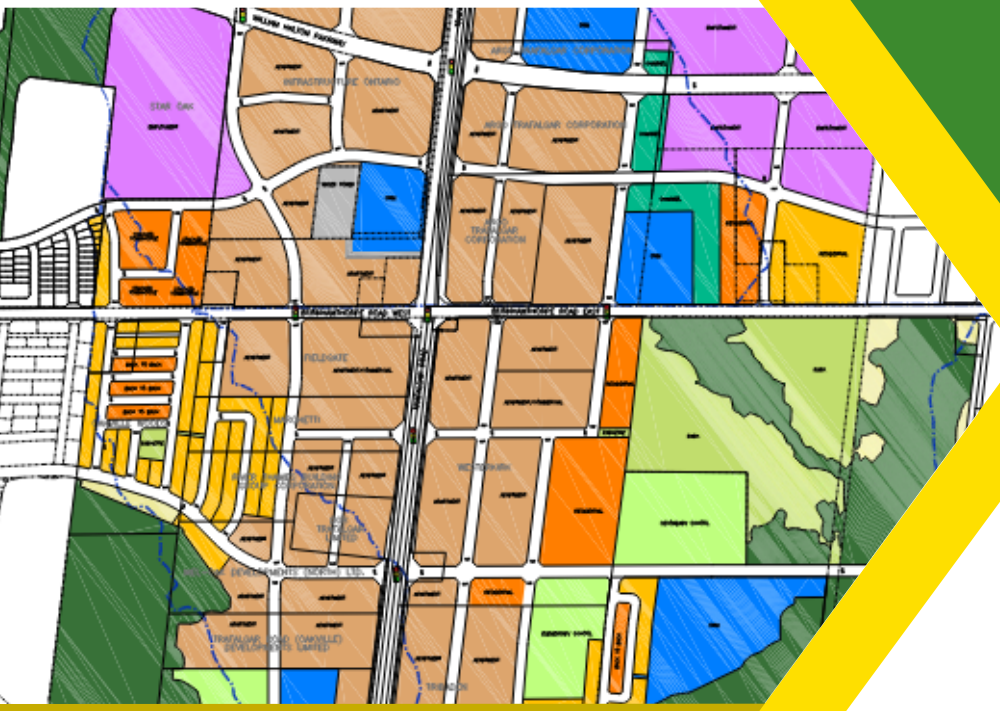
EM4 JC7 JC9



Transportation Impact Study

C|G|H TRANSPORTATION

EM4 JC7 JC9
Transportation Impact Study

Prepared for:

EM4 JC7 JC9 Landowner's Group

Prepared by:

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November 2024

PN: 2023-084

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Executive Summary

CGH Transportation has been retained by the EM4 JC7 JC9 Landowners' Group to prepare a Transportation Impact Study to support the proposed mixed-use development within the EM4, JC7, JC9 lands in North Oakville. This Transportation Impact Study has been prepared to support the Environmental Implementation Report (EIR) / Functional Servicing Study (FSS) and will provide a high-level review on the impact of the proposed development on the transportation network within the Study Area. The study will include a review of existing and planned conditions, a travel demand forecast, an operational analysis, intersection spacing evaluation, and a transportation demand management plan. Through the Terms of Reference, the scope has been confirmed with the Ministry of Transportation Ontario (MTO), Halton Region, and Town of Oakville staff.

Proposed Development:

The EM4, JC7, JC9 lands are located in North Oakville along Trafalgar Road south of Highway 407. The Study Area is bounded by Sixth Line to the west, Ninth Line to the east, Highway 407 to the north, and Dundas Street to the south. The proposed development will include approximately 660 townhouse units, 2,600 mid-rise and 17,665 high-rise residential units, along with 32,665 square metres of retail, 58,530 square metres of employment, and three schools distributed throughout the lands. The development statistics have the potential to be further refined and are subject to change at future Draft Plan, Site Plan, and Zoning By-Law submissions. The proposed development is anticipated to be fully built out by 2031.

Analysis Process & Key Findings:

The study includes traffic operational analysis at the Study Area intersections for the existing horizon of 2024, the buildout horizon of 2031, the buildout plus 5 years horizon of 2036, and the buildout plus 10 years horizon of 2041.

The proposed development is anticipated to generate 6300 AM and 5990 PM peak hour external two-way vehicle trips, consisting of 5199 in the AM and 5685 in the PM for non-school trips, and 1101 in the AM and 305 in the PM for school trips. In addition to the weekday AM and PM peak periods, a Saturday peak analysis is conducted at the two Highway 407 ramp terminal intersections on Trafalgar Road. The subject development is anticipated to generate 5616 net new Saturday external two-way peak hour auto trips.

The planned network improvements have been incorporated into the traffic analysis for the 2031, 2036 and 2041 analysis horizons. Reviewing the future scenarios, additional mitigation measures, including additional turn lanes, increased storage distances, and signal timing optimization, have been proposed as a result of the auto mode operational analysis results. However, due to the high volumes along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street, critical movements are still present following the implementation of the mitigation measures. It is noted that the access intersections to the subject lands operate well with no noted over-capacity turning movements into or out of the subject development lands. In order for the Study Area intersections to function adequately, a shift in mode share from single occupancy vehicles to transit is required to reduce traffic volumes along Trafalgar Road and Dundas Street. This is expected of high-density downtown environments and is anticipated to occur with the implementation of future planned BRT facilities along Trafalgar Road and Dundas Street. As the Halton Region Integrated Master Plan is an ongoing study, the results and macroscopic modelling of this scenario are not yet available, however it is recommended and anticipated that the modelling of these BRT scenarios will address the high traffic volumes in this area and the impact of reducing one through lane in each travel direction along Dundas Street as well as Trafalgar Road.

A preliminary transportation demand management plan including pedestrian, cycling, and transit facilities, have been recommended in order to reduce reliance on single occupant vehicle trips. TDM measures will be further explored at future submission stages.

Given that the impact of the proposed development is consistent with future growth expected in the surrounding Study Area, the proposed development application is recommended to proceed from a transportation perspective.

1 Introduction

This Transportation Impact Study (TIS) has been prepared to support the Environmental Implementation Report (EIR) / Functional Servicing Study (FSS) for multiple lands within the EM4, JC7, and JC9 development areas in North Oakville in support of the combined Landowners' Group. The subject development areas, EM4, JC7, and JC9, are linked via catchment areas for their respective Environmental Implementation Report (EIR) / Functional Servicing Study (FSS). This TIS will support lands within the three catchment areas and will serve as an overall guiding transportation document that will, through addenda, support the future Draft Plan, Zoning By-law, and Site Plan Applications for each development.

The subject lands described within this report are being developed by a group of companies including:

- Star Oak
- Oakville Woods
- Fieldgate
- River Thames
- DGB Trafalgar
- Mel-Oak (North)
- Trafalgar Road
- Mel-Oak
- ARGO
- Westerkirk
- Tribaden

The combined development includes a mix of residential, employment, and retail land uses. It is estimated to contain approximately 660 townhouse units, 2,600 mid-rise and 17,665 high-rise residential units, along with 32,665 square metres of retail, 58,530 square metres of employment, and three schools distributed throughout the lands. The development statistics are still being refined and are subject to change at future Draft Plan, Site Plan, and Zoning By-Law submissions. Accesses to the development will be guided by the *Halton Region Access Management Guidelines* and the *North Oakville Urban Design and Open Space Guidelines* where applicable.

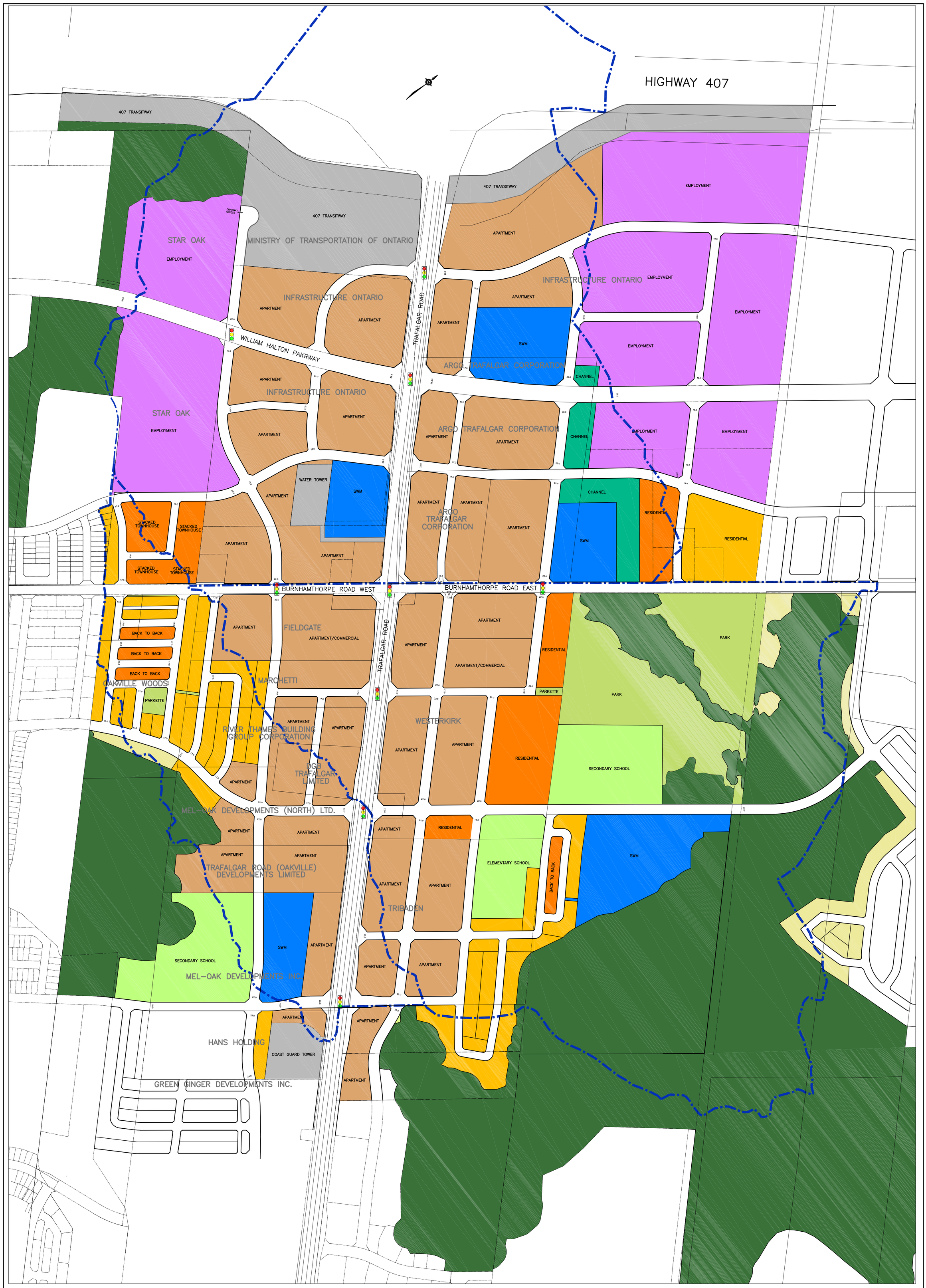
For the purposes of this report, it has been assumed that the proposed developments will be built and operational by 2031. Therefore, the analysis horizons will include 2024 existing conditions, a build-out year of 2031, a build-out plus five years of 2036, and a build-out plus ten years of 2041. Figure 1 illustrates the site context. Figure 2 illustrates the concept plan showing the subject lands. Please note that this demonstration plan has been prepared to support the EIR / FSS. It will be subject to subsequent draft plan of subdivision and site plan approval processes that will further refine the plans for each site.

The scope of this TIS has been confirmed with transportation staff from the Town of Oakville, Halton Region, and the Ministry of Transportation Ontario (MTO). Email correspondence has been included in Appendix A.

Figure 1: Site Context



Figure 2: Concept Plan



DRAFT CONCEPT FOR EM4/JC7/JC9

LEGEND:

- PARTICPATING PARCEL BOUNDARIES
- COMMERICAL AND/OR APARTMENTS
- BACK TO BACK TOWNHOUSES AND/OR STACKED TOWNHOUSES
- STREET/LANE ACCESSED TOWNHOUSES
- SINGLE DETACHED/SEMI-DETACHED
- EMPLOYMENT
- SCHOOL
- PARK
- NATURAL HERITAGE SYSTEM AREA
- STORM WATER MANAGEMENT
- CHANNEL
- OTHER OPEN SPACE
- UTILITY
- FOUR WAY SIGNALIZED INTERSECTION
- EXISTING EM4/JC7/JC9 DRAINAGE BOUNDARY (TO BE DETERMINED)

DEVELOPMENT FABRIC AND LAND USES ARE CONCEPTUAL. SUBJECT TO REVISION BY THE RESPECTIVE LAND OWNERS.

FOR DISCUSSION PURPOSES ONLY

PROJECT No. P-3407

SCALE 1:4000 NOV. 13, 2024

(3407-SUBWATERSHEDBASE19)

PLANNING PARTNERS INC.
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Planning • Design • Development

2 Study Area

The Study Area will consist of the following intersections:

- Burnhamthorpe Road at Trafalgar Road (Existing)
- Trafalgar Road at William Halton Parkway (Existing)
- William Halton Parkway at Sixth Line (Existing)
- Sixth Line at Burnhamthorpe Road (Existing)
- Trafalgar Road at Dundas Street (Existing)
- William Halton Parkway at Burnhamthorpe Road (Existing)
- Burnhamthorpe Road / William Halton Parkway at Ninth Line (Existing)
- Highway 407 ramp terminals at Trafalgar Road (Existing)
- 4180 Trafalgar Road Parking Lot at Trafalgar Road (Existing)
- Settlers Road at Trafalgar Road (Future)
- Marvin Avenue at Trafalgar Road (Future)
- Four Accesses on William Halton Parkway (Future)
- Five Accesses on Burnhamthorpe Road (Future)
- Three Accesses on Trafalgar Road (Future)
- Six internal collector road intersections (Future)

3 Existing Conditions

3.1 Area Road Network

Trafalgar Road

Trafalgar Road is a north-south Halton Region arterial road with a four-lane cross-section. The Halton Region Transportation Master Plan (TMP) protects for a 50-metre right-of-way for class N1 Urban roads which includes Trafalgar Road between Dundas Street and Highway 407. A 60 km/h posted speed limit applies to the section of Trafalgar Road between Dundas Street and Wheat Boom Drive and an 80 km/h posted speed limit applies north thereof. A paved multi-use pathway is provided on both sides of Trafalgar Road north of William Halton Parkway and a sidewalk is provided on the east side of Trafalgar Road south of Dundas Street. Auxiliary turning lanes are provided at major intersections.

William Halton Parkway

William Halton Parkway is a Halton Region arterial road within the Study Area. With the completion of Phase 1 of the William Halton Parkway extension in November 2020, it is assumed that the portion of the road will be considered a regional road. William Halton Parkway has a four-lane cross-section from Sixth Line to 400 metres east of Trafalgar Road and a two-lane cross section east of that. A raised concrete median is provided for the four-lane section. The Halton Region Transportation Master Plan (TMP) protects a 35-metre right-of-way for class C2 Urban roads. A 60 km/h posted speed limit applies. Bike lanes are present on both sides of the road and a sidewalk is provided on the north side of the road. A paved multi-use pathway is provided on the south side of William Halton Parkway west of Trafalgar Road.

Burnhamthorpe Road

Burnhamthorpe Road is a Halton Region arterial road with a two-lane rural cross-section with gravel shoulders and exists in the Study Area east of Ninth Line and west of William Halton Parkway. With the completion of Phase 1 and Phase 2 – Stage 2 of the William Halton Parkway extension east of Burnhamthorpe Road, responsibility for the remaining portions of this roadway will transfer from Halton Region to the Town of Oakville. As the new William Halton Parkway will replace the Regional Road function of Burnhamthorpe Road to serve as the north Oakville transportation corridor, the Town completed a Character Study for Burnhamthorpe Road to illustrate the ultimate cross-section and alignment once the Town assumes this road. The Burnhamthorpe Character Study protects for a 24-metre right-of-way for Burnhamthorpe Road. A 60 km/h posted speed limit applies. No bike lane or pedestrian facilities are currently provided. The Character Study and future road elements will be discussed further in subsequent sections of this TIS.

Dundas Street

Dundas Street is a Halton Region arterial road with a six-lane divided urban cross-section. The Halton Region Transportation Master Plan (TMP) classifies Dundas Street as an N2 urban road and protects for a 50-metre right-of-way. A 60 km/h posted speed limit applies. Auxiliary turning lanes are provided at major intersections. A paved multi-use pathway is provided on the south side on Dundas Street and intermittently along the north side.

Ninth Line

Ninth Line is a Halton Region arterial road with a two-lane urban cross-section. The Halton Region Transportation Master Plan (TMP) classifies Ninth Line as a C2 urban road and protects for a 35-metre right-of-way. A 60 km/h posted speed limit applies. No cycling or pedestrian facilities are provided on Ninth Line within the Study Area.

Sixth Line

Sixth Line is a Town of Oakville minor arterial road with a two-lane rural cross-section with gravel shoulders. The Town of Oakville Official Plan protects for a 26-metre right-of-way for minor arterial roads. A 60 km/h posted speed limit applies. Bike lanes and sidewalks are provided on both sides of Sixth Line within approximately 200 metres north and south of William Halton Parkway No pedestrian or cycling facilities are noted along Sixth Line within the Study Area south thereof.

Settlers Road

Settlers Road is a Town of Oakville minor collector with a 2-lane cross section. The Town of Oakville Official Plan protects for a 20-metre right-of-way. This road will provide east-west connections to the proposed development once the neighboring communities to the east and to the west are built out. The unposted speed limit is assumed to be 50 km/hr. Sidewalks are provided on both sides of Settlers Road. No cycling facilities are noted.

Marvin Avenue

Marvin Avenue is a Town of Oakville minor collector with a 2-lane cross section. The Town of Oakville Official Plan protects for a 20-metre right-of-way. This road will provide east-west connections to the proposed development once the neighboring communities to the east and to the west are built out. The unposted speed limit is assumed to be 50 km/hr. Sidewalks are provided on both sides of Marvin Avenue. No cycling facilities are noted.

Highway 407

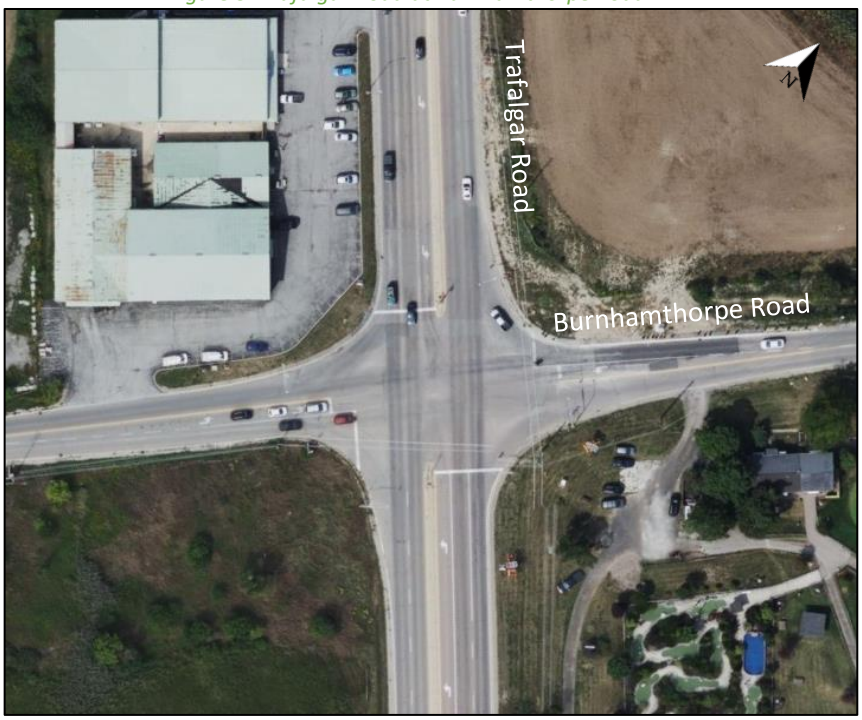
Highway 407 (King's Highway 407) is a tolled Ontario 400-series highway comprising of both privately leased and publicly owned segments. Highway 407 travels in an east-west direction and has three travel lanes in each direction in the Study Area. The posted speed limit for the eastbound and westbound off-ramps in the Study Area is 60 km/h and the posted speed limit along the highway is 100 km/h.

3.2 Existing Intersections

Trafalgar Road at Burnhamthorpe Road

The intersection of Trafalgar Road at Burnhamthorpe Road is a four-legged signalized intersection. Auxiliary left turn lanes are provided on all approaches. The northbound and southbound approaches each contain an auxiliary left-turn lane, a through lane and a shared through / right-turn lane. The eastbound and westbound approaches each contain an auxiliary left-turn lane and a shared through / right-turn lane. No turn restrictions are noted. No pedestrian crossings or bike lanes are provided at the intersection. Figure 3 illustrates the intersection of Trafalgar Road at Burnhamthorpe Road.

Figure 3: Trafalgar Road at Burnhamthorpe Road

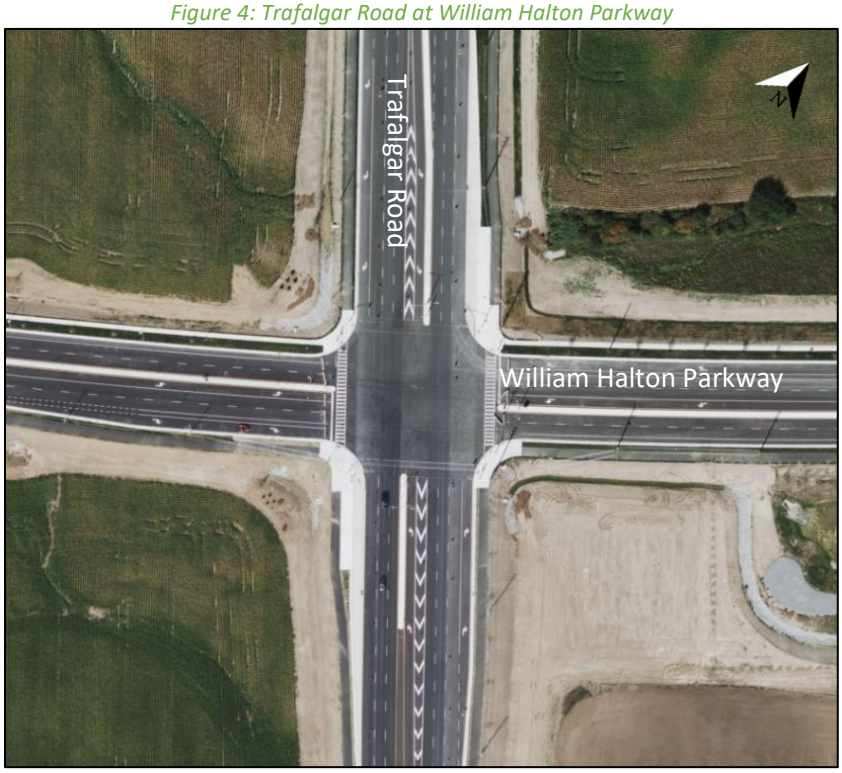


Trafalgar Road at William Halton Parkway

The intersection of Trafalgar Road at William Halton Parkway is a four-legged signalized intersection. The northbound and southbound approaches each contains an auxiliary left-turn lane, three through lanes, and an auxiliary right-turn lane. The eastbound and westbound approaches both consist of an auxiliary left-turn lane, two through lanes and an auxiliary right-turn lane. Pedestrian crossings are present on all intersection legs. At the intersection, bike lanes are provided on both sides of William Halton Parkway. A multi- use pathway is provided on the south side of William Halton Parkway and on both sides of Trafalgar Road. A sidewalk is present on the

north side of William Halton Parkway. No turn restrictions are noted. Figure 4 illustrates the intersection of Trafalgar Road at William Halton Parkway.

Figure 4: Trafalgar Road at William Halton Parkway



William Halton Parkway at Burnhamthorpe Road

The intersection of William Halton Parkway at Burnhamthorpe Road is an unsignalized three-legged intersection with stop control on the south leg on Burnhamthorpe Road and free movement for eastbound and westbound movements along William Halton Parkway. The northbound approach consists of a shared left-turn / right-turn lane. The eastbound approach consists of a shared right-turn / through lane. The westbound approach consists of a shared left-turn / through lane. At the intersection, bike lanes are provided along William Halton Parkway although there are no marked bike or pedestrian crossings on the south leg. No turn restrictions are noted. Figure 5 illustrates the intersection of William Halton Parkway at Burnhamthorpe Road.

Figure 5: William Halton Parkway at Burnhamthorpe Road



Sixth Line at Burnhamthorpe Road

The intersection of Sixth Line at Burnhamthorpe Road is an all-way-stop-controlled intersection with a shared left-turn / through / right-turn lane on each approach. No auxiliary lanes or sidewalks are provided on any of the intersection legs. An overhead flashing red beacon has been installed over the centre of the intersection. No turn restrictions are noted. Figure 6 illustrates the intersection of Sixth Line at Burnhamthorpe Road.

Figure 6: Sixth Line at Burnhamthorpe Road



Sixth Line at William Halton Parkway

The intersection of Sixth Line at William Halton Parkway functions as a four-legged two-lane roundabout. The west leg of the intersection was recently opened in November 2023 as part of the completion of Phase 2 – Stage 2 of the William Halton Extension Project. Pedestrian crosswalks and sidewalks are present on all intersection legs and bike lanes are provided along both sides of William Halton Parkway at the intersection. All approaches consist of a shared left-turn / through lane and a shared through / right-turn lane and are noted to have yield signs. No turn restrictions are noted. Figure 7 illustrates the roundabout intersection at Sixth Line at William Halton Parkway.

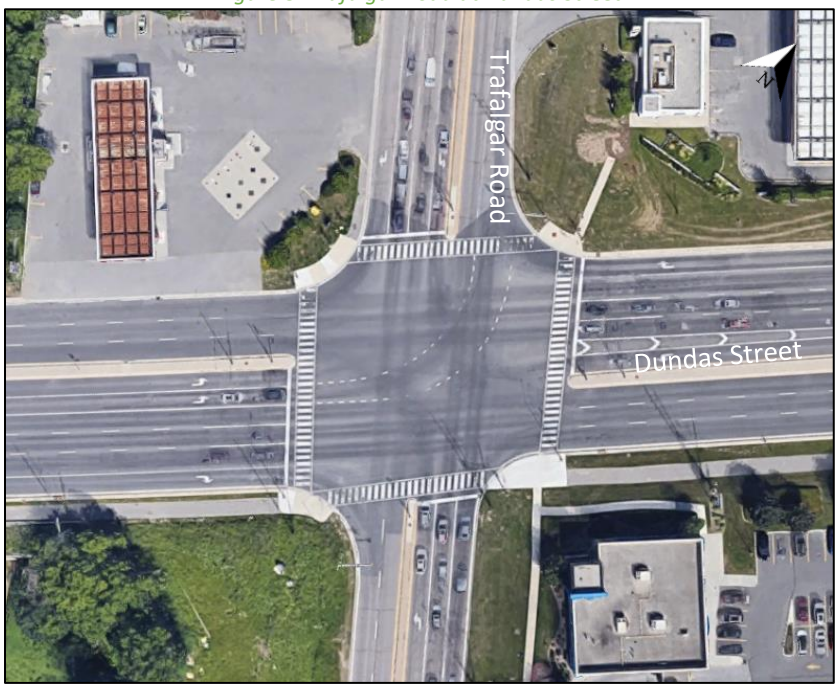
Figure 7: Sixth Line at William Halton Parkway



Trafalgar Road at Dundas Street

The intersection of Trafalgar Road at Dundas Street is a four-legged signalized intersection. The northbound approach contains an auxiliary left-turn lane, one through lane, and a shared through / right-turn lane. The southbound approach has an auxiliary left-turn lane, two through lanes, and a right-turn lane. The eastbound approach consists of two auxiliary left-turn lanes, three through lanes, and an auxiliary right-turn lane. The westbound approach has an auxiliary left-turn lane, three through lanes, and an auxiliary right-turn lane. Pedestrian crossings are present on all intersection legs. At the intersection, a paved multi-use pathway is provided on the south side of Dundas Street and a sidewalk is provided on the east side of Trafalgar Road south of Dundas Street. No turn restrictions are noted. Figure 8 illustrates the intersection of Trafalgar Road at Dundas Street.

Figure 8: Trafalgar Road at Dundas Street



Burnhamthorpe Road / William Halton Parkway at Ninth Line

The intersection of Burnhamthorpe Road / William Halton Parkway at Ninth Line is a four-legged two-lane roundabout. All approaches consist of a shared left-turn / through lane and a shared through / right-turn lane, and all approaches are noted to have yield signs. No turn restrictions are noted. Pedestrian crosswalks and multi-use pathways are present on all intersection legs. Figure 9 illustrates the roundabout intersection at Burnhamthorpe Road / William Halton Parkway at Ninth Line.

Figure 9: Burnhamthorpe Road / William Halton Parkway at Ninth Line



4180 Trafalgar Road Parking Lot Access at Trafalgar Road

The intersection of the 4180 Trafalgar Road Parking Lot Access at Trafalgar Road is a three-legged signalized intersection. The northbound approach consists of an auxiliary left-turn lane and three through lanes. The southbound approach consists of an auxiliary right-turn lane and three through lanes. The eastbound approach consists of a left-turn lane and a right-turn lane. No turn restrictions are noted. Despite not being shown on the aerial imagery below, a pedestrian crosswalk is provided on the south leg of the intersection. Multi-use pathways are present on both sides of Trafalgar Road south of the intersection. Figure 10 illustrates the intersection of the 4180 Trafalgar Road Parking Lot Access at Trafalgar Road.

Figure 10: 4180 Trafalgar Road Parking Lot Access at Trafalgar Road



Trafalgar Road at the South Highway 407 EB On-Ramp

The intersection of the Highway 407 EB on-ramp on the east side of Trafalgar Road consists of a one-lane on-ramp that allows for vehicles travelling northbound on Trafalgar Road to access the EB Highway 407 lanes. The northbound approach consists of two through lanes and one auxiliary right-turn lane. A raised median separates the northbound and southbound traffic at this intersection. Figure 11 illustrates the intersection of Trafalgar Road at the South Highway 407 EB on-ramp.

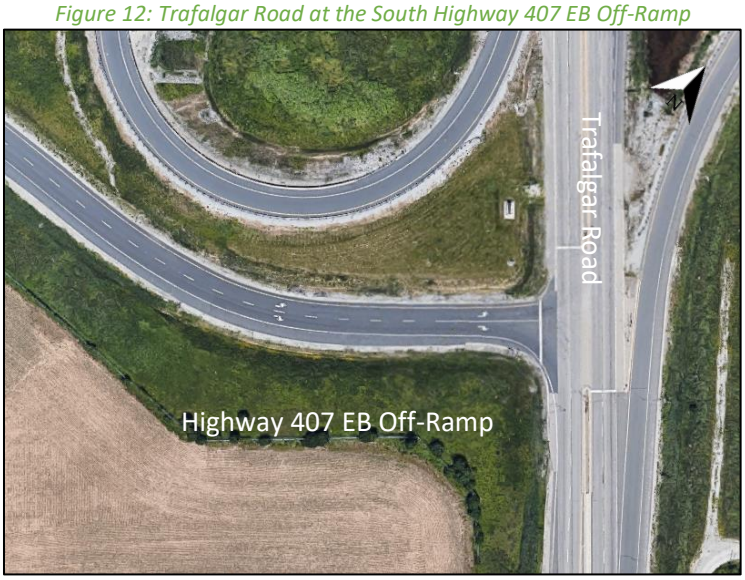
Figure 11: Trafalgar Road at the South Highway 407 EB On-Ramp



Trafalgar Road at the Highway 407 EB Off-Ramp

The intersection of the Highway 407 EB off-ramp at Trafalgar Road is a signalized three-legged intersection. The Highway 407 EB off-ramp consists of an auxiliary left-turn lane and an auxiliary right-turn lane. The northbound and southbound approaches each consist of two through lanes that are curb-separated near the intersection. Figure 12 illustrates the intersection of Trafalgar Road at the south Highway 407 EB off-ramp.

Figure 12: Trafalgar Road at the South Highway 407 EB Off-Ramp



Trafalgar Road at the North Highway 407 EB On-Ramp

The intersection of the Highway 407 WB on-ramp on the west side of Trafalgar Road consists of a one-lane on-ramp that allows for vehicles travelling southbound on Trafalgar Road to access the EB Highway 407 lanes. The southbound approach consists of two through lanes and one auxiliary right-turn lane. Figure 13 illustrates the intersection of Trafalgar Road at the north Highway 407 EB on-ramp.

Figure 13: Trafalgar Road at the North Highway 407 EB On-Ramp



Trafalgar Road at the South Highway 407 WB On-Ramp

The intersection of the Highway 407 WB on-ramp on the east side of Trafalgar Road is a one-lane on-ramp that allows for vehicles travelling northbound on Trafalgar Road to access the WB Highway 407 lanes. The northbound approach consists of two through lanes and one auxiliary right-turn lane. Figure 14 illustrates the intersection of Trafalgar Road at the south Highway 407 WB on-ramp.

Figure 14: Trafalgar Road at the South Highway 407 WB On-Ramp



Trafalgar Road at the North Highway 407 WB On-Ramp

The intersection of the Highway 407 WB on-ramp on the west side of Trafalgar Road is a one-lane on-ramp that allows for vehicles travelling southbound on Trafalgar Road to access the WB Highway 407 lanes. The southbound approach consists of two through lanes and one auxiliary right-turn lane. Figure 15 illustrates the intersection of Trafalgar Road at the north Highway 407 WB on-ramp.

Figure 15: Trafalgar Road at the North Highway 407 WB On-Ramp



Trafalgar Road at the Highway 407 WB Off-Ramp

The intersection of the Highway 407 WB off-ramp at Trafalgar Road is a signalized four-legged intersection. The Highway 407 WB off-ramp consists of an auxiliary left-turn lane, a shared left-turn / through / right-turn lane, and an auxiliary right-turn lane. The eastbound approach is a driveway access to the Trafalgar Carpool parking lot and consists of a shared left-turn / right-turn lane. No through movements are permitted on the eastbound approach. The northbound approach consists of an auxiliary left-turn lane and two through lanes. The southbound approach consists of two through lanes and a shared through / right-turn lane. Figure 16 illustrates the intersection of Trafalgar Road at the Highway 407 WB off-ramp.

Figure 16: Trafalgar Road at the Highway 407 WB Off-Ramp



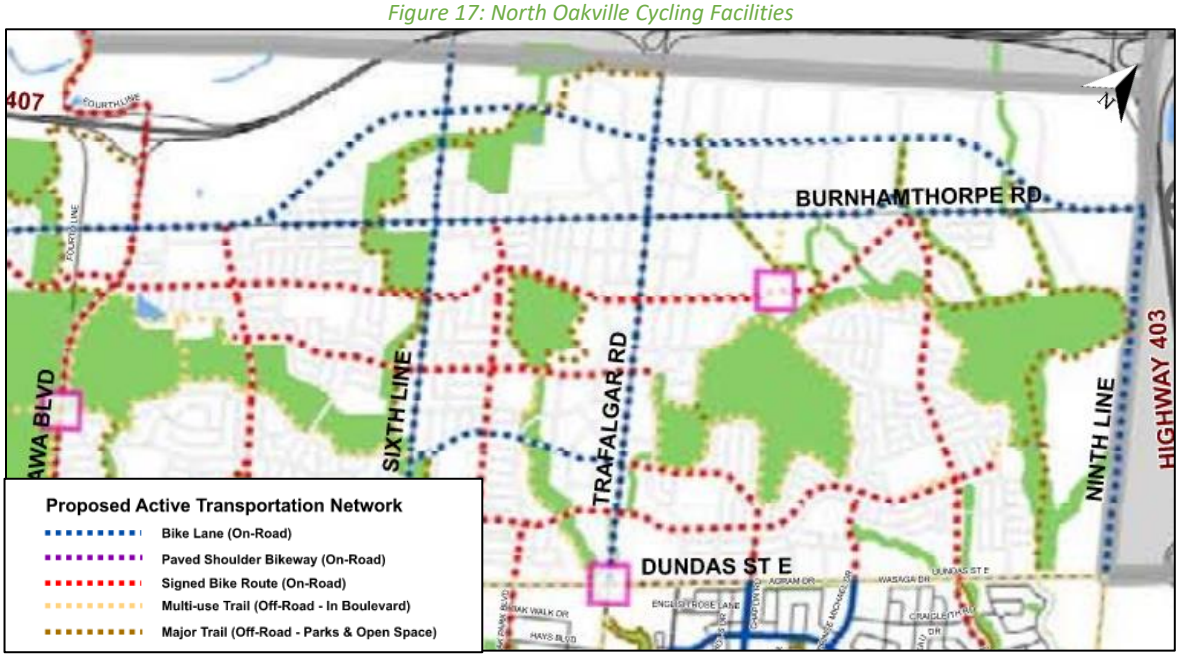
3.3 Cycling and Pedestrian Facilities

As discussed in Section 3.1, pedestrian facilities are present within parts of the Study Area road network. Sidewalks are provided on the north side of the road along William Halton Parkway. Sidewalks are also provided on both sides of Sixth Line within approximately 200 metres north and south of William Halton Parkway. Pedestrian crosswalks are noted at all approaches at the William Halton Parkway at Trafalgar Road, Dundas Street at Trafalgar Road, Sixth Line at William Halton Parkway, and Ninth Line at William Halton Parkway / Burnhamthorpe Road intersections.

Bike lanes are present on both sides along William Halton Parkway west of Ninth Line within the Study Area. No bike lanes are present on any other roads within the Study Area. A paved multi-use pathway is also provided on the south side of William Halton Parkway west of Trafalgar Road, on the south side of Dundas Street, and intermittently along the north side of Dundas Street within the Study Area.

The Town of Oakville Active Transportation Master Plan (ATMP) designates Sixth Line, Burnhamthorpe Road, Trafalgar Road, William Halton Parkway, Ninth Line, and Dundas Street as primary (spine) routes. The existing portions of Settlers Road and Marvin Avenue are designated as secondary (neighbourhood) routes. Existing bike lanes along William Halton Parkway, and multi-use pathways along Dundas Street are shown in the North Oakville Cycling Facilities plan below. Planned bike lanes proposed to be provided along Burnhamthorpe Road, Sixth Line, and Trafalgar Road as well as signed bike routes along Settlers Road and Marvin Avenue within the Study Area are shown as well. Figure 17 illustrates the North Oakville cycling facilities.

Figure 17: North Oakville Cycling Facilities



Source: North Oakville Active Transportation Plan (2017)

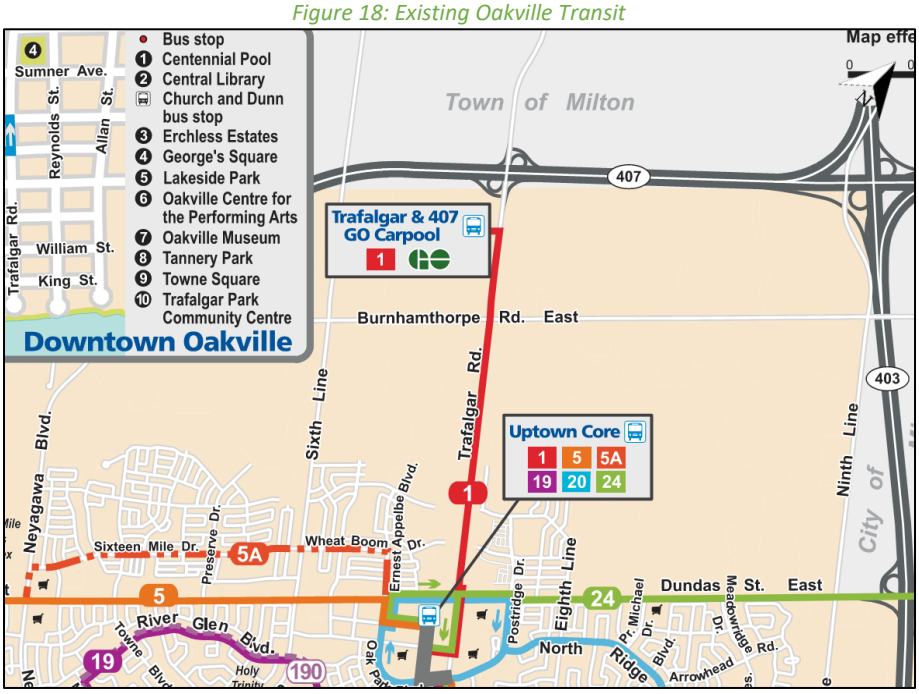
3.4 Existing Transit

The local transit routes operating in the study area are Route #1, Routes #5 and #5A, and Route #24, operated by Oakville Transit. The stops noted for Route #1 are located along Trafalgar Road, while stops for Routes #5, #5A, and #24 are located on Dundas Street. The Uptown Core transit Station is located on the southwest corner of the Trafalgar Road and Dundas Street intersection, providing connections to Routes #19 and #20 operated by Oakville Transit.

There is a "park and ride" facility to the south of the Highway 407 interchange at Trafalgar Road, approximately 300 metres north of William Halton Parkway. GO Bus Routes #21, #41, #47, and #56 have stops at this location, which will provide intercity transit services to the proposed developments. Route #21 runs along Trafalgar Road, Derry Road, and Thompson Road, providing service between Milton GO and Oakville GO and has stops at Trafalgar Road at Burnhamthorpe Road and at Dundas Street. Route #41 runs between Hamilton GO and Pickering GO via Highway 403, Highway 407 and Highway 401. Route #47 runs between Hamilton GO and Highway 407 Bus Terminal in Vaughan via Highway 403 and Highway 407. Route #56 runs between Oakville GO and Oshawa GO via Trafalgar Road, Highway 407 and Simcoe Street in Oshawa, and provides stops at Trafalgar Road at Burnhamthorpe Road and at Dundas Street.

The existing Oakville Transit and GO Transit services the Study Area are presented in Figure 18 and Figure 19, respectively. The Trafalgar Road at Highway 407 Carpool / Park and Ride is noted on both system maps.

Figure 18: Existing Oakville Transit



Source: www.oakvilletransit.ca/

Figure 19: Existing GO Transit



Source: https://www.gotransit.com/en/trip-planning/system-and-route-map/

3.5 Existing Peak Hour Travel Demand

The analysis will cover the AM and PM peak hours as the majority of the proposed development consists of residential and employment land uses. To understand the existing AM and PM peak hour traffic volumes, turning movement counts (TMCs) for the Study Area intersections have been acquired from Ontario Traffic Inc.

Table 1 summarizes the date of the most recent turning movement counts at each existing Study Area intersection.

Table 1: TMC Data Dates

Data Type	Location	Count Date
Turning Movement Counts (TMC)	Burnhamthorpe Road at Trafalgar Road	January 17, 2024
	William Halton Parkway at Trafalgar Road	
	William Halton Parkway at Burnhamthorpe Road	
	Burnhamthorpe Road at Sixth Line	
	William Halton Parkway at Sixth Line	
	Trafalgar Road at Dundas Street	
	Highway 407 at Trafalgar Road Interchanges	March 7, 2024
	William Halton Parkway / Burnhamthorpe Road at Ninth Line	
	4180 Trafalgar Road Parking Lot Access at Trafalgar Road	April 4, 2024

As shown above, the turning movement counts have been collected in 2024 and therefore no growth rate has been applied to the counts, as they are representative of existing conditions. As the counts were collected on different dates, volume balancing was applied to Highway 407 interchanges along Trafalgar Road to represent more consistent volumes along the Trafalgar Road corridor. Turning movement count data is included in Appendix B. The intersections of the Highway 407 EB and WB off-ramps at Trafalgar Road as well as Trafalgar Road at Burnhamthorpe Road, William Halton Parkway, and Dundas Street are signalized. Signal timing plans of these intersections are included in Appendix C. Figure 20 and Figure 21 illustrates the 2024 existing vehicle traffic volumes.

Figure 20: 2024 Existing Traffic Volumes – Section A

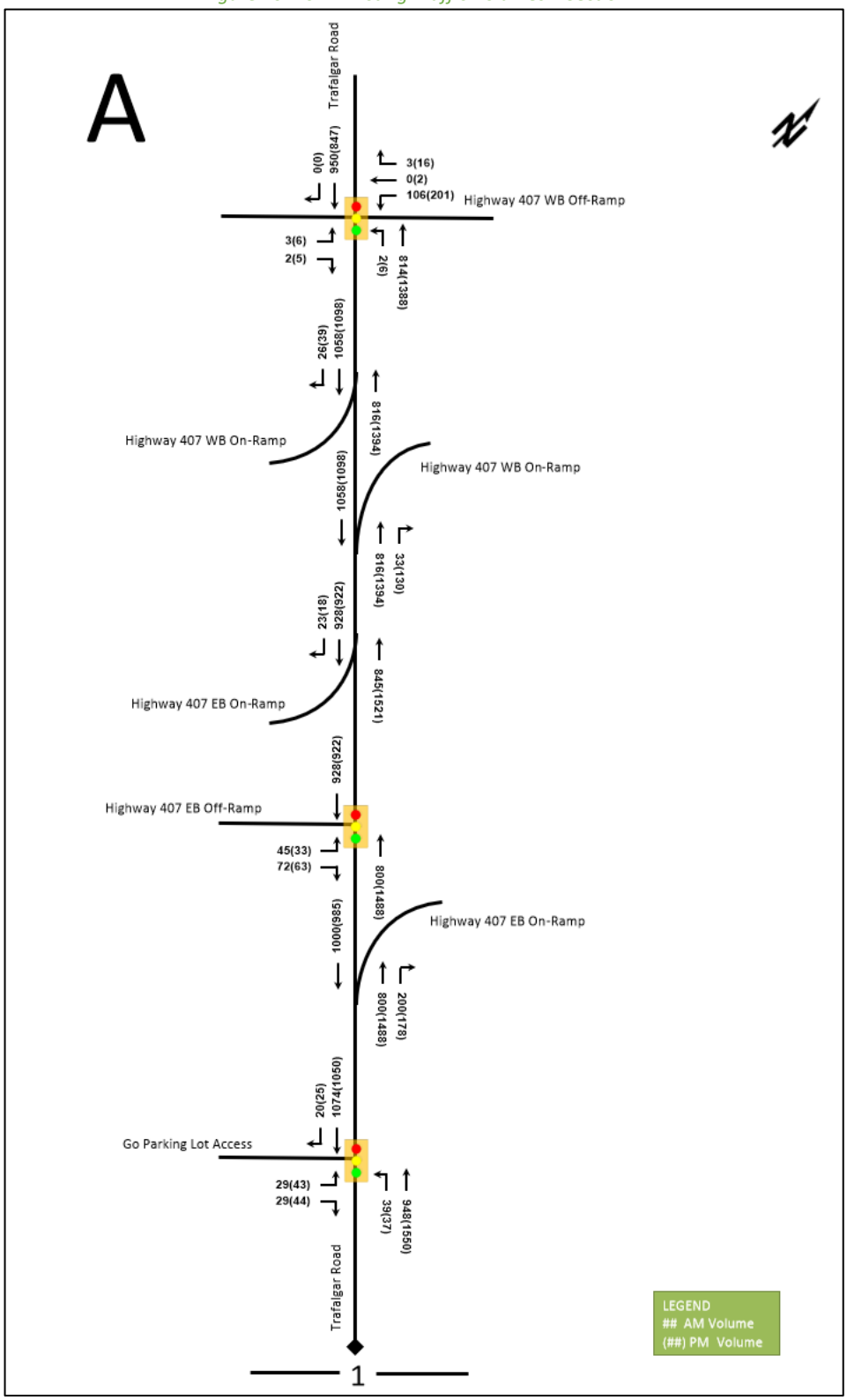
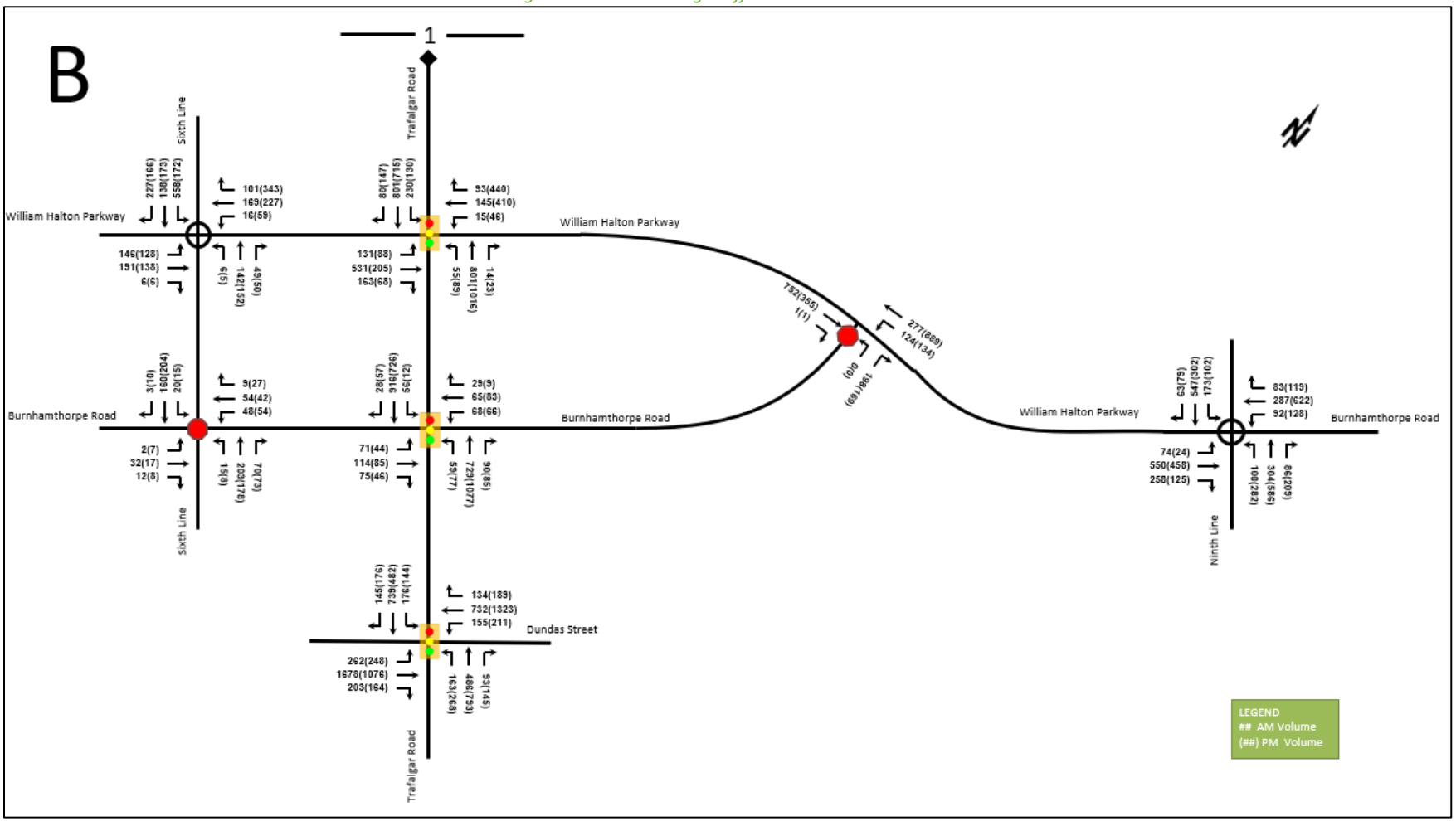


Figure 21: 2024 Existing Traffic Volumes – Section B



3.5.1 Existing Saturday Peak Hour Travel Demand

In addition to the weekday AM and PM peak periods, a Saturday peak analysis will be conducted at the two Highway 407 ramp terminal intersections on Trafalgar Road, in response to the Ministry of Transportation Ontario (MTO) comments as shown in Appendix A. Existing intersection configurations and descriptions for the ramp terminal intersections are discussed in Sections 3.1 and 3.2.

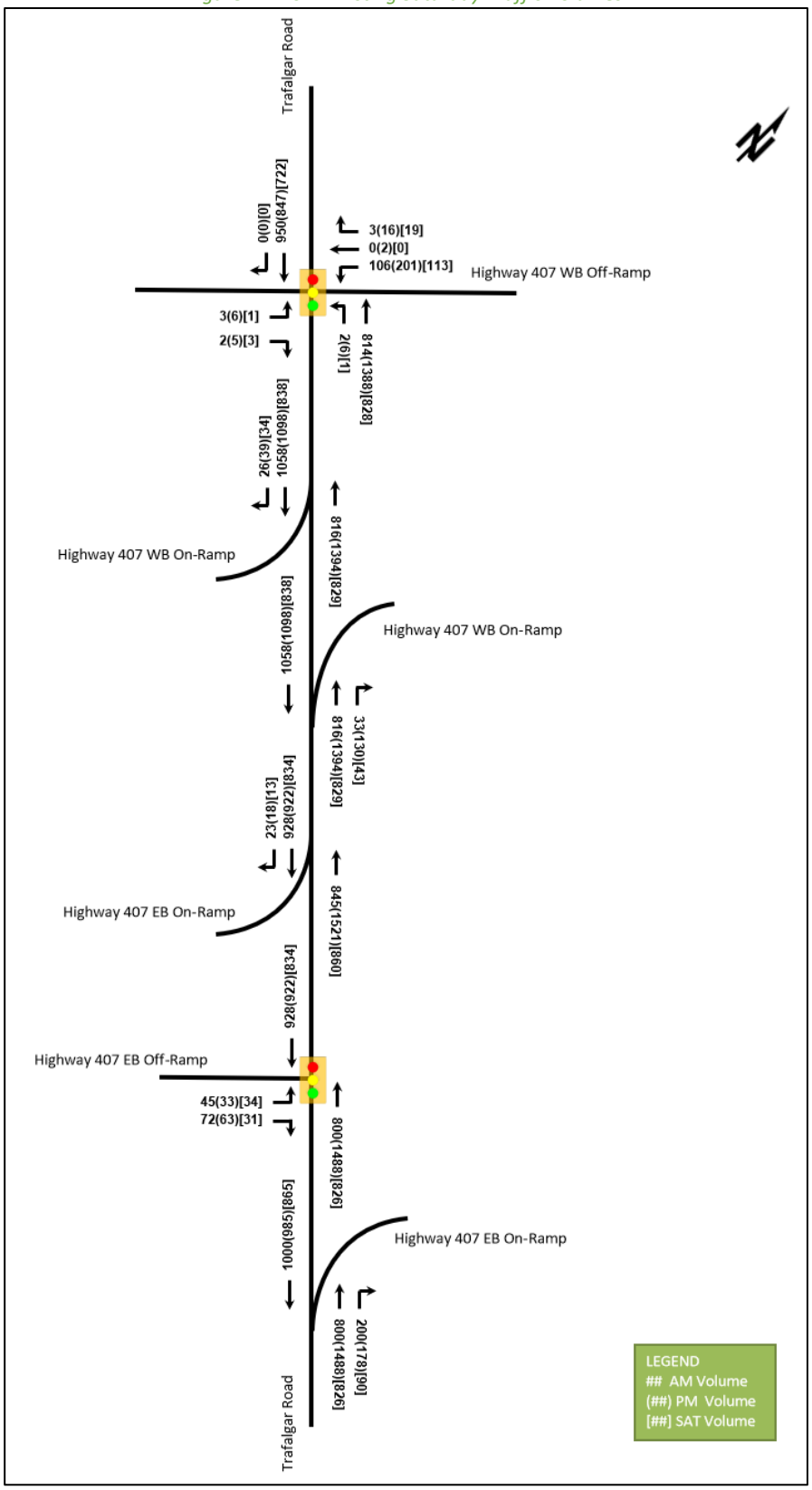
To understand the existing Saturday peak hour traffic volumes, turning movement counts (TMCs) for the two intersections have been acquired from Ontario Traffic Inc. Table 2 summarizes the date of the most recent Saturday turning movement counts.

Table 2: TMC Saturday Data Dates

Data Type	Location	Count Date
Turning Movement Counts (TMC)	Highway 407 EB Off-Ramp at Trafalgar Road	April 13, 2024
	Highway 407 WB Off-Ramp at Trafalgar Road	

Similar to the weekday AM and PM counts, the turning movement counts have been collected in 2024 and therefore no growth has been applied to the counts. As the Saturday counts were collected on the same day, no volume balancing has been performed as the intersection counts are representative of existing conditions. Turning movement count data is included in Appendix B. Signal timing plans of the Highway 407 EB and WB off-ramps at Trafalgar Road intersections are included in Appendix C. Figure 22 illustrates the 2024 existing Saturday vehicle traffic volumes at the study intersections.

Figure 22: 2024 Existing Saturday Traffic Volumes



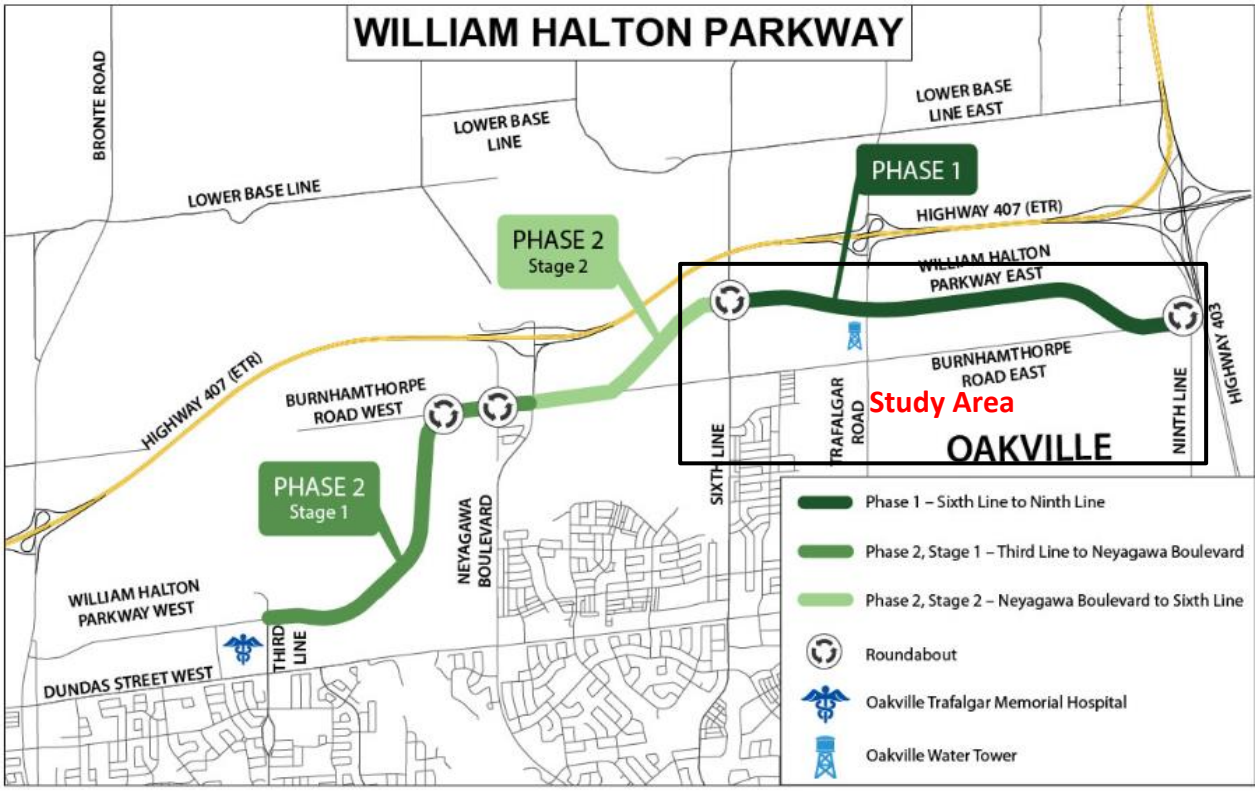
4 Future Background Conditions

4.1 Planned Conditions

4.1.1 William Halton Parkway Extension

As discussed in Section 3.1, William Halton Parkway is a Region of Halton arterial road. The William Halton Parkway Extension Project, which creates a new east-west corridor from Bronte Road (Regional Road 25) to Ninth Line (Regional Road 13), is planned to include sidewalks, multi-use pathways, and bike lanes between Third Line and Ninth Line, as seen in Figure 23. Phase 1 of the William Halton Parkway Extension Project between Sixth Line and Ninth Line was completed in November 2020. Phase 2 of the project takes place west of the development between Third Line and Sixth Line. Phase 2 – Stage 2 of the project was completed in November 2023, while Stage 1 is anticipated to be completed by December 2024. With the completion of this project, William Halton Parkway will replace the regional function of Burnhamthorpe Road. As improvements to William Halton Parkway within the Study Area are complete, the existing intersection configurations within the Study Area will remain the same in future analysis horizons however, the completion of Phase 2 – Stage 1 will influence the travel patterns of the east-west traffic within the Study Area. These volumes are anticipated to change as a portion of vehicles will take William Halton Parkway instead of Burnhamthorpe Road. These volume adjustments will be considered in all future analysis horizons.

Figure 23: Planned Extension of William Halton Parkway



Source: https://www.halton.ca/For-Residents/Roads-Construction/Construction-Projects/William-Halton-Parkway-Extension-Project

4.1.2 Trafalgar Road

Halton Region is making improvements to Trafalgar Road in the Town of Oakville to address future traffic demands and provide safe travel options for motorists, pedestrians and cyclists. Improvements on Trafalgar Road are being implemented in two phases. Phase 1 of construction between Leighland Avenue and north of Hays Boulevard was completed in Fall 2022. Phase 2 of construction between Hays Boulevard and William Halton Parkway is currently under design, with construction projected to be completed by 2026.

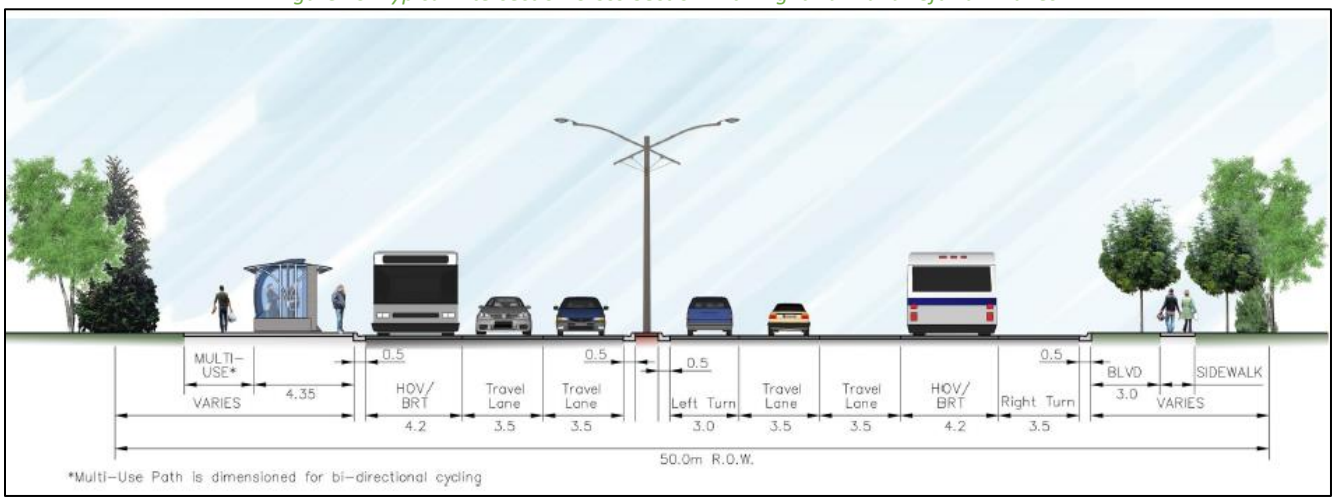
Trafalgar Road will be widened from four to six lanes north of Dundas Street within the Study Area and will have a 50-metre right-of-way. An urban cross-section is planned throughout with sidewalks, multi-use paths, and transit stops added. The posted speed limit on Trafalgar Road will be 60 km/h throughout the corridor. The typical mid-block cross-section is illustrated in Figure 24 and the typical intersection cross-section is shown in Figure 25. As construction is projected to be completed in 2026, all future scenarios will model Trafalgar Road in the Study Area as a six-lane road. The Trafalgar Road Improvements Class Environmental Assessment Study (2015) indicates future potential for the introduction of High Occupancy Vehicle (HOV) curb lanes or dedicated bus lanes upon completion of the widening project. The Halton Region Defining Major Transit Requirements (DMTR) Study (2019) indicates that HOV lanes are recommended along the outer lanes of Trafalgar Road between Steeles Avenue to the Midtown Oakville GO by 2031. By 2041, the HOV lanes will be converted to BRT lanes in the segment of Trafalgar Road between Highway 407 and the Midtown Oakville GO. Therefore, in the 2031 and 2036 future horizons, Trafalgar Road will be modelled with three travel lanes in each direction with a reduced lane utilization factor to account for the HOV lanes. In the 2041 horizon, the capacity on Trafalgar Road will be reduced to two travel lanes in each direction to account for the addition of the BRT lanes.

Figure 24: Typical Mid-Block Cross-Section



Source: Trafalgar Road (Regional Road 3) Improvements Class Environmental Assessment Study (2015)

Figure 25: Typical Intersection Cross-Section with Right-Turn and Left-Turn Lanes



Source: Trafalgar Road (Regional Road 3) Improvements Class Environmental Assessment Study (2015)

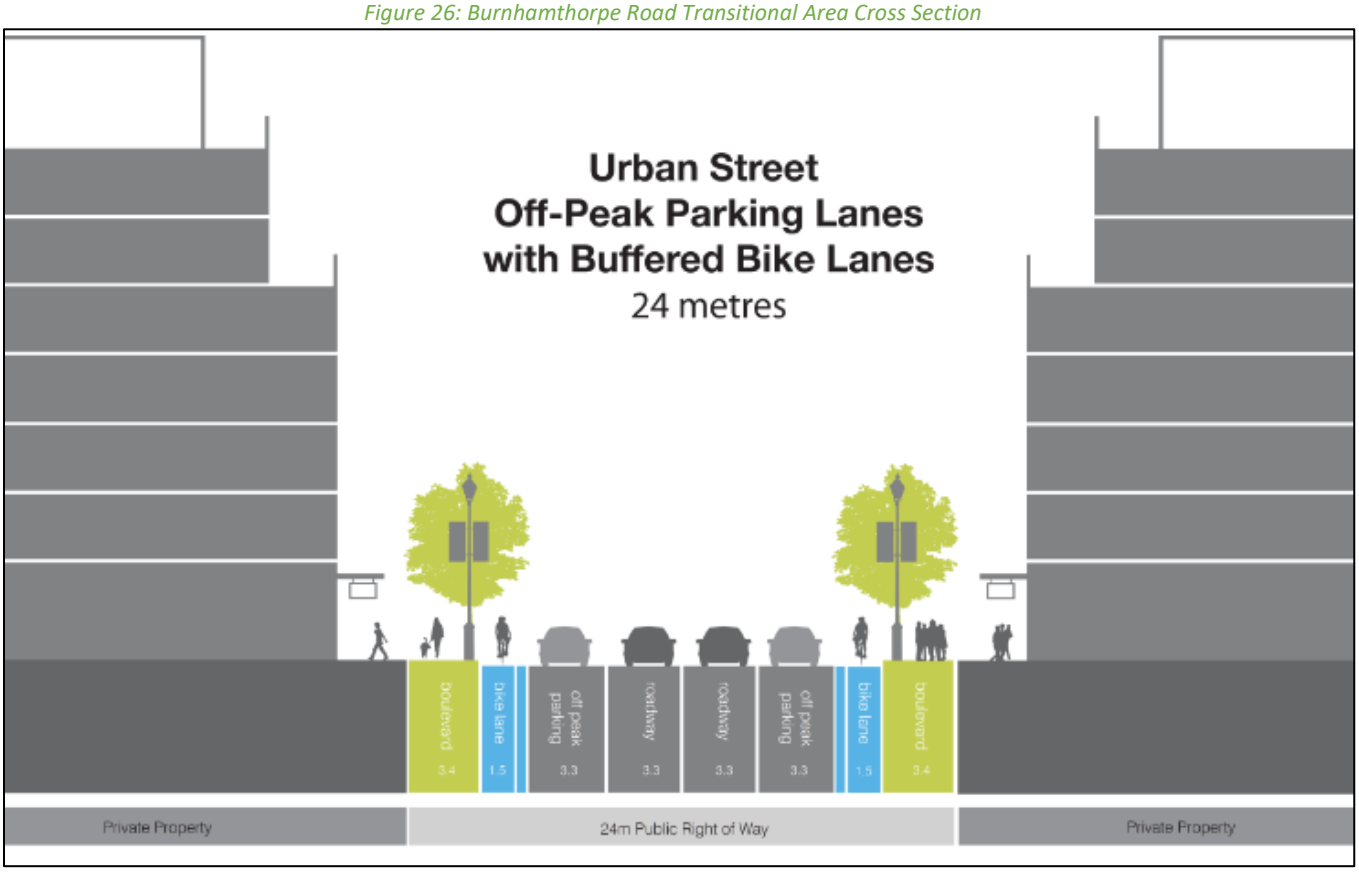
As the detailed design of Trafalgar Road is still underway and not yet available, the Trafalgar Road EA will be referenced for the configuration of Trafalgar Road in future analysis horizons. The preliminary designs of the Study Area intersections shown in the Trafalgar Road EA are provided in Appendix D.

4.1.3 Burnhamthorpe Road

With the completion of Phase 2 – Stage 2 of the William Halton Parkway extension in November 2023, the regional function of Burnhamthorpe Road as the North Oakville transportation corridor is assumed to be transferred to William Halton Parkway. Therefore, within the Study Area, Burnhamthorpe Road is assumed to be under the jurisdiction of the Town of Oakville and designated as a character road. The Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014) was conducted to develop a new road design for Burnhamthorpe Road between Ninth Line and Sixteen Mile Creek to better serve the needs of the north Oakville community. As construction for Burnhamthorpe Road is expected to begin in three years, in 2027, the improvements along Burnhamthorpe Road will be considered in all future analysis horizons.

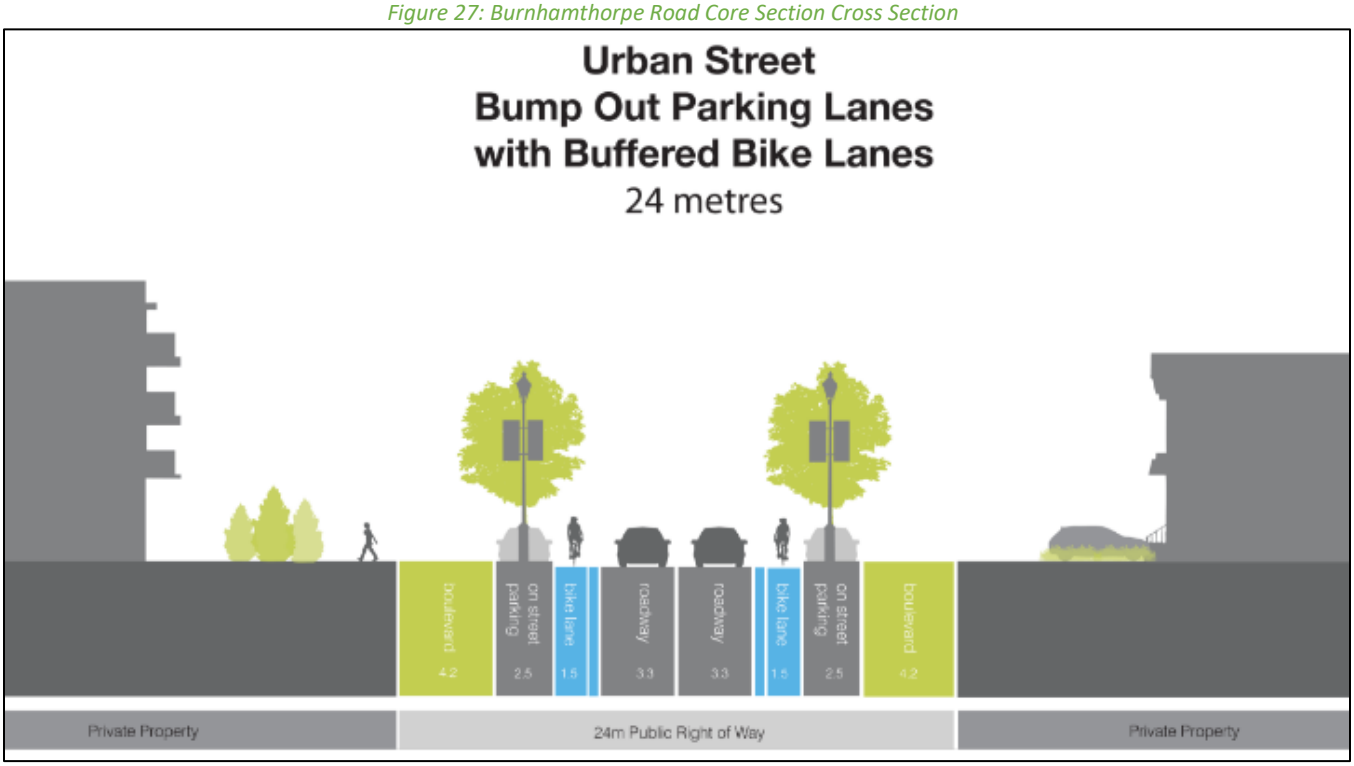
The section of Burnhamthorpe Road approximately 500 metres east and west of Trafalgar Road is designated as the Trafalgar Urban Core section. It will be Northeast Oakville's focal point with mixed-use urban development up to 20 stories that result in highest densities. The recommended design for the core section is Core Section 1 and is illustrated in Figure 26. The sections of Burnhamthorpe Road east and west of the core section is designated as Transitional Areas which provides interface/buffer from the Employment District. The recommended design for the transitional sections is Transitional Section 2 and is illustrated in Figure 27. A posted speed limit of 50 km/h will apply to all sections of Burnhamthorpe Road.

Figure 26: Burnhamthorpe Road Transitional Area Cross Section



Source: Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014)

Figure 27: Burnhamthorpe Road Core Section Cross Section



Source: Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014)

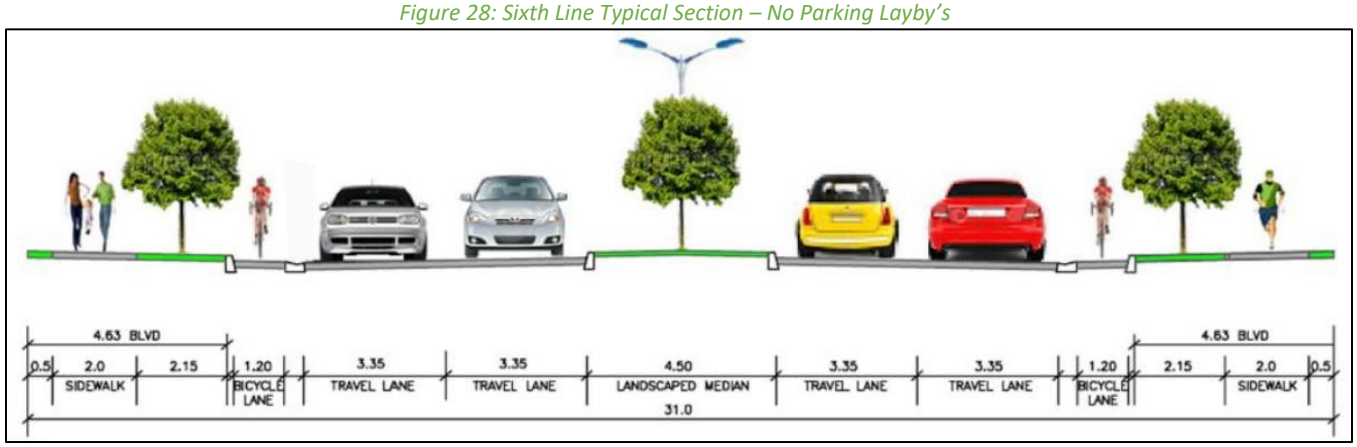
As the detailed design of Burnhamthorpe Road is still under development and not yet available, the Burnhamthorpe Road Character Study ESR will be referenced for the configuration of Burnhamthorpe Road in future analysis horizons. The preliminary designs of the intersections of Burnhamthorpe Road between Sixth Line and William Halton Parkway as shown in the Burnhamthorpe ESR are provided in Appendix D.

4.1.4 Sixth Line

Sixth Line is a north-south corridor in the Study Area and has been the subject of the Sixth Line Class Environmental Assessment Study to examine widening Sixth Line from two-lanes to four-lanes between Dundas Street and just south of Highway 407. The widening will be completed in two phases. Phase 1 covers the section between Dundas Street and Threshing Mill Boulevard and was completed in the summer of 2023. Phase 2 covers the section from Threshing Mill Boulevard to William Halton Parkway and is anticipated to be completed by Fall 2025. For the purposes of this study, it has been assumed that Sixth Line operates as a four-lane road for all future horizons. The posted speed limit of 60 km/h on Sixth Line will be maintained.

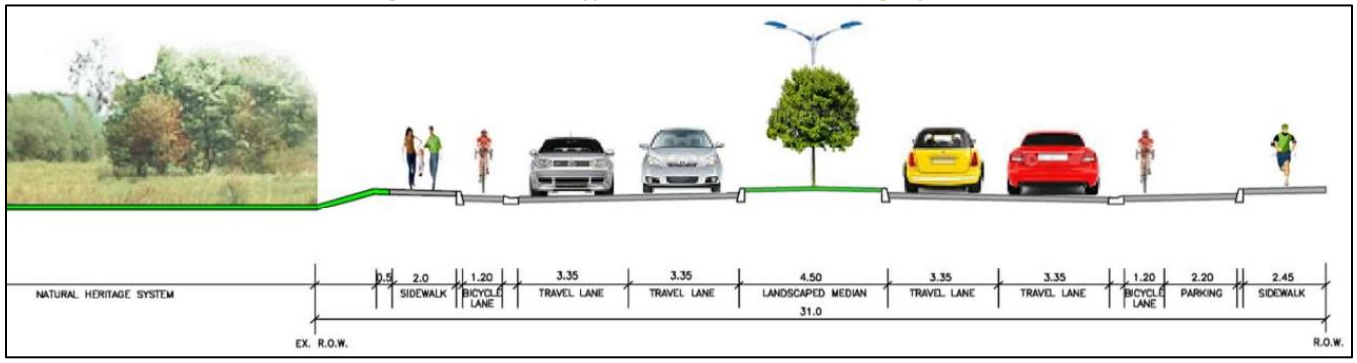
Two typical cross-sections are proposed for Sixth Line within the Study Area. An urban cross-section with no on-street parking and an urban cross-section for the shifted alignment at the Natural Heritage System are proposed for the segments of Sixth Line north of Burnhamthorpe Road within the Study Area. Figure 28 and Figure 29 illustrates the two sections. The Sixth Line Class Environmental Assessment Study indicates that the intersection of Sixth Line at Burnhamthorpe Road will be signalized with exclusive northbound and southbound left-turn lanes. The preliminary design along Sixth Line is included in Appendix D.

Figure 28: Sixth Line Typical Section – No Parking Layby's



Source: Sixth Line from Dundas Street To Highway 407 ETR Class Environmental Assessment Study Environmental Study Report (2014)

Figure 29: Sixth Line Typical Section – Natural Heritage System



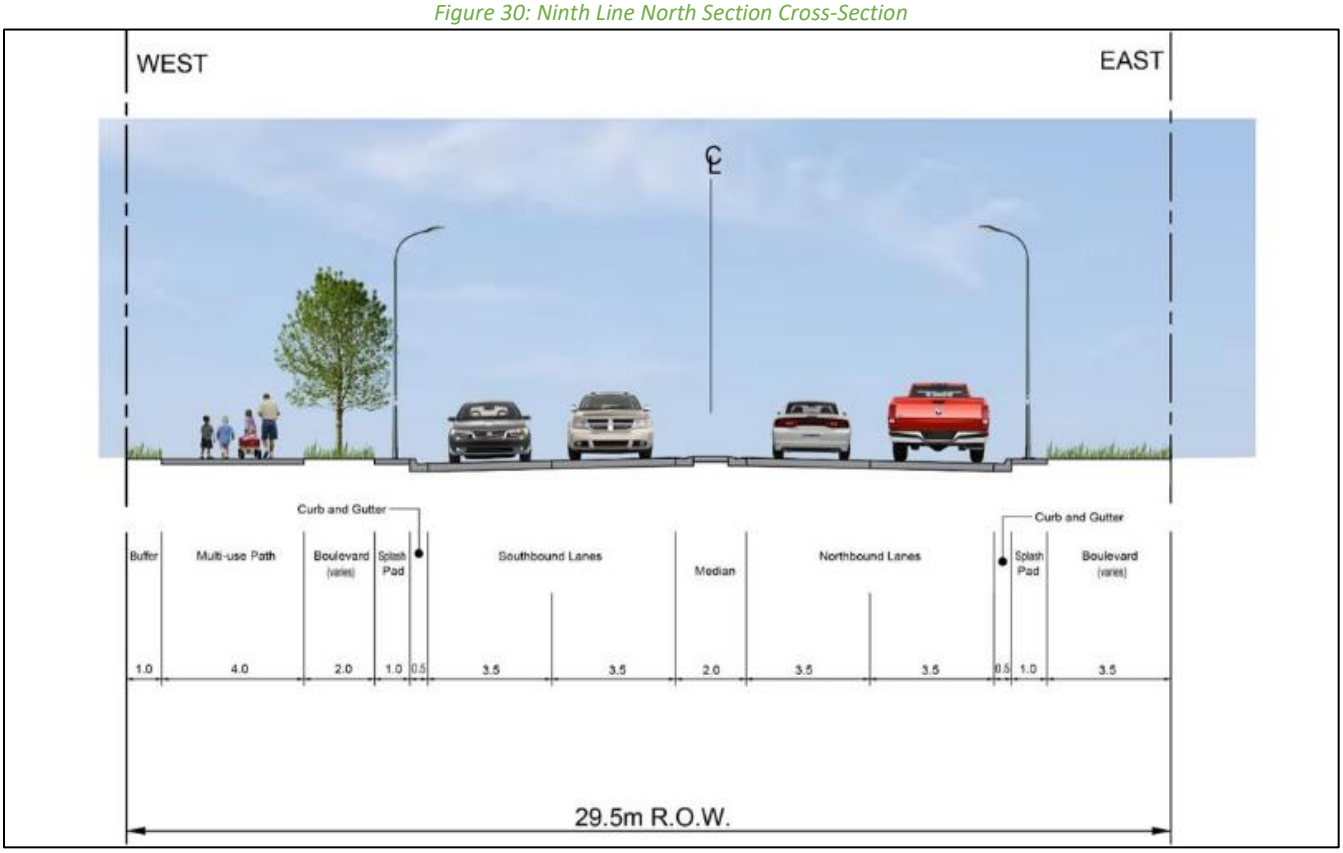
Source: Sixth Line from Dundas Street to Highway 407 ETR Class Environmental Assessment Study Environmental Study Report (2014)

4.1.5 Ninth Line

The Ninth Line Corridor Study was completed to identify roadway improvement options along Ninth Line between Dundas Street and Highway 407. Construction for the Ninth Line corridor is scheduled to begin in 2025, and improvements will therefore be considered in all future analysis horizons. The posted speed limit of 60 km/h on Ninth Line will be maintained.

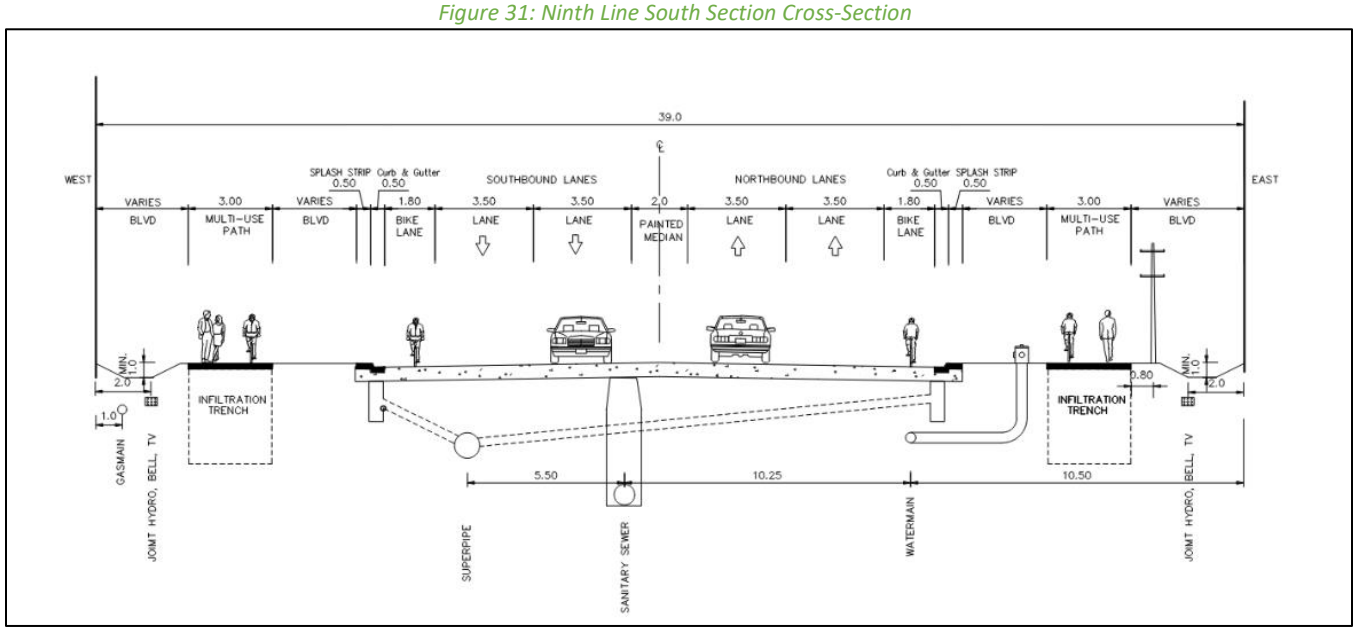
The section of Ninth Line is proposed to be widened from two to four lanes, with the addition of bike lanes and multi-use pathways on both sides of the road. For the development of design alternatives, Ninth Line was divided into two sections, with the North Section consisting of Ninth Line between William Halton Parkway and Highway 407, and the South Section consisting of Ninth Line between Dundas Street and William Halton Parkway. Figure 30 and Figure 31 illustrates the proposed cross-section for the North and South Sections of the Ninth Line widening, respectively.

Figure 30: Ninth Line North Section Cross-Section



Source: Ninth Line Transportation Corridor Improvements from Dundas Street to 407 ETR Environmental Study Report (2020)

Figure 31: Ninth Line South Section Cross-Section

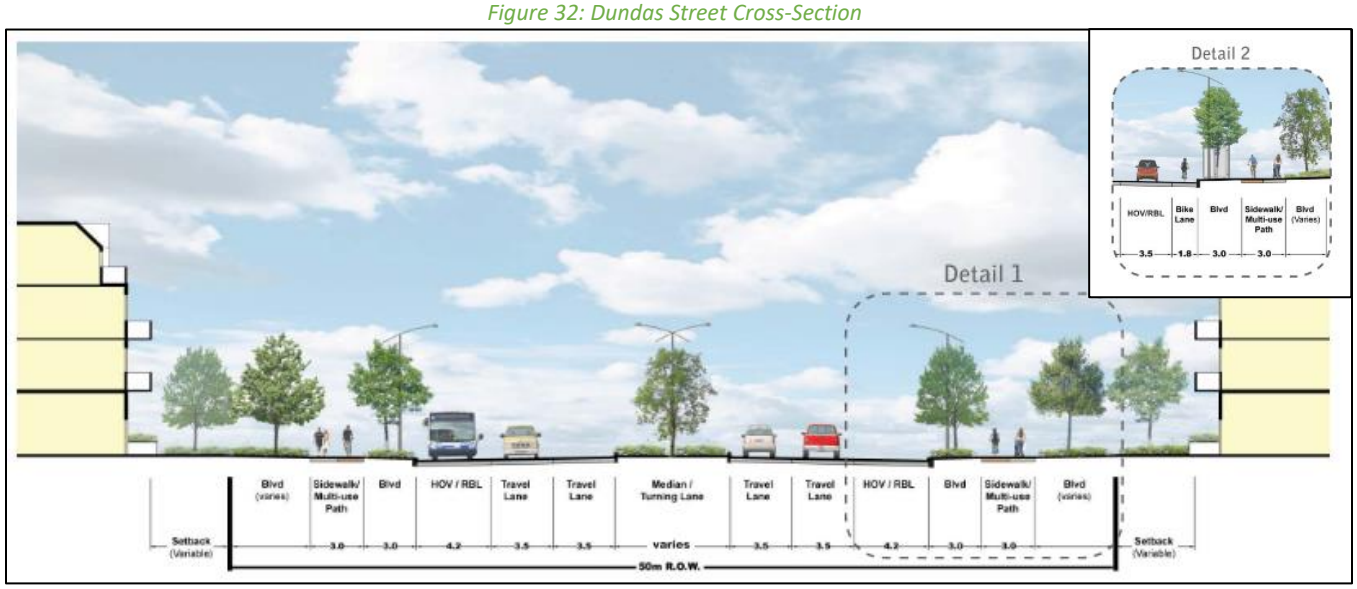


Source: Ninth Line Transportation Corridor Improvements from Dundas Street to 407 ETR Environmental Study Report (2020)

4.1.6 Dundas Street

Dundas Street is defined as a Priority Bus Corridor from Brant Street to Trafalgar Road and as a Bus Rapid Transit (BRT) Corridor east of Trafalgar Road. The Halton Region Defining Major Transit Requirements (DMTR) Study (2019) indicates that HOV lanes are recommended to be implemented along the outer lanes of Dundas Street between Bronte Road and the Halton/Peel Boundary by the 2031 horizon. The HOV lanes will be converted to bus-only BRT lanes in this segment by 2041. In order to reflect the BRT lanes, one through lane in each direction of travel will be removed in the Synchro analysis along Dundas Street in the 2041 analysis horizon. The existing speed limit is assumed to be maintained in all future analysis horizons. The future cross-section of Dundas Street is illustrated in Figure 32.

Figure 32: Dundas Street Cross-Section

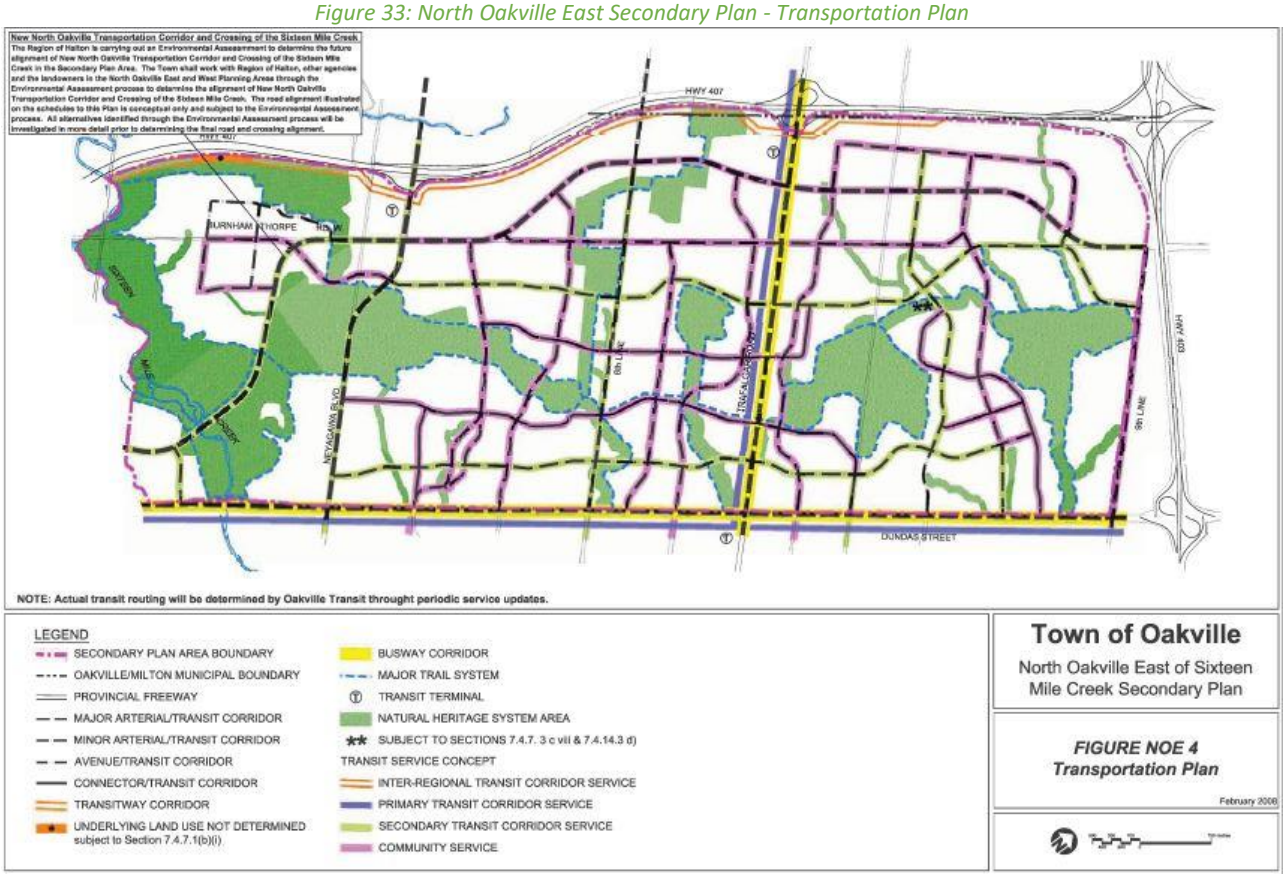


Source: Halton Region Transportation Master Plan Regional Right-of-Way Guidelines (2011)

4.1.7 North Oakville East Secondary Plan – Transportation Plan

The North Oakville East Secondary Plan includes transit routes along key corridors within the proposed developments. Figure 33 illustrates the North Oakville East Secondary Plan Transportation Plan. Within the Study Area, Trafalgar Road and Dundas Street are planned as a Primary Transit Corridor and Busway Corridor, Sixth Line is planned as a Secondary Transit Corridor, and William Halton Parkway, Burnhamthorpe Road, and Ninth Line are recognized as Community Service Transit Corridors.

Figure 33: North Oakville East Secondary Plan - Transportation Plan



Source: North Oakville East Secondary Plan (2008)

4.1.8 Other Study Area Developments

The proposed development lands are surrounded by several ongoing developments. The TISs for those developments from Ward 6 and Ward 7 of the Town of Oakville Development and Site Plan Applications portal have been reviewed to determine the amount of background traffic that would be added to the Study Area road network as a result of those developments. The following nearby developments have been considered in accordance with feedback from Town staff, as shown in Appendix A, and will be considered as part of the background traffic growth:

- Sherborne Lodge Development
- Remington Eno Development
- Neighbourhood 9,10,11 Development
- Sixth Oak Inc. School and Employment Lands
- Star Oak Development
- Infrastructure Ontario (IO) Trafalgar Lands

- Green Ginger – Trafalgar Road
- Bressa and Dunoak
- Coscorp Joshua Creek
- ARGO Joshua Creek
- Mattamy Joshua Creek
- Joshua Creek Phase 4
- Capoak and Redoak
- SmartCentres Oakville North

Additionally, the following developments were identified to generate background traffic within the proposed study area, but do not include a TIS within Oakville Active Development Applications Portal:

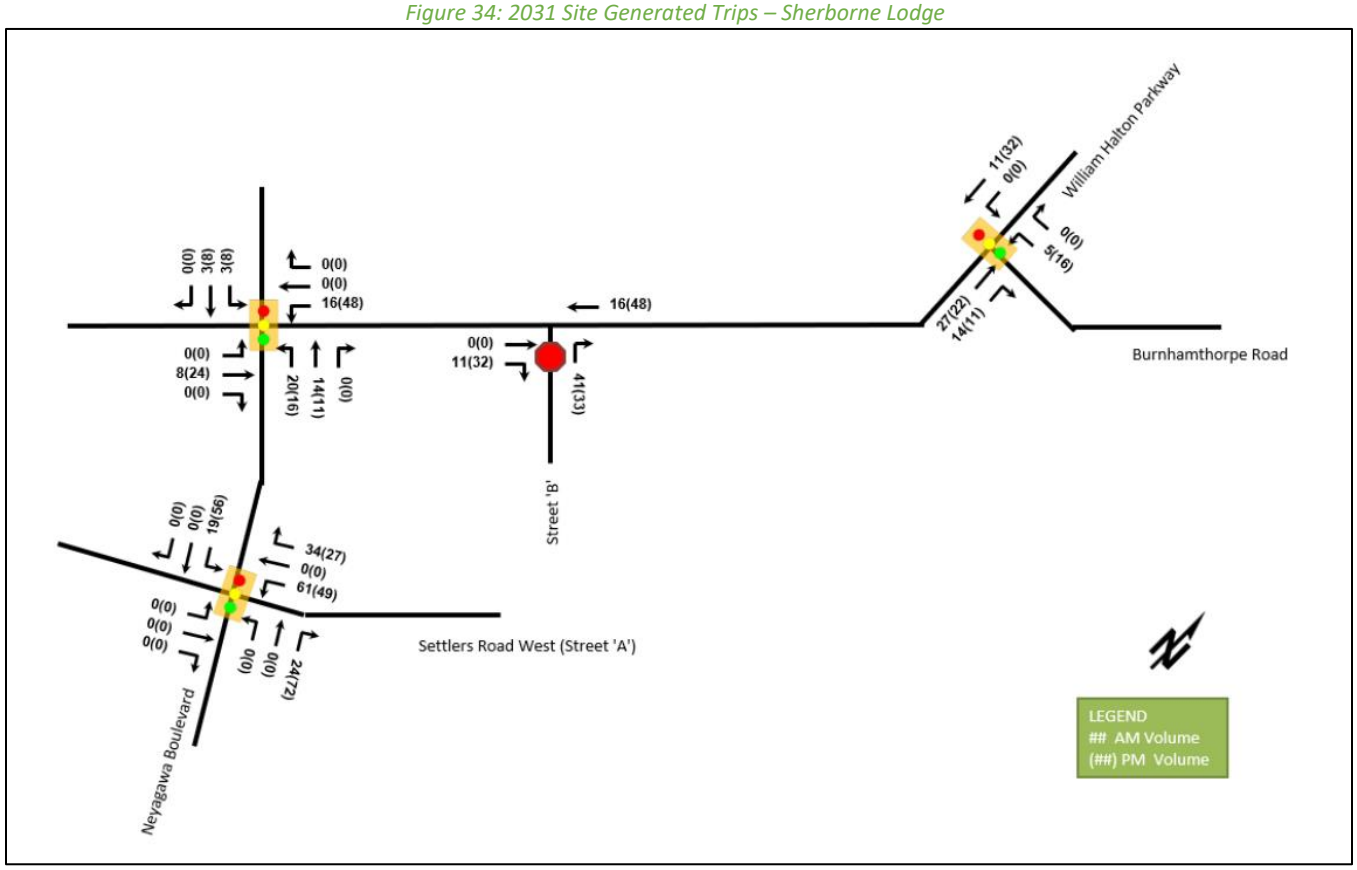
- Palermo Village
- Enirox Dundas
- Kaneff Group – 2350 & 2360 Bristol Circle
- CEFA Early Learning Oakville – 1030 Eighth Line
- Premier Poly Products – Northeast corner Winston Park and Portland Drive
- Mississauga Oakville Veterinary Emergency Hospital – 2285 Bristol Circle
- 1943 Ironoak Way
- HDSB North Oakville #3 PS – Wheat Boom Dr
- Kamato Holdings Ltd. – 1226 to 1230 White Oaks Boulevard and 350 Lynnwood Drive
- Lions Foundation Dog Guides – 1949 Ironoak Way
- Private Residences 2358 Eighth Line Lot A & Lot C
- Restone Foods – 2727 Portland Drive
- Reinders + Law Ltd. – 2500 to 2510 Hampshire Gate
- Arbor Memorial Inc. – 3164 Ninth Line
- Ontario Zoroastrian Community Foundation – 1187 Burnhamthorpe Road East
- 1019 Dundas Street East
- 393 Dundas GP Inc. – 295 Dundas Street West and 3025 Trailside Drive
- BC Trafalgar Inc. – 3220 William Coltson Avenue
- 407 Dundas GP Inc. – 405 Dundas Street West
- Silk Westerns Corp. – 412 Silver Maple Road
- HDSB Northeast Oakville No. 1 High School
- Martillac Estates Inc. – 1359 Dundas Street West
- Rione Development Corp. – 455 & 465 Dundas Street West
- 3064 Trafalgar Road
- Minto Communities Oakvillage
- North Park Development – 2070 Neyagawa Boulevard
- 98 Kaitting Trail
- Rowhedge Construction Ltd. – Block 6, Part of Lot 15, Con 2, NDS
- Perano Residences Ltd. – 509 Dundas Street West
- Preserve North (Phase 4)
- QuadReal Property Group/bcIMC Realty Corporation/Bentall – 3269 & 3271 Dundas Street West
- HCDSB North Oakville #4 Elementary School – 420 Threshing Mill Boulevard

The impact of the trip generation of these developments within the Study Area is assumed to be captured within the application of the conservative compound annual rates provided by Town and Region Staff. Each background development considered within this study and the traffic associated with it has been summarized in the subsections below.

4.1.8.1 Sherborne Lodge Development

The future North Oakville Sherborne Lodge Development is located west of the subject site. The following information has been taken from the *Sherborne Lodge Developments Transportation Impact Study (2023),* prepared by CGH Transportation. This development includes an apartment block with an anticipated 296 units, a low-rise subdivision with 84 single detached homes and 125 townhouses, a commercial block, and an elementary school. This development will connect to the road network via one access on William Halton Parkway and one access on Settlers Road West. A 2026 build-out year is anticipated, and therefore site generated traffic will be considered in all future analysis horizons. The proposed development is anticipated to generate 189 AM and 296 PM peak hour two-way vehicle trips in the future 2031 future analysis horizon considered in the TIS. The 2031 Sherborne Lodge trip generation is illustrated in Figure 34.

Figure 34: 2031 Site Generated Trips – Sherborne Lodge



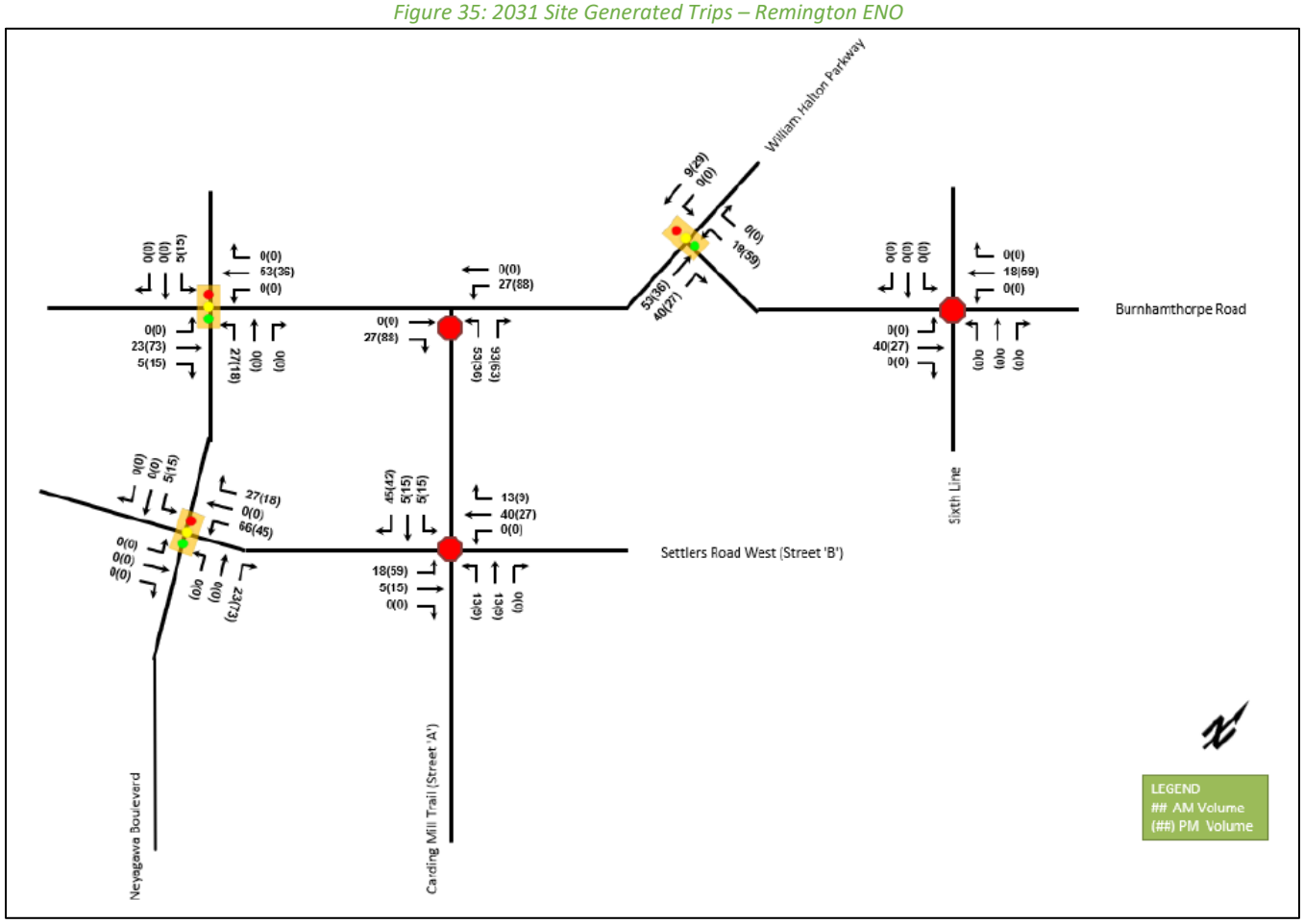
Source: Sherborne Lodge Developments Transportation Impact Study; CGH; September 2021

4.1.8.2 Remington ENO Residential Development

The future Remington Eno development is a proposed subdivision in North Oakville, bordered by Burnhamthorpe Road (future William Halton Parkway) to the north, and the proposed Sherborne Lodge development to the west. The following information has been taken from the *Remington Eno Transportation Impact Study (2023),* prepared by CGH Transportation. Remington Eno includes a mix of 290 single detached houses, 307 townhouses, and

several multi-storey mid-rise buildings with a total of approximately 1,700 apartment units and a total of approximately 15,000 square feet of retail space. Access to this development will be provided via the intersection of Carding Mill Trail and William Halton Parkway, as well as the intersection of Neyagawa Boulevard at Settlers Road West. A 2026 build-out year is anticipated, and therefore site generated traffic will be considered in all future analysis horizons. The proposed development is anticipated to generate 352 AM and 472 PM peak hour two-way vehicle trips in the 2031 future analysis horizon considered in the TIS. The 2031 Remington Eno trip generation horizons can be seen in Figure 35.

Figure 35: 2031 Site Generated Trips – Remington ENO



Source: Remington Eno Transportation Impact Study; CGH; March 2021

4.1.8.3 Neighbourhood 9,10,11 Developments

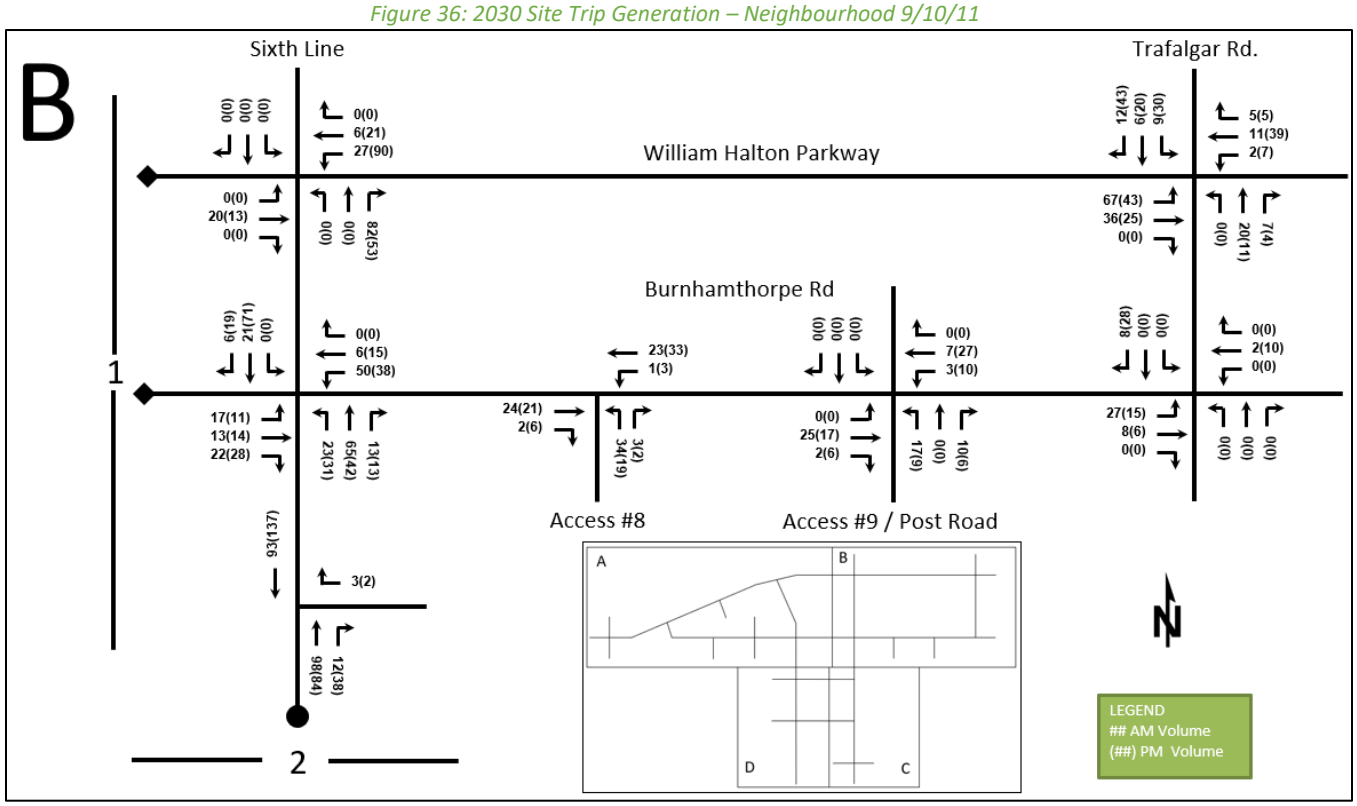
The proposed Neighbourhood 9/10/11 developments in North Oakville are located to the west of the subject development, covering a vast area on both sides of Burnhamthorpe Road. The site encloses everything south of the extension of William Halton Parkway, north of North Park Boulevard, and west of Sixth Line. The following information has been taken from the *Neighbourhood 9/10/11 Transportation Impact Study (2020),* prepared by CGH Transportation. The developments consist of:

- Timsin Holding Corp. – 29 single family detached units and 18 townhouse units
- Docasa Group Ltd. – 200 single detached residential units and 110 townhouse units
- Star Oak Developments Ltd. – 105 single family detached units and 63 townhouse units

- Digram Developments Inc. – 172 townhouse units and 110 apartment units
- ARGO (West Morrison Creek) Ltd. – 85 single family detached units and 162 townhouse units
- Crosstrail Estates Inc. and TWKD Developments Inc. – 244 townhouse units
- Mattamy Homes Preserve North – 369 single family detached units and 22 townhouses
- Mattamy Homes / SGGC – 202 townhouse units and 75 apartment units
- G.C. Family Investments – 10 townhouse units

The combined development includes a total of 788 single detached homes, 1003 townhouses, and 175 mid-rise units. The projected completion date is 2024, however the majority of the development does not appear to have been constructed, and therefore site generated traffic will be considered in all future analysis horizons. The development is anticipated to generate a total of 851 and 1114 two-way vehicle trips during the AM and PM peak hour in the 2030 future analysis horizon considered in the TIS. Figure 36 illustrates the projected 2030 site traffic generation of the Neighbourhood 9/10/11 Development.

Figure 36: 2030 Site Trip Generation – Neighbourhood 9/10/11



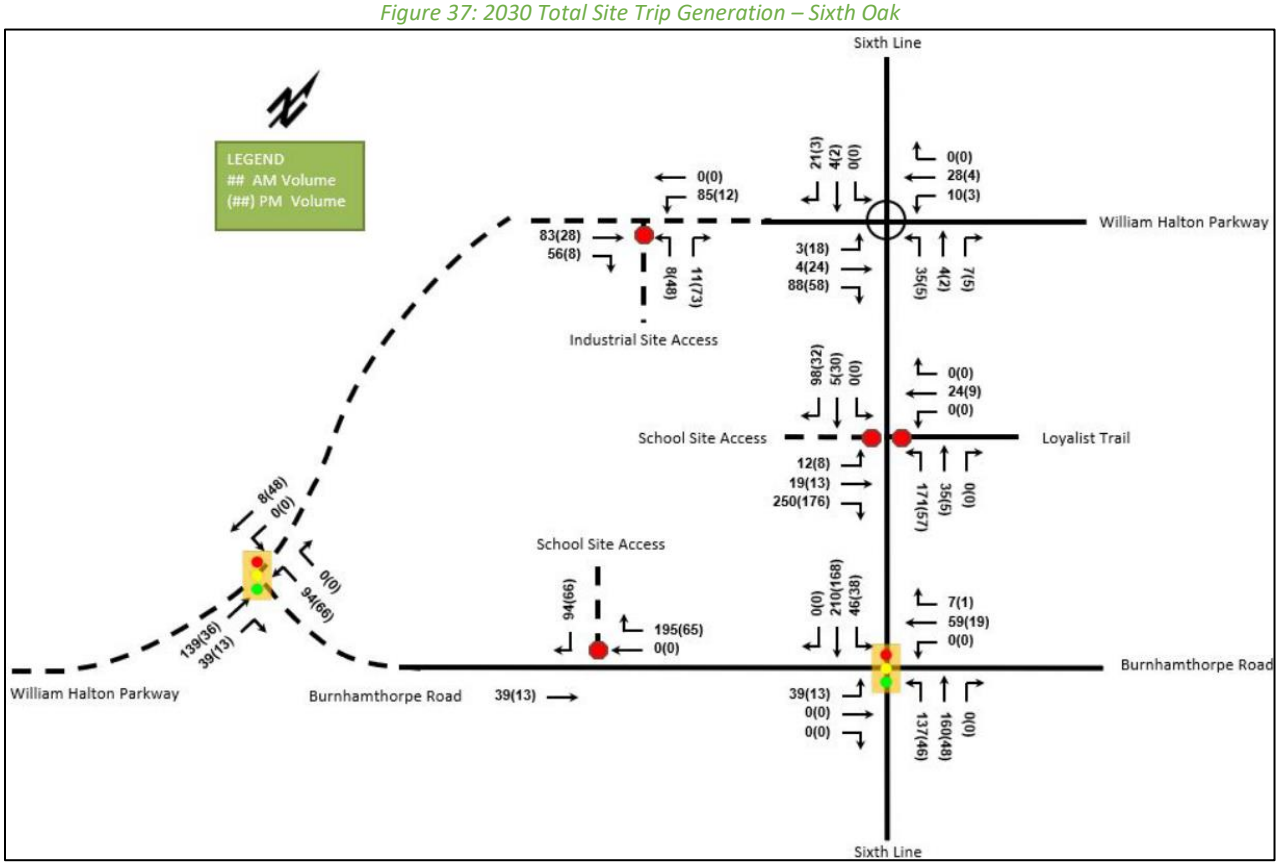
Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2020

4.1.8.4 Sixth Oak Inc. School and Employment Lands

The future Sixth Oak development occupies the northwest corner at the intersection of Burnhamthorpe Road at Sixth Line, including the natural heritage area. The following information has been taken from the *Sixth Oak Inc. School and Employment Lands Transportation Impact Study (2022),* prepared by CGH Transportation. The proposed development will include a secondary school with a capacity of 1,200 pupils, an 8,000 square foot childcare facility, a 100,000 square foot office space, and 281,600 square feet of one-storey industrial buildings separated from the rest by natural heritage service areas. The secondary school, the daycare, and the office building have a right-in/right-out access on Burnhamthorpe Road and a full-movement access on Sixth Line, and the industrial buildings have a full-movement access on William Halton Parkway. A full build-out horizon of 2025

is anticipated, and therefore site trip generation will be considered in all future analysis horizons. The proposed development is anticipated to generate 377 AM and 346 PM peak hour two-way auto trips in the 2030 future analysis horizon considered in the TIS. The total 2030 site trip generation for Sixth Oak is illustrated in Figure 37.

Figure 37: 2030 Total Site Trip Generation – Sixth Oak

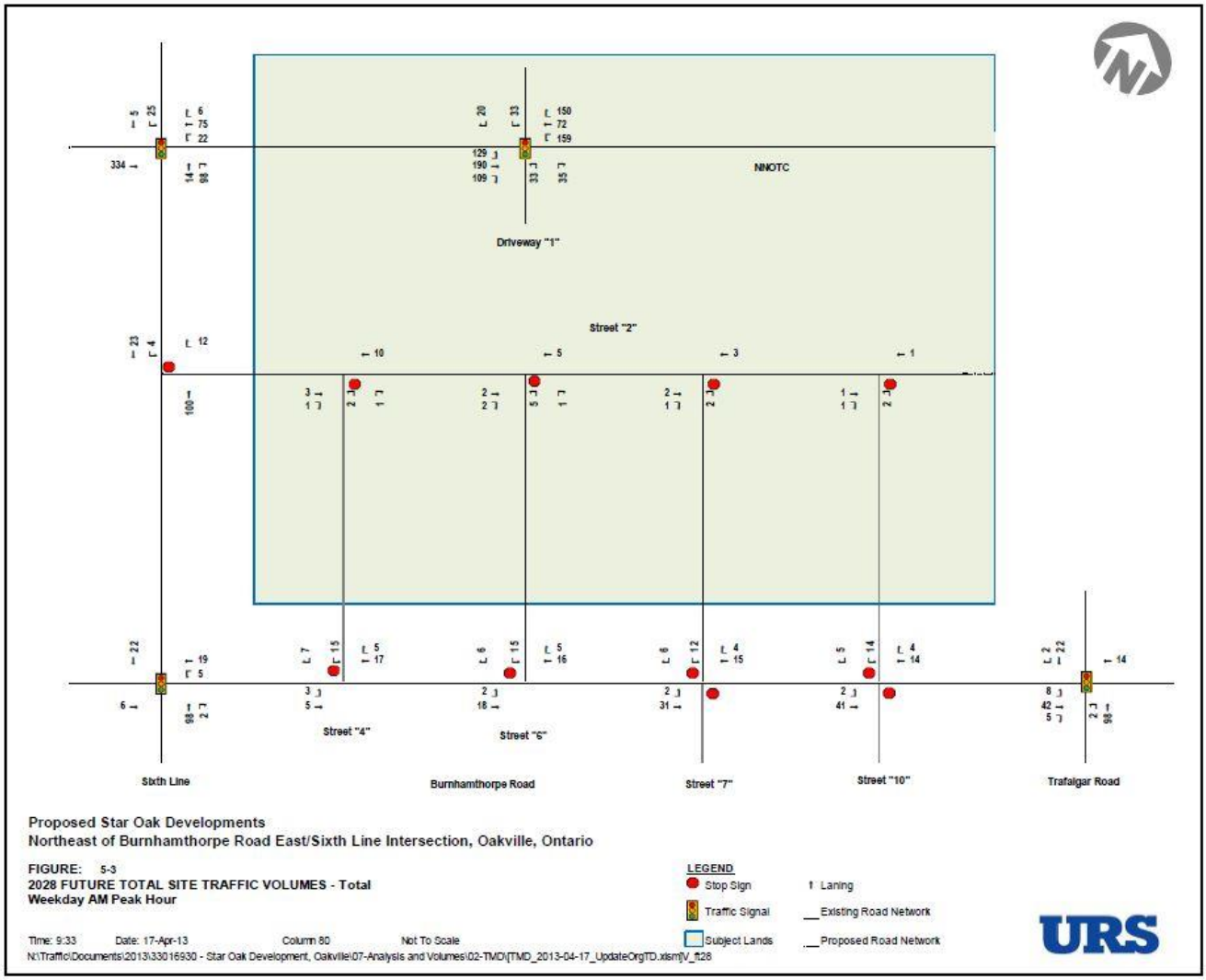


Source: Sixth Oak Inc. School and Employment Lands Transportation Impact Study; CGH; February 2022

4.1.8.5 Star Oak Development

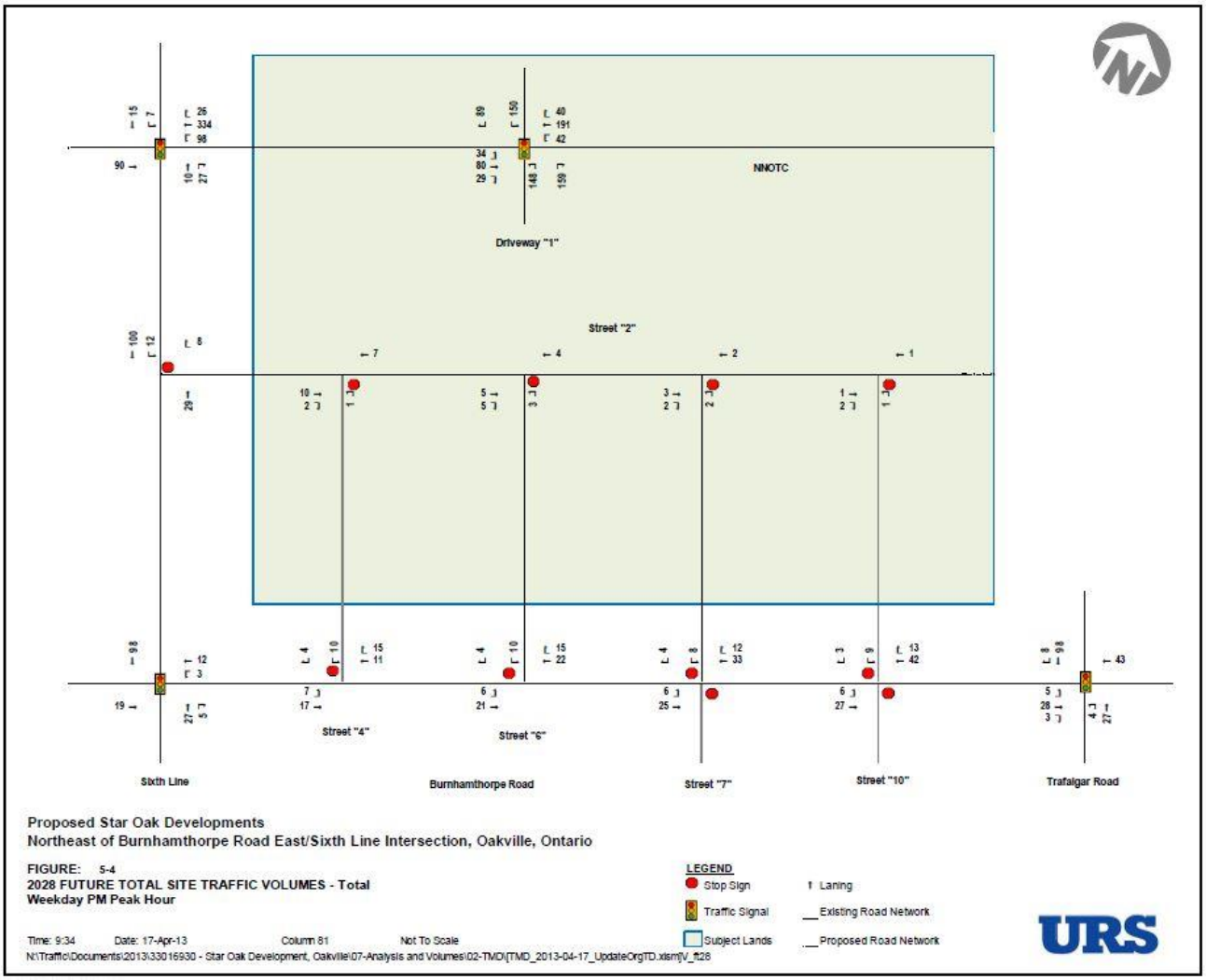
The Star Oak development is located at the northeast quadrant of Burnhamthorpe Road at Sixth Line. The following information has been taken from the *Traffic Impact Study Star Oak Developments Town of Oakville (2013),* prepared by URS Canada. This development includes 217 residential units with a mix of detached single-family units, and townhouse type units and 154,000 square metres of employment uses. The construction will be completed in two phases. Phase I includes all the residential units and 10% of the employment buildings while Phase II consists of 90% of the employment development. Phase I was completed in 2018 and Phase II will be completed in 2028 and will be considered in all future analysis horizons. As such, a reduction of the site traffic volumes based on the GFAs of the portion of the development that is being considered as a background development has been applied to the volume figures shown below. This development will connect to the road network via accesses on Sixth Line, Burnhamthorpe Road, and William Halton Parkway. The proposed development is anticipated to generate 951 AM and 985 PM peak hour two-way vehicle trips in the 2028 analysis horizon. The traffic generated by the Star Oak Development by 2028 is summarized in Figure 38 and Figure 39.

Figure 38: Star Oak 2028 AM Peak Hour Site Trip Generation



Source: Traffic Impact Study Star Oak Developments Town of Oakville; URS Canada; April 2013

Figure 39: Star Oak 2028 PM Peak Hour Site Trip Generation

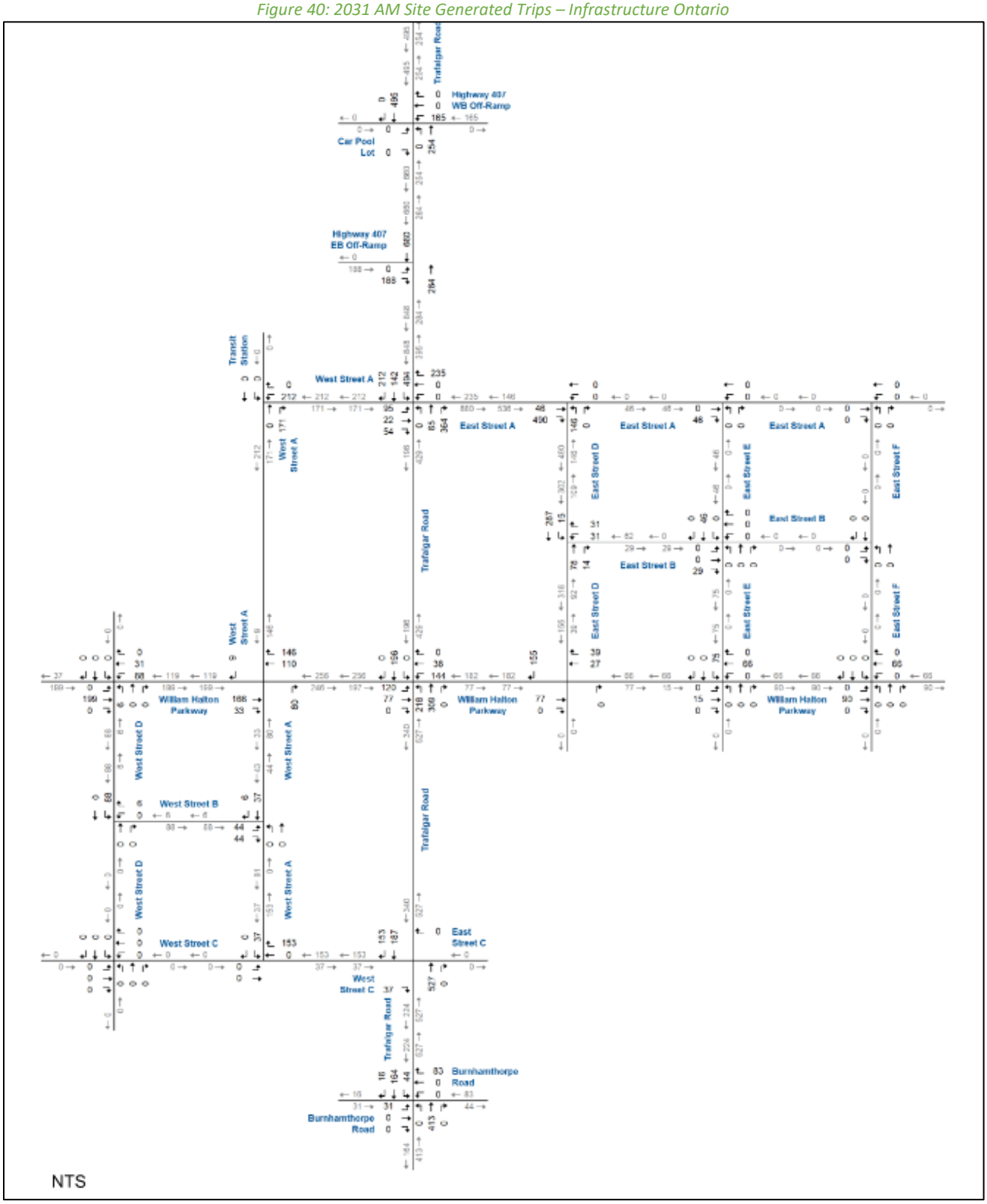


Source: Traffic Impact Study Star Oak Developments Town of Oakville; URS Canada; April 2013

4.1.8.6 Infrastructure Ontario (IO) Trafalgar Lands

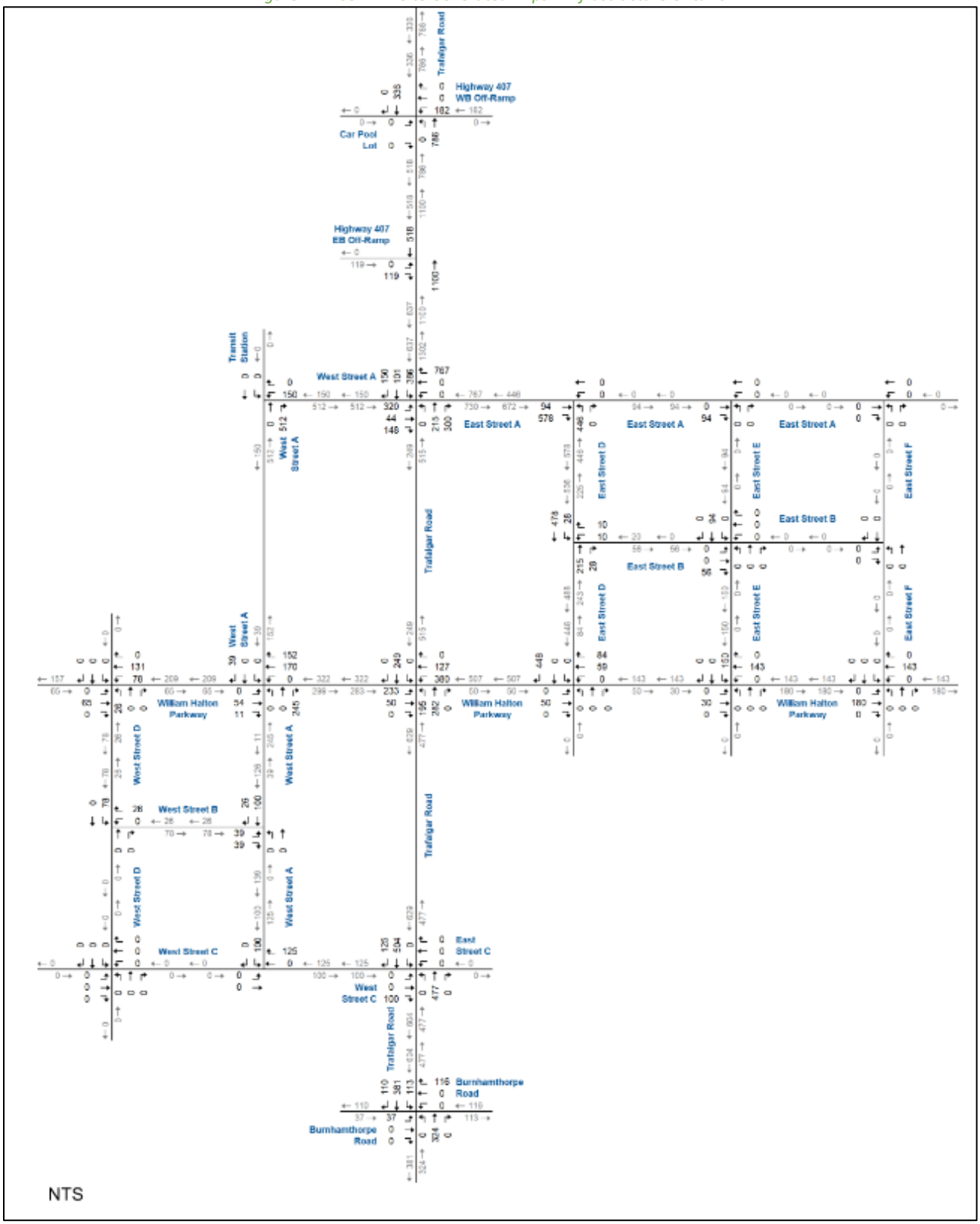
The site is located on both the east and west side of Trafalgar Road, between Highway 407 and Burnhamthorpe Road. The following information has been taken from the *I/O Highway 407 & Trafalgar Road Transportation Impact Study (2021)* prepared by Paradigm Transportation Solutions Limited. Multiple uses are expected in this site including mid-rise and high-rise residential buildings, offices, and shopping centres. Two separate illustrative development scenarios have been prepared: a 70% residential focus Scenario A and a 50% Employment focus Scenario B. The ultimate development mix and intensity will be subject to future development applications. 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 for Scenario B. To be conservative, the Scenario B trip generation and distribution is included in this study. The project will be completed in two phases in 2031 and 2041. For the 2031 horizon year, 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. The 2031 trip volumes as illustrated in Figure 40 and Figure 41 are included in the 2031 and 2036 analysis horizons in this study. The 2041 trip volumes as illustrated in Figure 42 and Figure 43 are included in the 2041 analysis horizon.

Figure 40: 2031 AM Site Generated Trips – Infrastructure Ontario



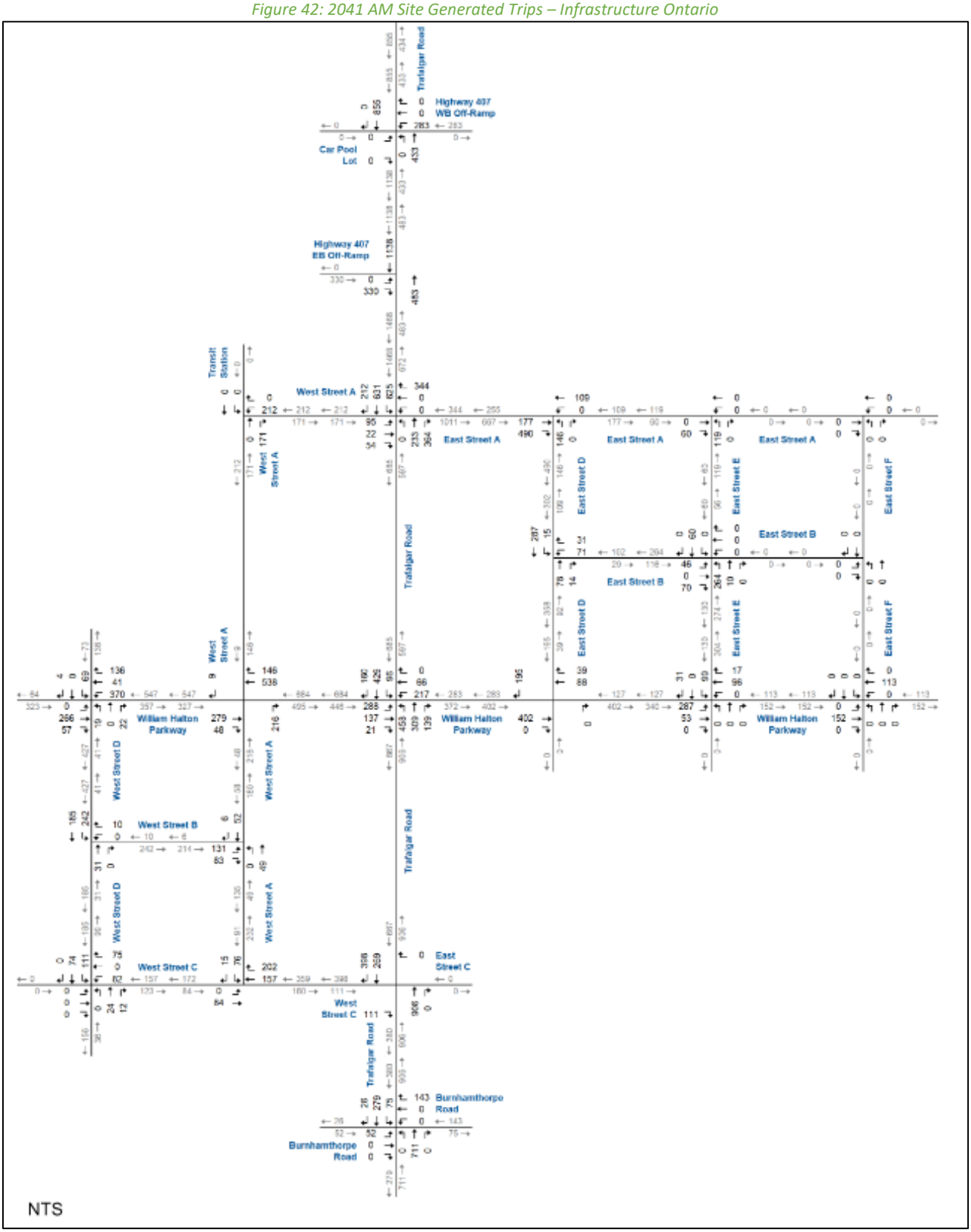
Source: I/O Highway 407 & Trafalgar Road, Oakville, ON Transportation Impact Study; GSP Group Inc.; December 2021

Figure 41: 2031 PM Site Generated Trips – Infrastructure Ontario



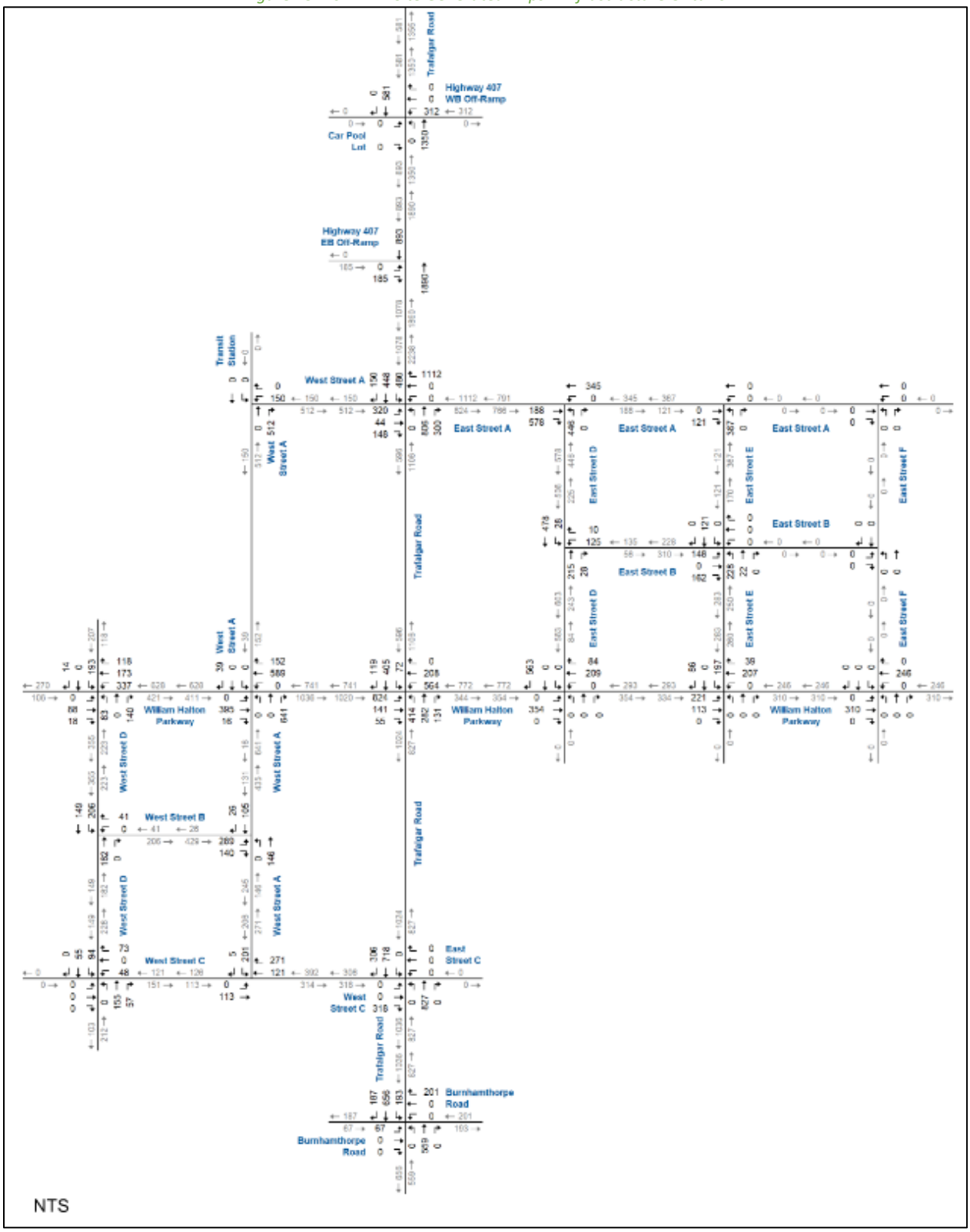
Source: I/O Highway 407 & Trafalgar Road, Oakville, ON Transportation Impact Study; GSP Group Inc.; December 2021

Figure 42: 2041 AM Site Generated Trips – Infrastructure Ontario



Source: I/O Highway 407 & Trafalgar Road, Oakville, ON Transportation Impact Study; GSP Group Inc.; December 2021

Figure 43: 2041 PM Site Generated Trips – Infrastructure Ontario

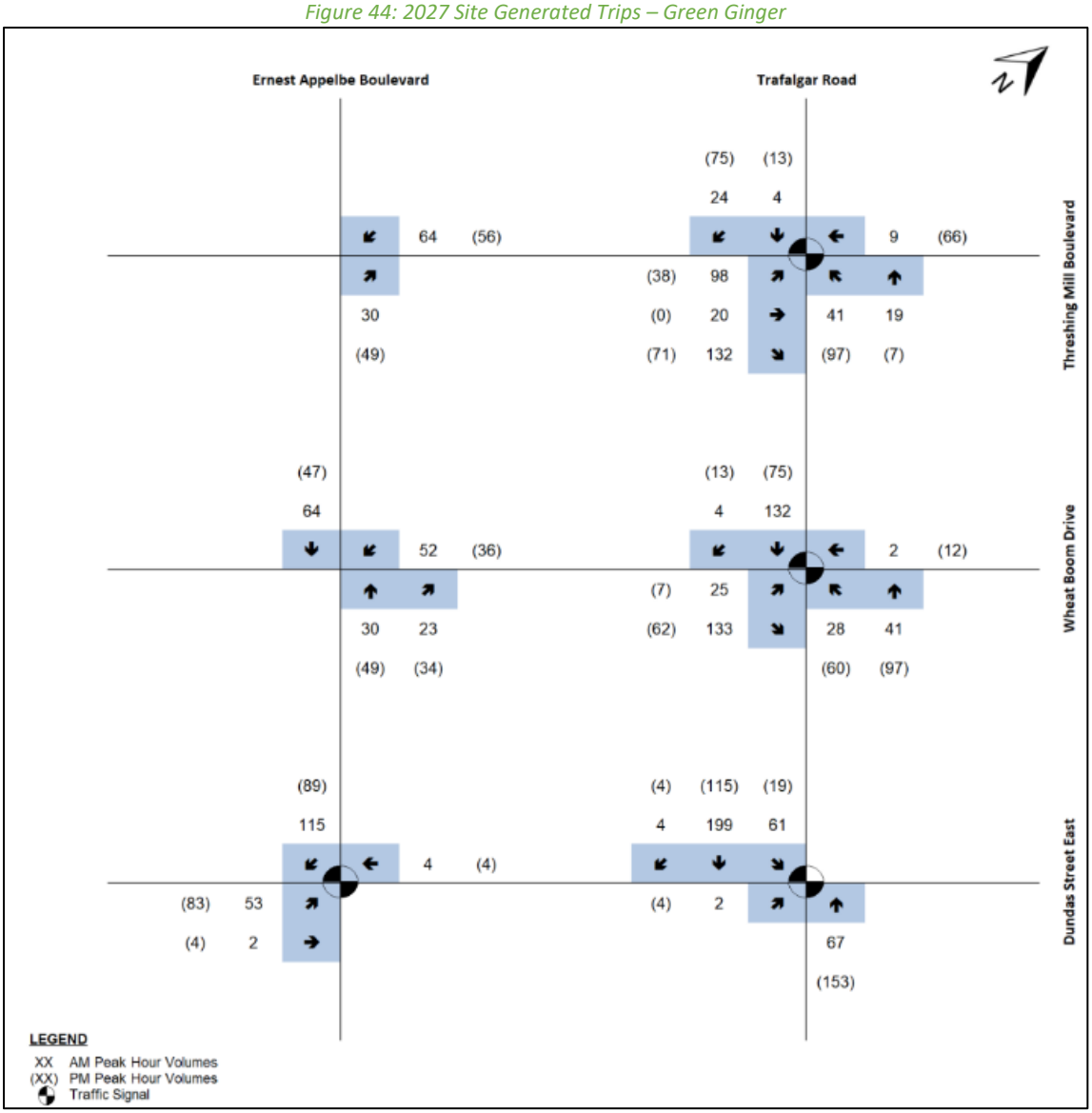


Source: I/O Highway 407 & Trafalgar Road, Oakville, ON Transportation Impact Study; GSP Group Inc.; December 2021

4.1.8.7 Green Ginger – Trafalgar Road

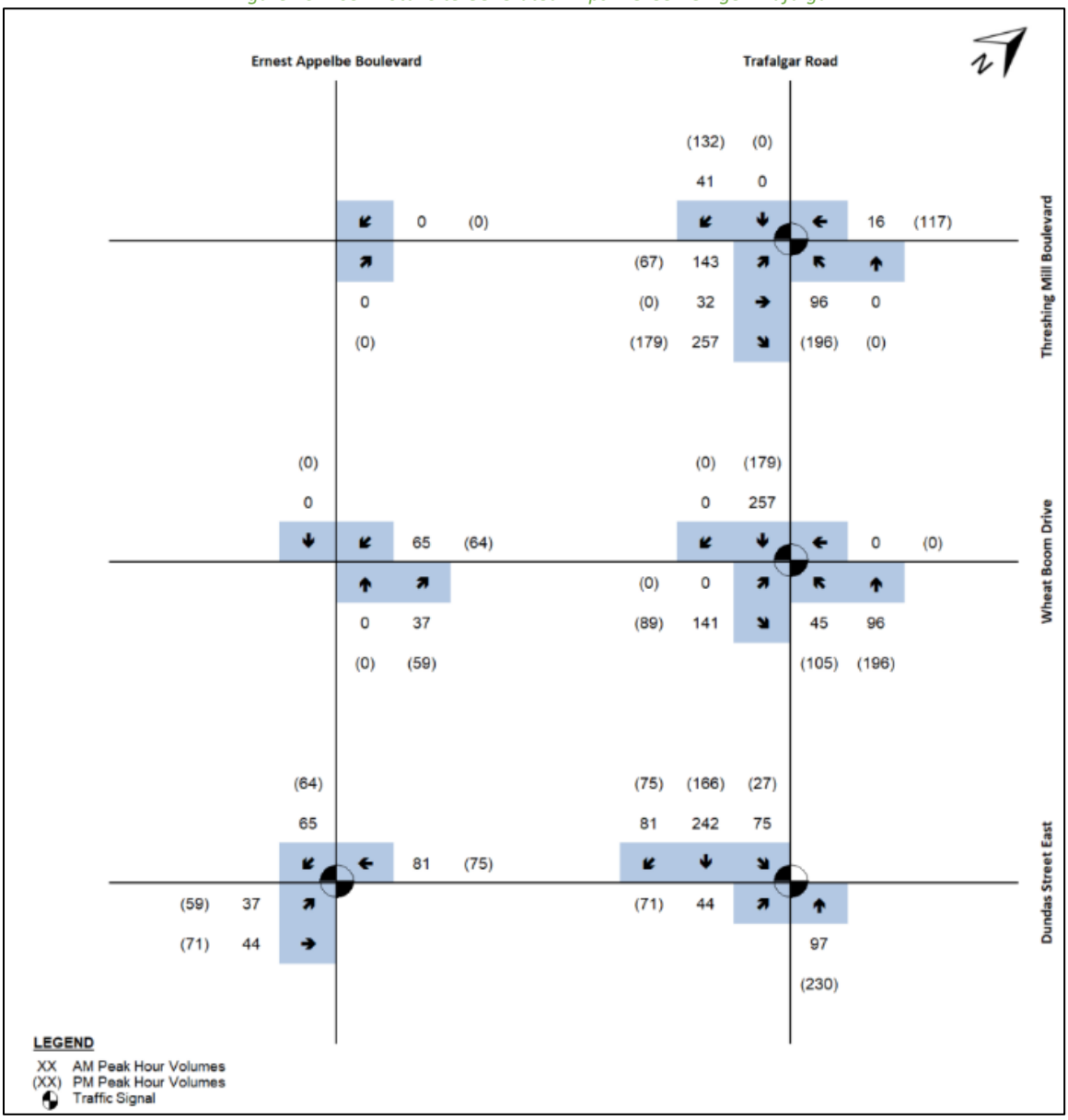
The development is part of the North Oakville East Secondary Plan and is located in the northwest quadrant of Dundas Street and Trafalgar Road in the Town of Oakville. The following information has been taken from the *Green Ginger Phase 2 Traffic Impact Study (2023)* prepared by GHD. The proposed subdivision consists of 506 townhouse units, 10 mid-rise buildings with a total of 1879 units, and 8 high-rise buildings with a total of 2521 units and 27,496 square feet of retail GFA. Access to the proposed subdivision from the surrounding regional arterial roads is proposed via Threshing Mill Boulevard, Wheat Boom Drive and Ernest Appelbe Boulevard. The draft plan of subdivision will be built-out in two phases in 2027 and 2032. As such, the 2027 site generated traffic will be considered in the 2031 future analysis horizon and the 2032 site generated traffic will be considered in the 2036 and 2041 future analysis horizons. The proposed development is anticipated to generate a total of 686 AM and 673 PM peak hour two-way vehicle trips in the 2027 horizon and 872 AM and 1009 PM peak hour two-way vehicle trips in the 2032 horizon. Figure 44 illustrates the projected 2027 site traffic generation and Figure 45 illustrates the projected 2032 total site traffic generation for this development.

Figure 44: 2027 Site Generated Trips – Green Ginger



Source: Green Ginger Phase 2 Transportation Impact Study; GHD; 2023

Figure 45: 2032 Total Site Generated Trips – Green Ginger Trafalgar

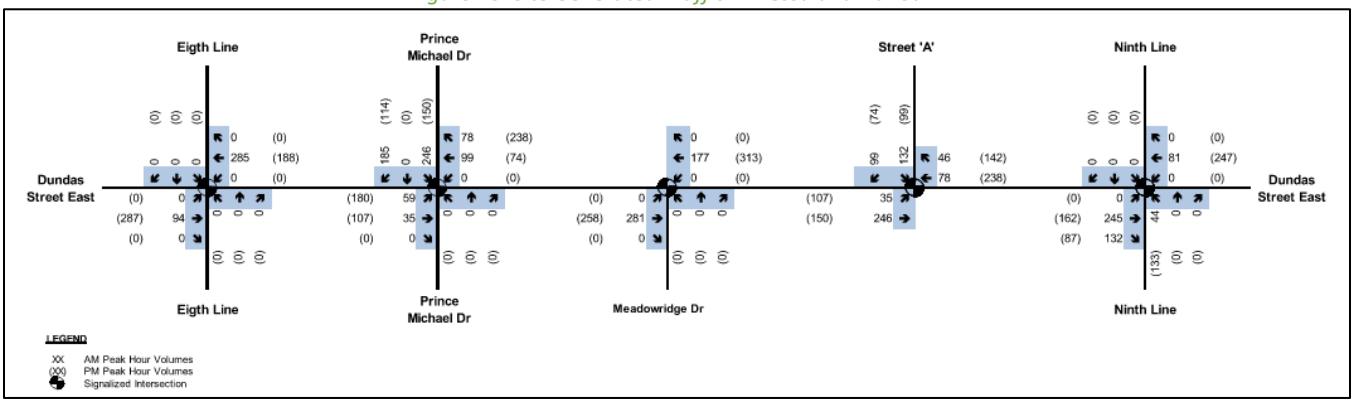


Source: Green Ginger Phase 2 Transportation Impact Study; GHD; 2023

4.1.8.8 Bressa and Dunoak

The Bressa and Dunoak developments are located north of Dundas Street between Ninth Line and Trafalgar Road. As the full TIS for this development is not available, the following information has been taken from the *Mattamy Joshua Creek Phase 3 Traffic Impact Study* (2022) prepared by GHD where the Bressa and Dunoak development has been considered in the background development volumes. As the build-out year is not known, site generated traffic will be considered in all future analysis horizons. A site visit performed on April 23, 2024, observed that the Bressa lands have been fully developed, while the Dunoak lands have been partially developed. Therefore, a 50% reduction has been applied to the volume figure shown below. Figure 46 shows the site generated traffic for the Bressa and Dunkoak development.

Figure 46: Site Generated Traffic – Bressa and Dunoak

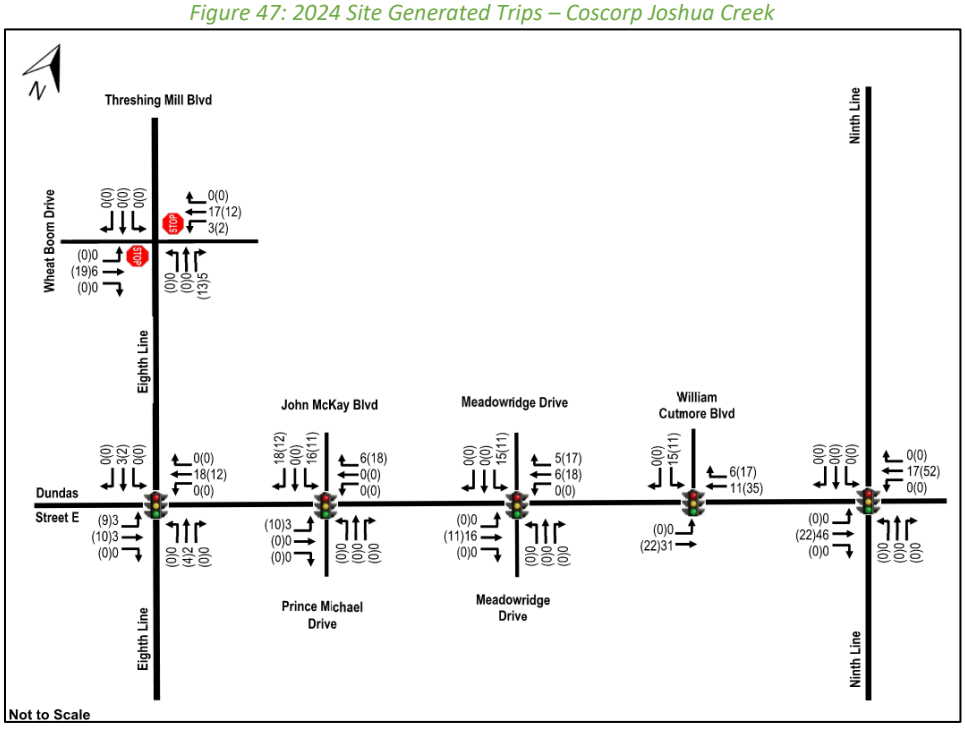


Source: Mattamy Joshua Creek Phase 3 Transportation Impact Study; GHD; 2022

4.1.8.9 Coscorp Joshua Creek

The Coscorp Joshua Creek development is a proposed residential development located south of Burnhamthorpe Road E, north of Dundas Street East, and between Eighth Line and Ninth Line in the North Oakville East Secondary Plan, within the Town of Oakville. The following information has been taken from the *Coscorp Joshua Creek Transportation Impact Study Addendum (2023)* prepared by NexTrans Consulting Engineers. The proposed residential development consists of a total 181 residential dwelling units, with 129 single-detached and 52 street townhouse units. The proposed development access is provided via internal public streets connecting to Mattamy Joshua Creek Phase 3 proposed draft plan of subdivision, and eventually to Burnhamthorpe Road East via future proposed draft plan of subdivisions to the north. A 2024 build-out year is anticipated, however, site conditions as of April 2024 shows that the development has not been completed. Therefore, site generated traffic will be considered in all future analysis horizons. The development is anticipated to generate 115 AM and 153 PM peak hour two-way vehicle trips. Figure 47 shows the 2024 site generated traffic for Coscorp Joshua Creek.

Figure 47: 2024 Site Generated Trips – Coscorp Joshua Creek

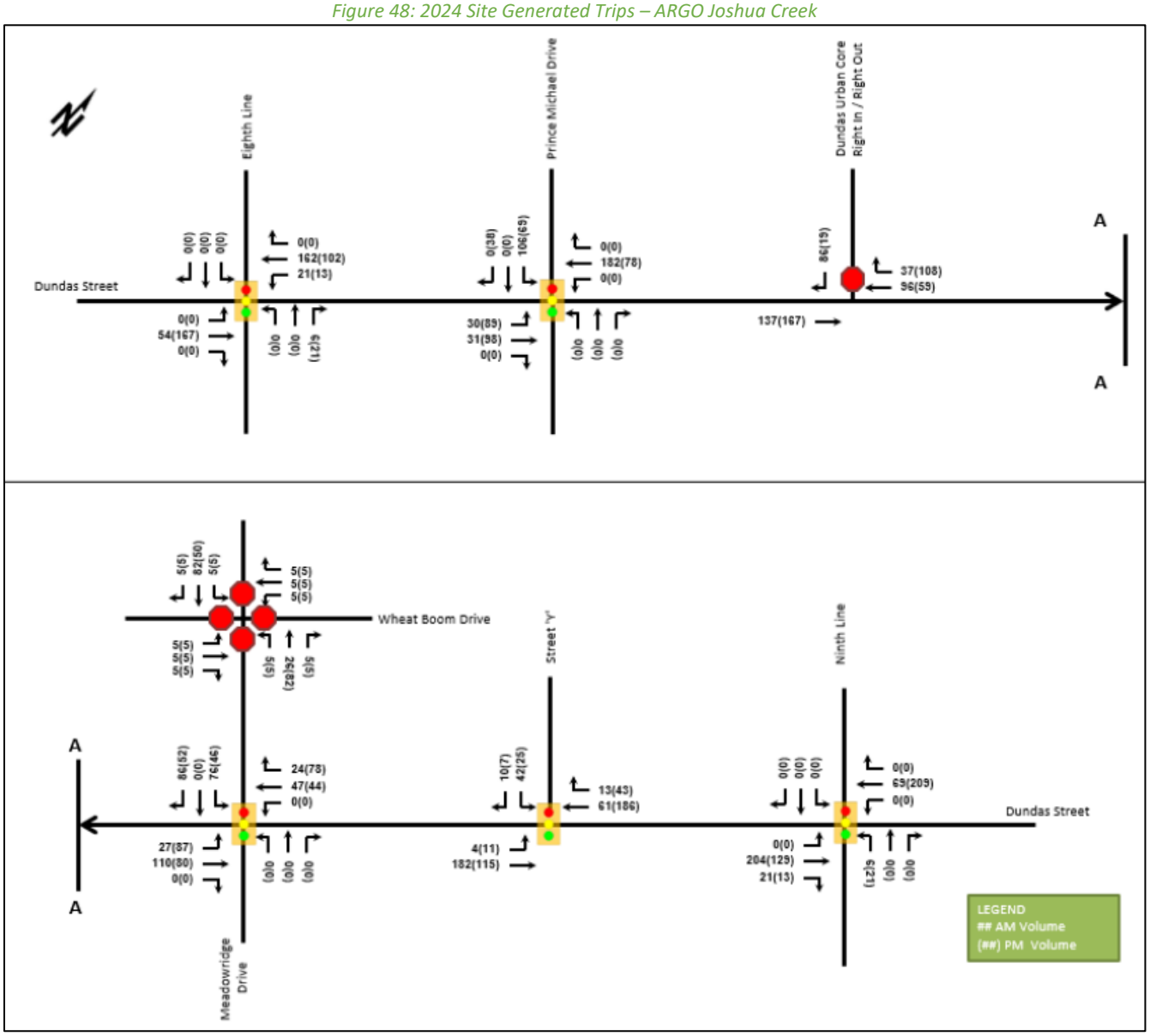


Source: Coscorp Joshua Creek Transportation Impact Study; NexTrans Consulting Engineers; 2023

4.1.8.10 ARGO Joshua Creek Phase 1

The proposed Joshua Creek Phase 1 Subdivision is located north of Dundas Street between Trafalgar Road and Ninth Line in North Oakville. The following information is taken from the *Joshua Creek Phase 1 Transportation Impact Study (2021)* prepared by CGH Transportation. The proposed development consists of 396 townhouse units, 168 single detached units, and approximately 95 apartment units. The proposed development will have a primary access that forms the fourth leg of the intersection of Meadowridge Drive and Dundas Street. Additionally, a right-in / right-out access is proposed into the Dundas Urban Core portion of the development. This development will also have connections to both adjacent proposed developments (Dunoak to the west and Bressa to the east). A 2024 build out year is anticipated, however, site conditions as of April 2024 shows that the development has not been completed. Therefore, site generated traffic will be considered in all future analysis horizons. The development is anticipated to generate 290 AM and 363 PM peak hour two-way vehicle trips. Figure 48 illustrates the 2024 site generated trips.

Figure 48: 2024 Site Generated Trips – ARGO Joshua Creek

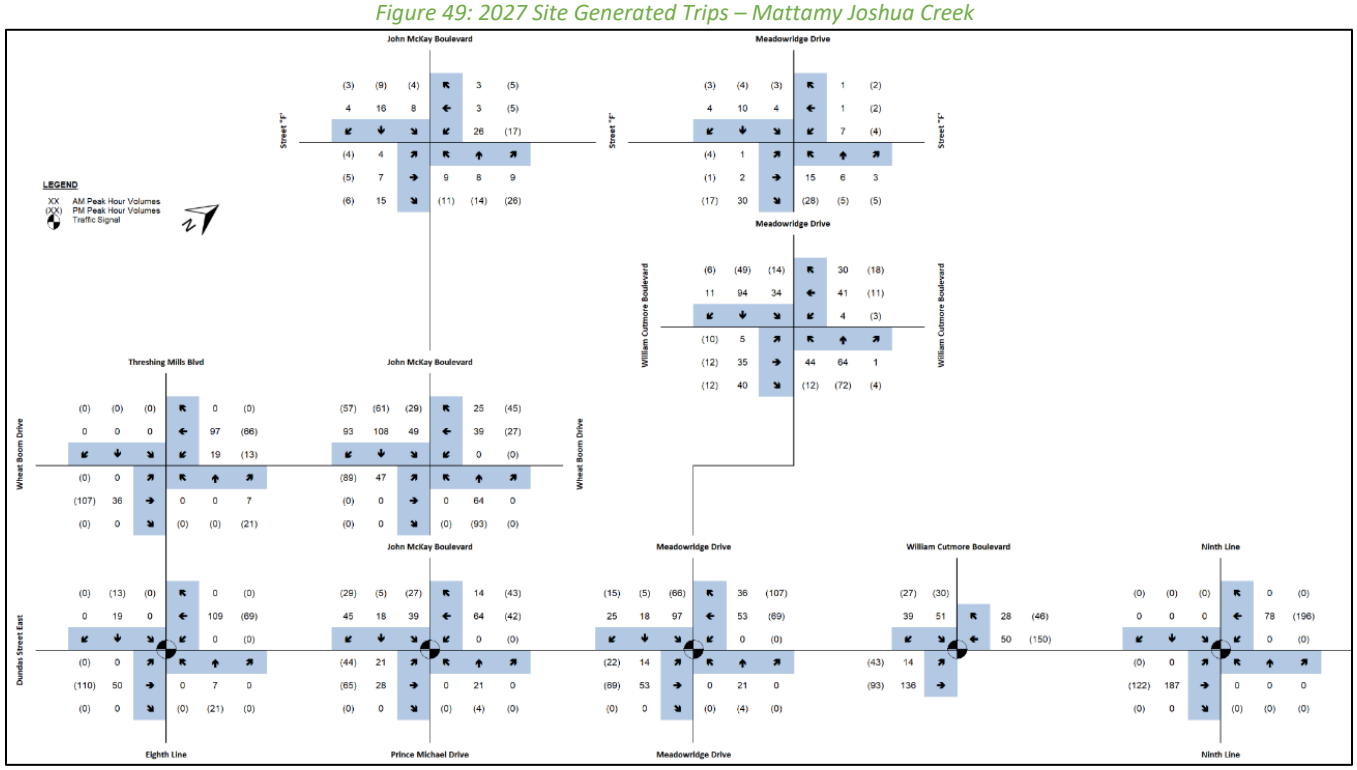


Source: Joshua Creek Transportation Impact Study; CGH; 2021

4.1.8.11 Mattamy Joshua Creek

Mattamy Joshua Creek is a proposed residential development located north of Dundas Street East between Eighth Line and Ninth Line in the North Oakville East Secondary Plan in the Town of Oakville. The following information has been taken from the *Joshua Creek Phase 3 Traffic Impact Study (2022)* prepared by GHD. The development consists of 306 townhouse units, 809 single detached units, and an approximate 700 student elementary school. The proposed subdivision is expected to generate a total of 1050 AM and 806 PM peak hour two-way vehicle trips in the 2027 future analysis horizon and will be considered in all future analysis horizons in this study. Figure 49 shows the 2027 site generated trips for Mattamy Joshua Creek.

Figure 49: 2027 Site Generated Trips – Mattamy Joshua Creek

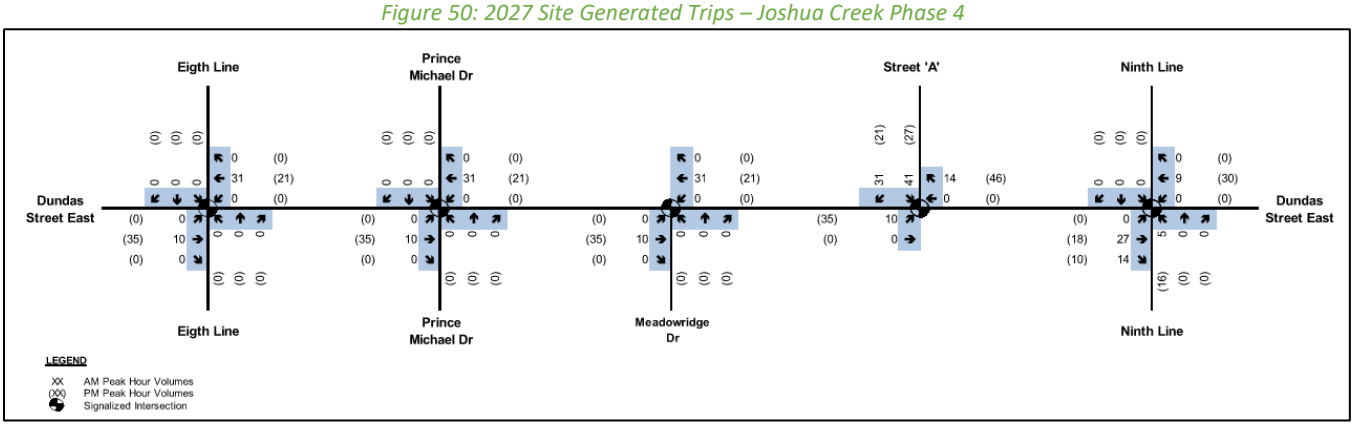


Source: Joshua Creek Phase 3 Transportation Impact Study; GHD; 2022

4.1.8.12 Joshua Creek Phase 4

The proposed residential development is located within the Bressa Draft plan, north of Dudas Street and east of Eighth Line. The following information has been taken from the *Joshua Creek Phase 4 Transportation Impact Study (2020)* prepared by GHD. The development consists of 36 townhouse units and 118 single detached units. The proposed subdivision is expected to generate a total of 96 AM and 129 PM peak hour two-way vehicle trips in 2022. A site visit on April 23, 2024, observed that approximately 80% of the development has been built and occupied. Therefore, an 80% reduction has been applied to the volumes shown in the volume figure below, and will be considered in all future analysis horizons in this study. Figure 50 shows the site generated trips for Joshua Creek Phase 4.

Figure 50: 2027 Site Generated Trips – Joshua Creek Phase 4

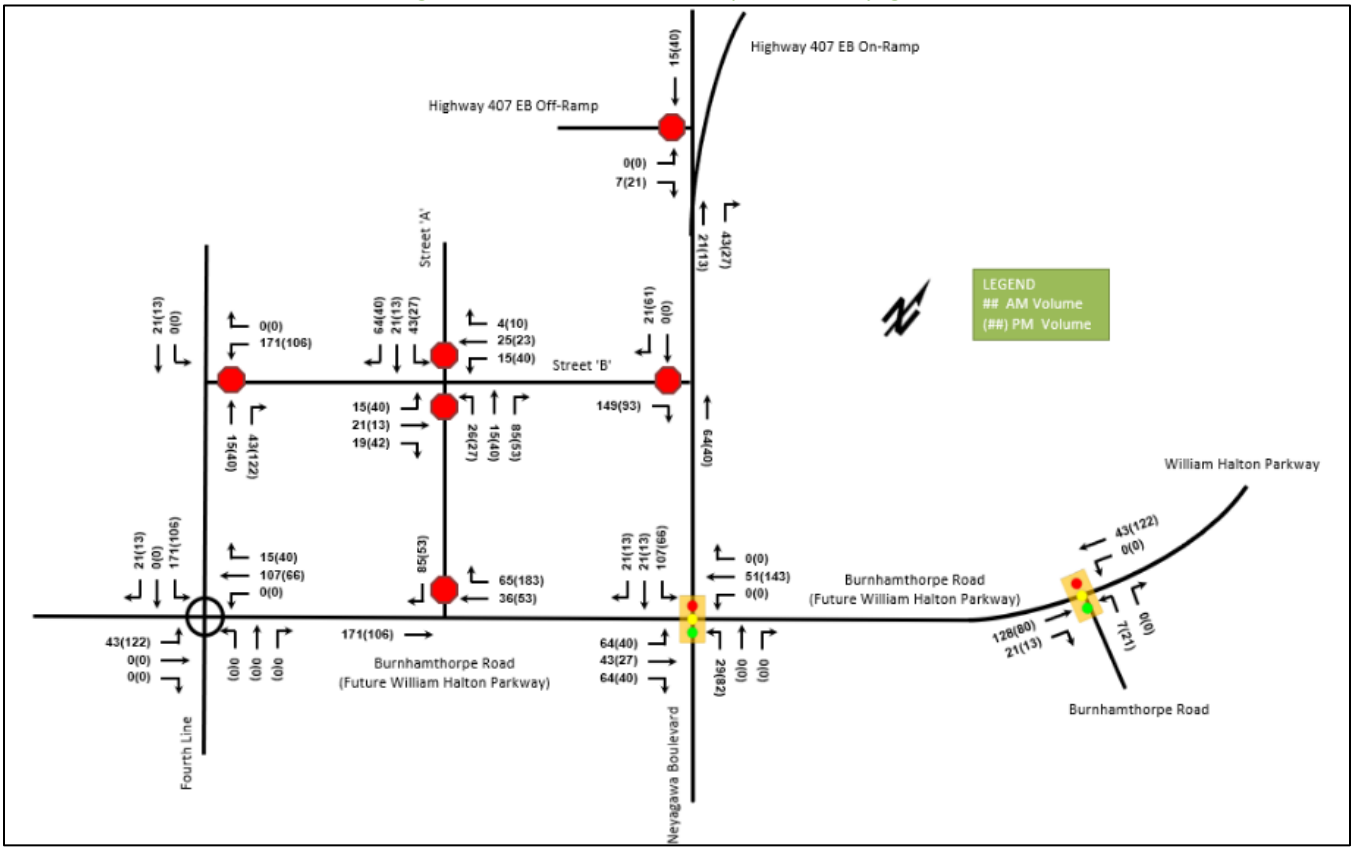


Source: Joshua Creek Phase 4 Transportation Impact Study; GHD; 2020

4.1.8.13 ARGO Neyagawa

The proposed ARGO Neyagawa Development is located west of the subject site. The following information has been taken from the *ARGO Neyagawa Transportation Impact Study (2023),* prepared by CGH Transportation. This development includes 360 townhouse dwelling units, 643 high-rise apartment units across two buildings, and 1,020 square metres of retail space. A total of 1,143 parking spaces will be provided to support to the proposed land uses. A 2028 build-out year is anticipated, and therefore site generated traffic will be considered in all future analysis horizons. The proposed development is anticipated to generate 275 AM and 358 PM peak hour two-way vehicle trips in the future analysis horizon considered in the TIS. The 2028 ARGO Neyagawa trip generation is illustrated in Figure 51.

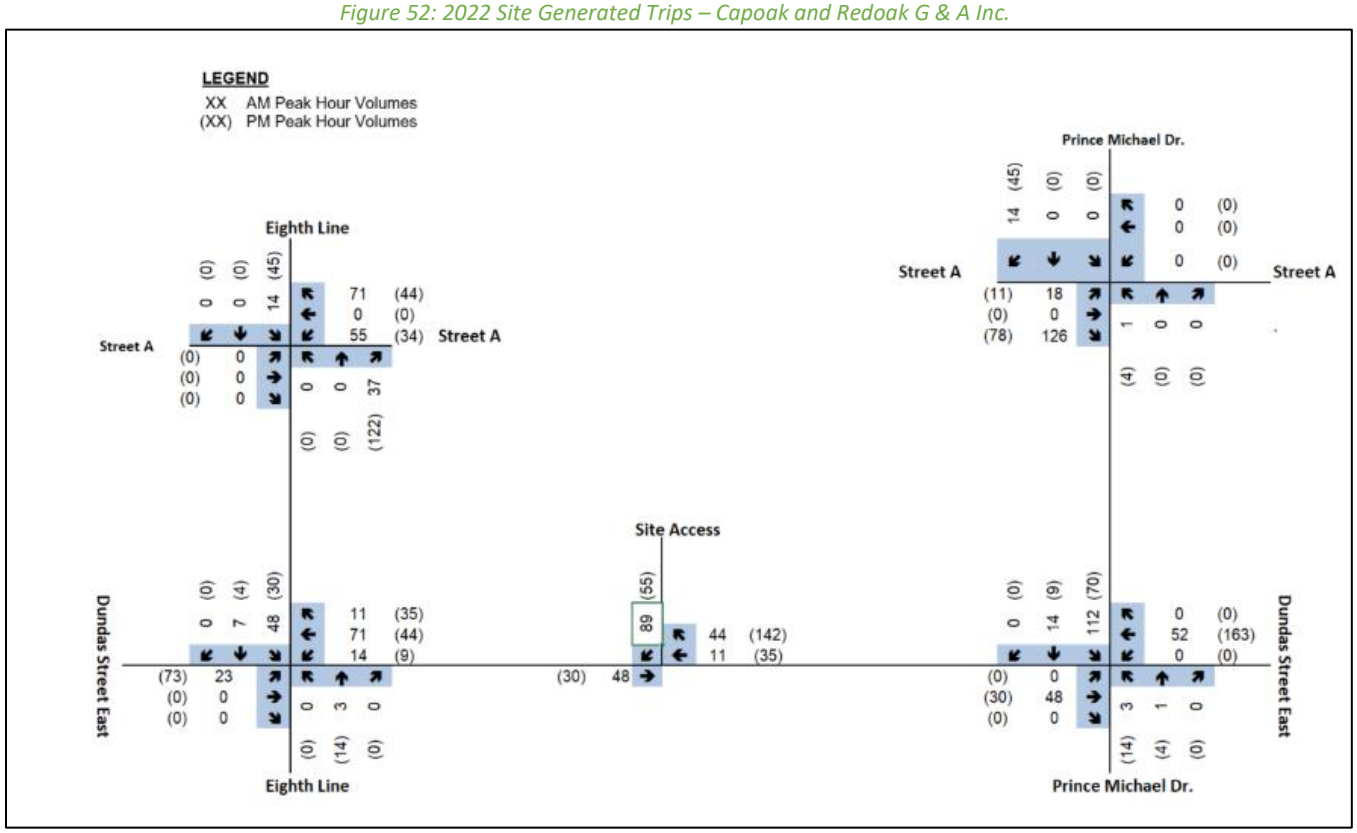
Figure 51: 2028 Site Generated Trips – ARGO Neyagawa



4.1.8.14 Capoak and Redoak G & A Inc. Residential Development

The Capoak and Redoak G & A Inc. development is a proposed residential subdivision in North Oakville at the northeast quadrant of the intersection of Dundas Street and Eighth Line Road. The following information has been taken from the *Capoak Inc. and Redoak G & A Inc. Proposed Redoak/Capoak Residential Development Traffic Impact Study (2020),* prepared by GHD. The development consists of 116 single family detached units, 459 townhouse units, and an estimated 578 condominium apartment and back-to-back townhouse units within the Dundas Street Urban Core blocks. Access to the development proposed to Dundas Street via a right-in/out driveway, and through adjacent draft plans via the future extension of Prince Michael Drive north of Dundas Street to the east and a connection from Street A to Eighth Line to the west. A 2022 build-out year was anticipated, however, a site visit confirmed that the area is not yet developed as of April 2024. Therefore, site generated traffic will be considered in all future analysis horizons. The development is anticipated to generate 471 AM and 584 PM peak hour two-way vehicle trips in the 2022 future analysis horizon considered in the TIS. The 2022 traffic generation is illustrated in Figure 52.

Figure 52: 2022 Site Generated Trips – Capoak and Redoak G & A Inc.



Source: Proposed Redoak/Capoak Residential Development Transportation Impact Study; GHD; 2020

4.1.8.15 SmartCentres Oakville North

The SmartCentres Oakville North development is a proposed mixed-use development located at the northwest corner of Trafalgar Road and Oak Park Boulevard in the Town of Oakville. The following information has been taken from the *SmartCentres Oakville North Transportation Impact Study (2022)* prepared by BA Consulting Group. The proposed development consists of 605 squared metres of retail GFA and approximately 585 residential units. Access to the development will be provided by an existing private access connecting to Taunton Road and Hays Boulevard. The build-out year has not been specified, and therefore site generated traffic will be considered in all

future analysis horizons. The development is anticipated to generate 10 AM and 10 PM peak hour two-way vehicle retail trips. Figure 53 illustrates the site generated traffic for Smartcentres Oakville North.

Figure 53: Site Generated Trips – SmartCentres Oakville North



Source: SmartCentres Oakville North Transportation Impact Study; BA Consulting Group Ltd.; 2022

4.1.9 Background Growth

Background growth rates have been provided by Region of Halton and Town of Oakville, as shown in Appendix A, for existing roads within the Study Area. As indicated by Region of Halton staff, a compound annual growth rate (CAGR) of 2% from 2024 to 2031 and 1% from 2031 to 2041 will be applied to William Halton Parkway, Dundas Road, Ninth Line, Trafalgar Road, and the Highway 407 Interchanges. A 3% CAGR will be applied to Burnhamthorpe Road and Sixth Line from 2024 to 2041 as indicated by Town of Oakville staff.

4.1.10 Projected Volumes on William Halton Parkway

Using the Halton EMME Model, that includes all 2031 TMP recommendations, the Region's internal study determined the 2031 future year traffic forecast along William Halton Parkway and major intersecting roads based on screen-line growth rate and diversion factors derived from the study. Halton Region provided the following volume projections along William Halton Parkway:

- 2031 PM peak hour volume west of Trafalgar: 2100 (800 east and 1300 west)
- 2031 PM peak hour volume east of Trafalgar: 2400 (800 east and 1600 west)

The email correspondence on the future volume projection along William Halton Parkway with Halton Region staff can be found in Appendix E. Since only the 2031 PM peak hour volumes are provided, the following assumptions were made, which were confirmed with Region staff as part of TOR correspondence shown in Appendix A:

- The AM peak hour volumes are the reverse for the eastbound and westbound directions. 2031 AM peak hour volume west of Trafalgar will be 1300 eastbound and 800 westbound, and 2031 AM peak hour volume east of Trafalgar will be 1600 eastbound and 800 westbound.
- The 2036 and 2041 AM and PM peak hour volumes are projected by applying the same CAGRs as indicated in Section 4.1.9.

The projection used the following methodology:

- The 2031, 2036, and 2041 future background volumes were initially calculated by summing up the traffic resulting from compound annual growth and traffic from background developments.
- Comparisons were made between this sum and the Regional volumes for each road segment in each scenario, and the greater was used.
- Due to the high turning volumes at the intersections, the screen line volumes at mid-sections were sometimes smaller than the Regional projections of 2100 and 2400 or the calculated sum. These have been considered as the maximum volumes along William Halton Parkway.

The Region's modeler noted that the EMME Model's traffic zone is much larger than the subject site and they do not have information on the population and employment statistics considered in the EMME model. Thus, it is not certain how many trips generated from the subject site are included in the model. A conservative approach is taken that this study assumes 0 trips from the proposed development have been included in the EMME Model which provides the volume projections. It is likely that this method will result in trips being accounted for twice, or double counted, as a portion of these trips may have been considered in the Region's study. This will result in a volume projection higher than what is likely to be realized along William Halton Parkway.

The resulting changes to the traffic volumes along William Halton Parkway in the 2031, 2036, and 2041 future analysis horizons are illustrated in Figure 54, Figure 55, and Figure 56 respectively.

Figure 54: 2031 William Halton Parkway Reassignment Traffic Volumes

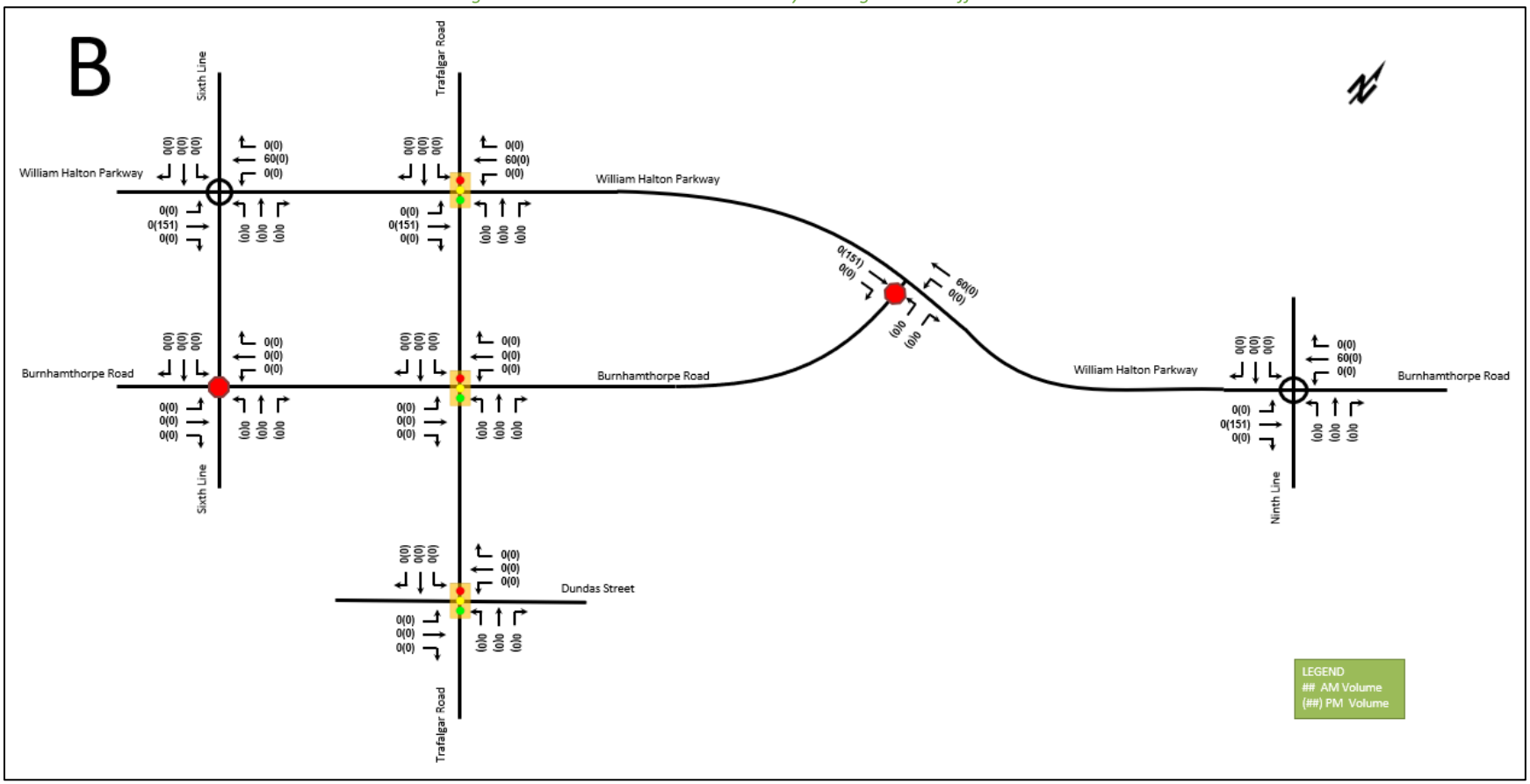


Figure 55: 2036 William Halton Parkway Reassignment Traffic Volumes

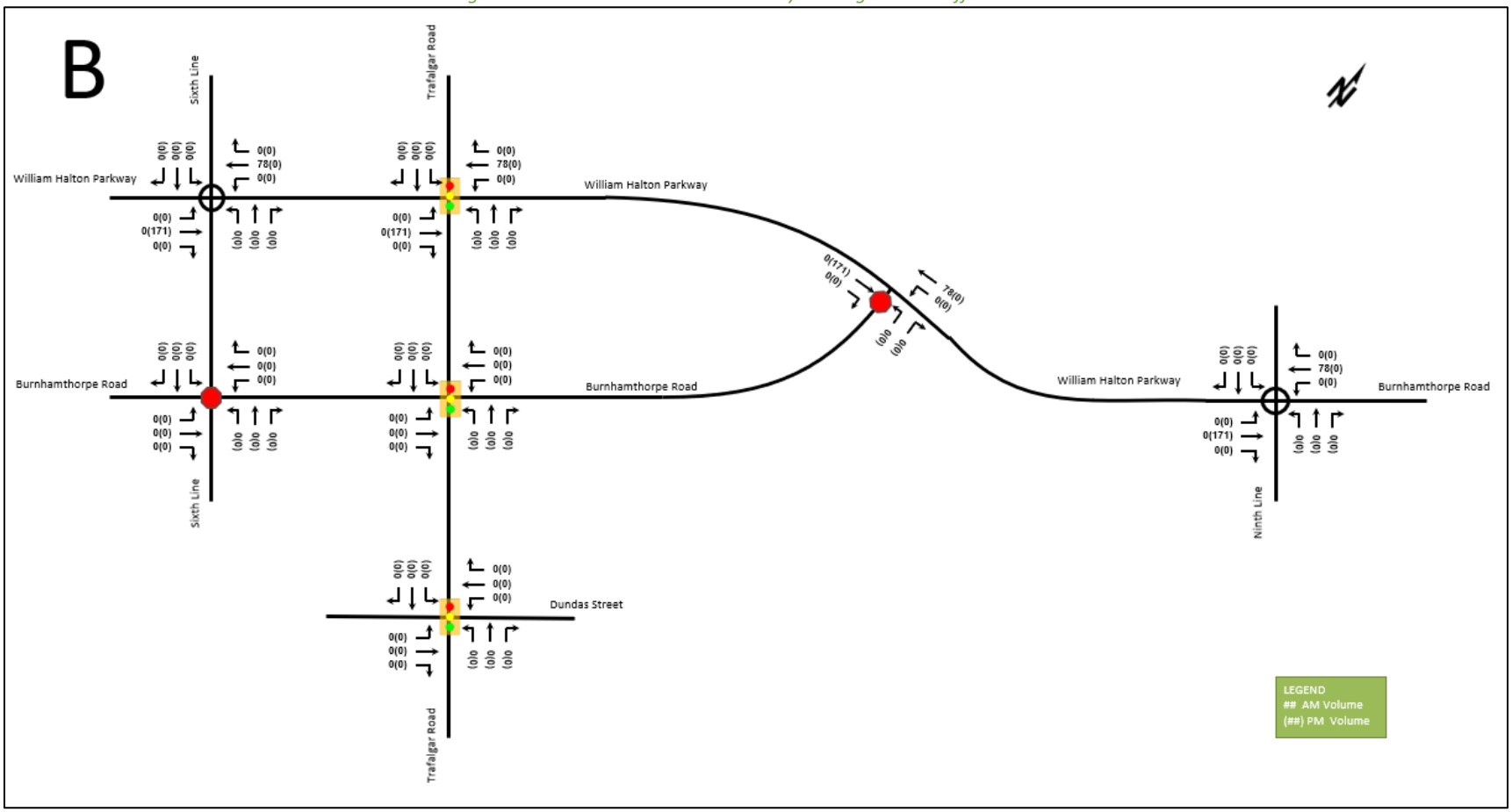
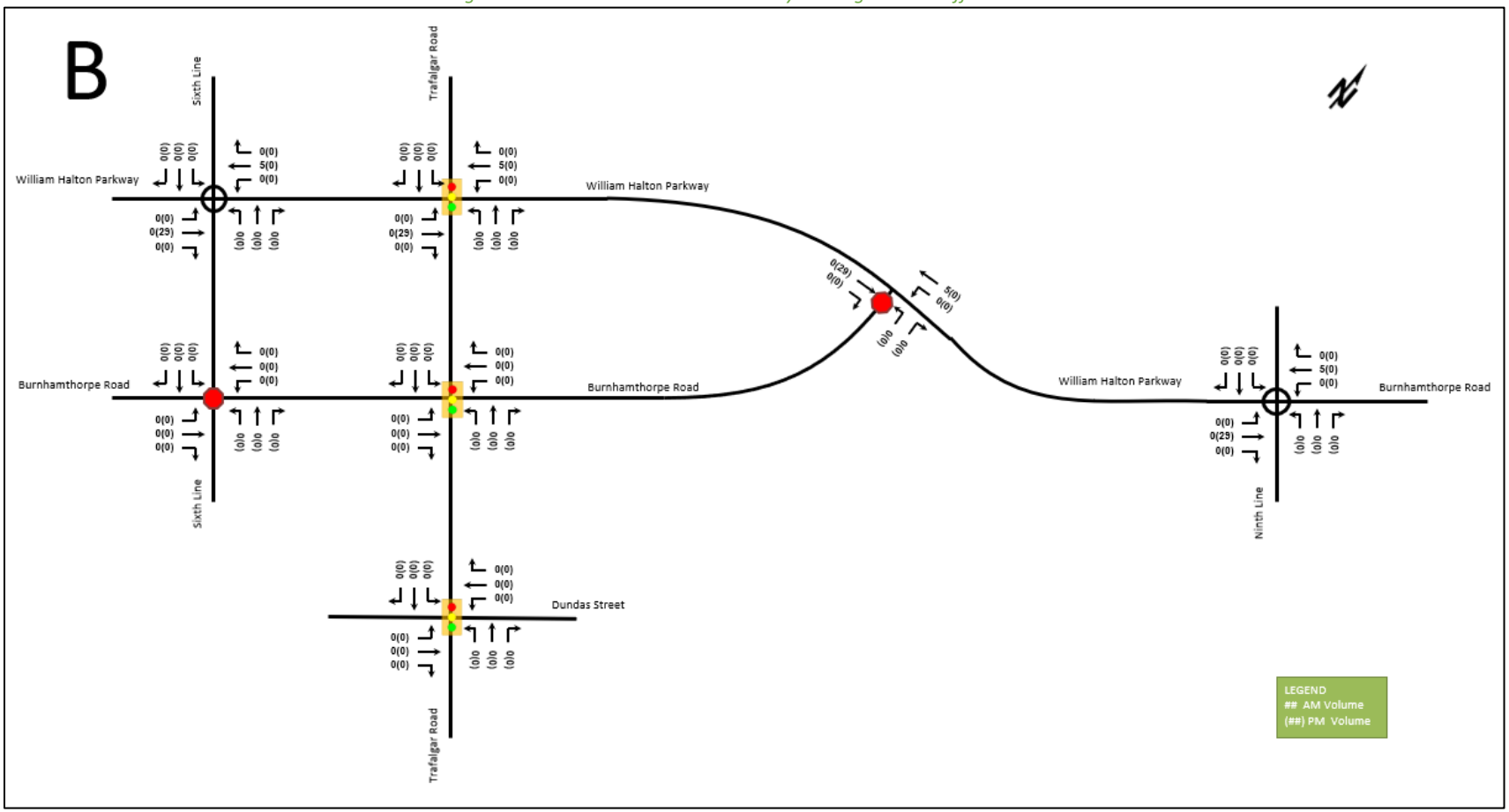


Figure 56: 2041 William Halton Parkway Reassignment Traffic Volumes



4.1.11 Future Background Traffic Volumes

Combining the background development traffic, the background growth rate, William Halton Parkway EMME projections, and the existing traffic volumes, the future background traffic volumes in the AM and PM peak periods were projected. Figure 57, Figure 58, Figure 59, and Figure 60 illustrates the 2031 future background traffic volumes. Figure 61, Figure 62, Figure 63, and Figure 64 illustrates the 2036 future background traffic volumes. Figure 65, Figure 66, Figure 67, and Figure 68 illustrates the 2041 future background traffic volumes.

Figure 57: 2031 Future Background Traffic Volumes – Section A

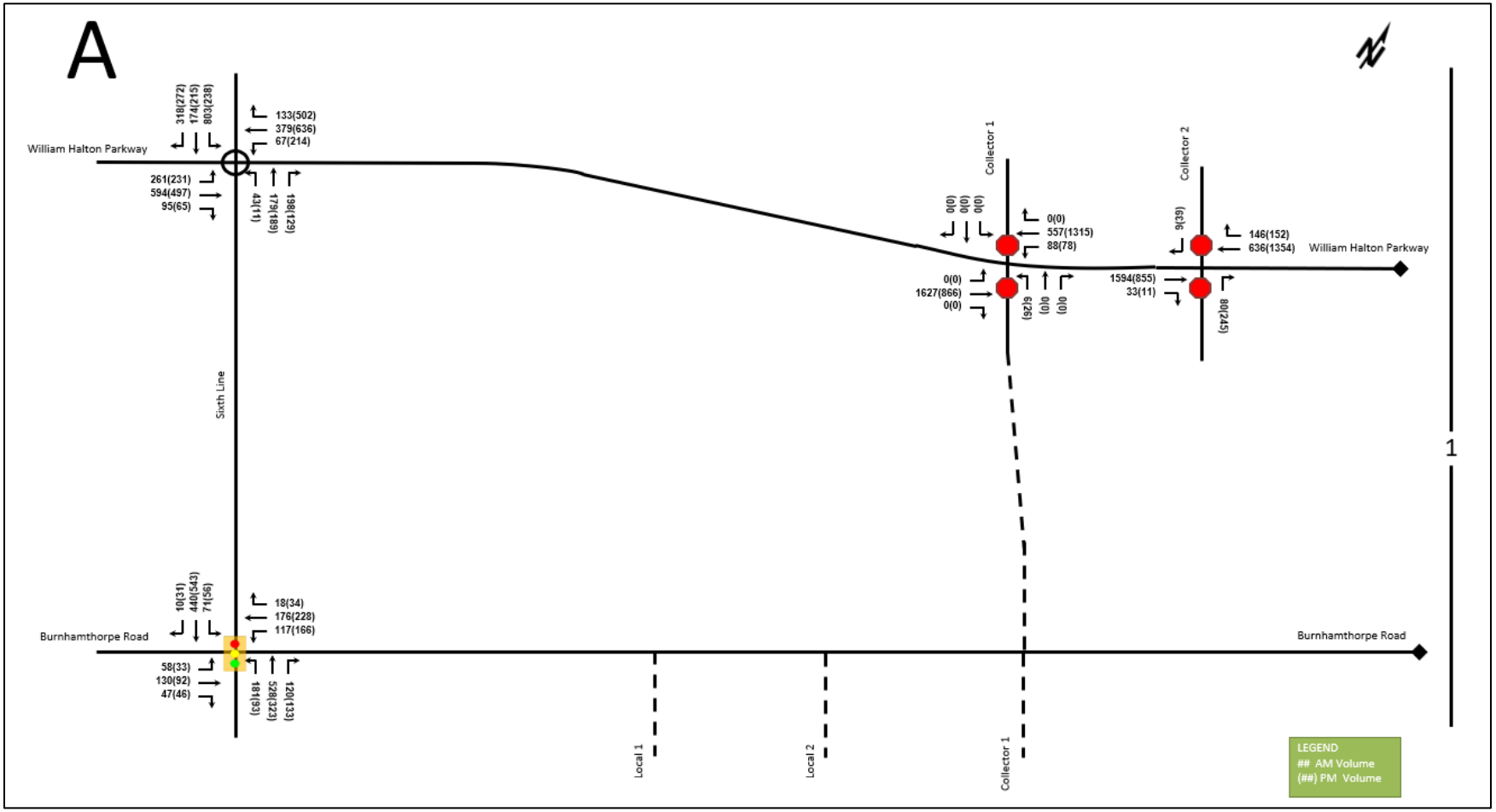


Figure 58: 2031 Future Background Traffic Volumes – Section B

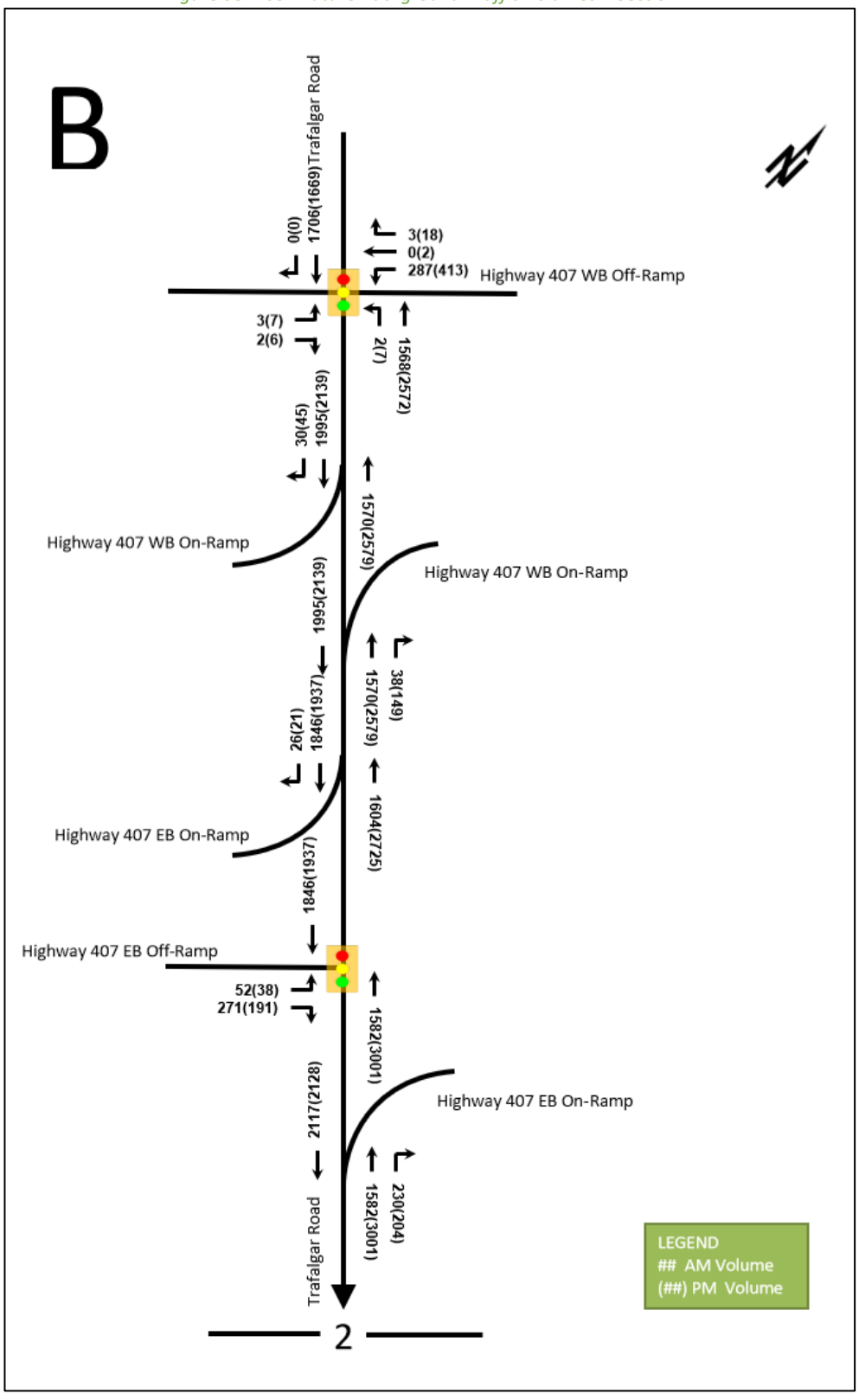


Figure 59: 2031 Future Background Traffic Volumes – Section C

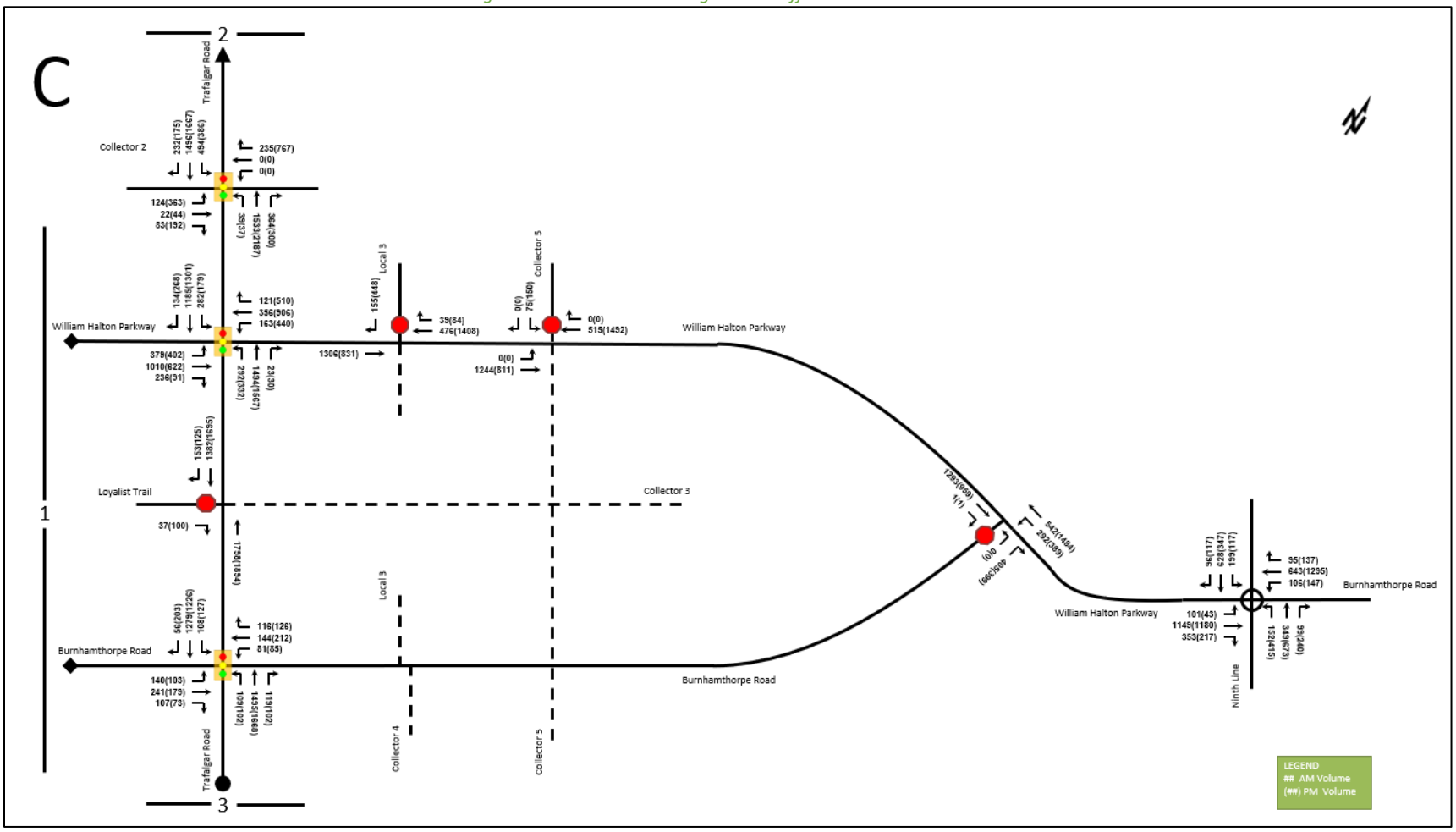


Figure 60: 2031 Future Background Traffic Volumes – Section D

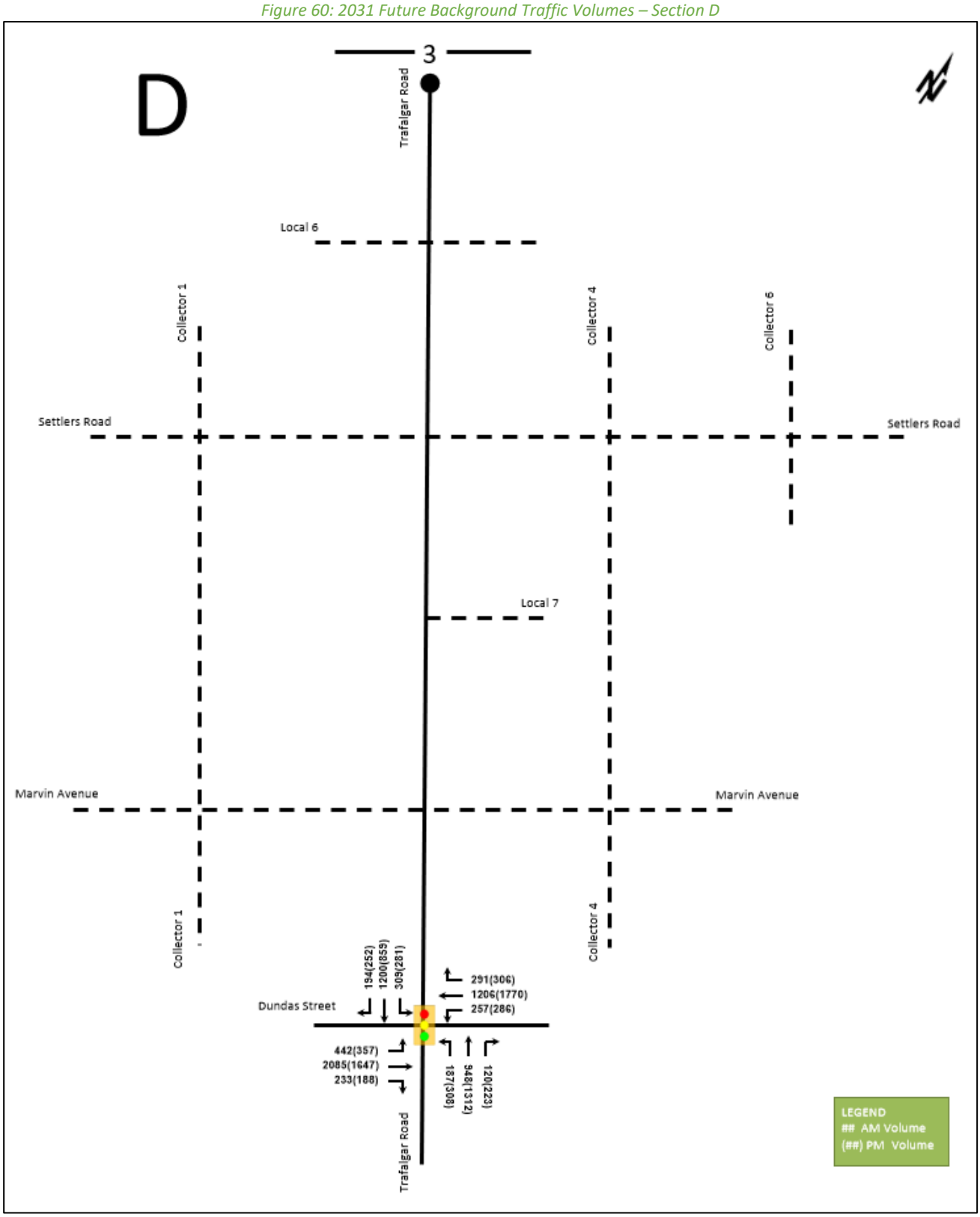


Figure 61: 2036 Future Background Traffic Volumes – Section A

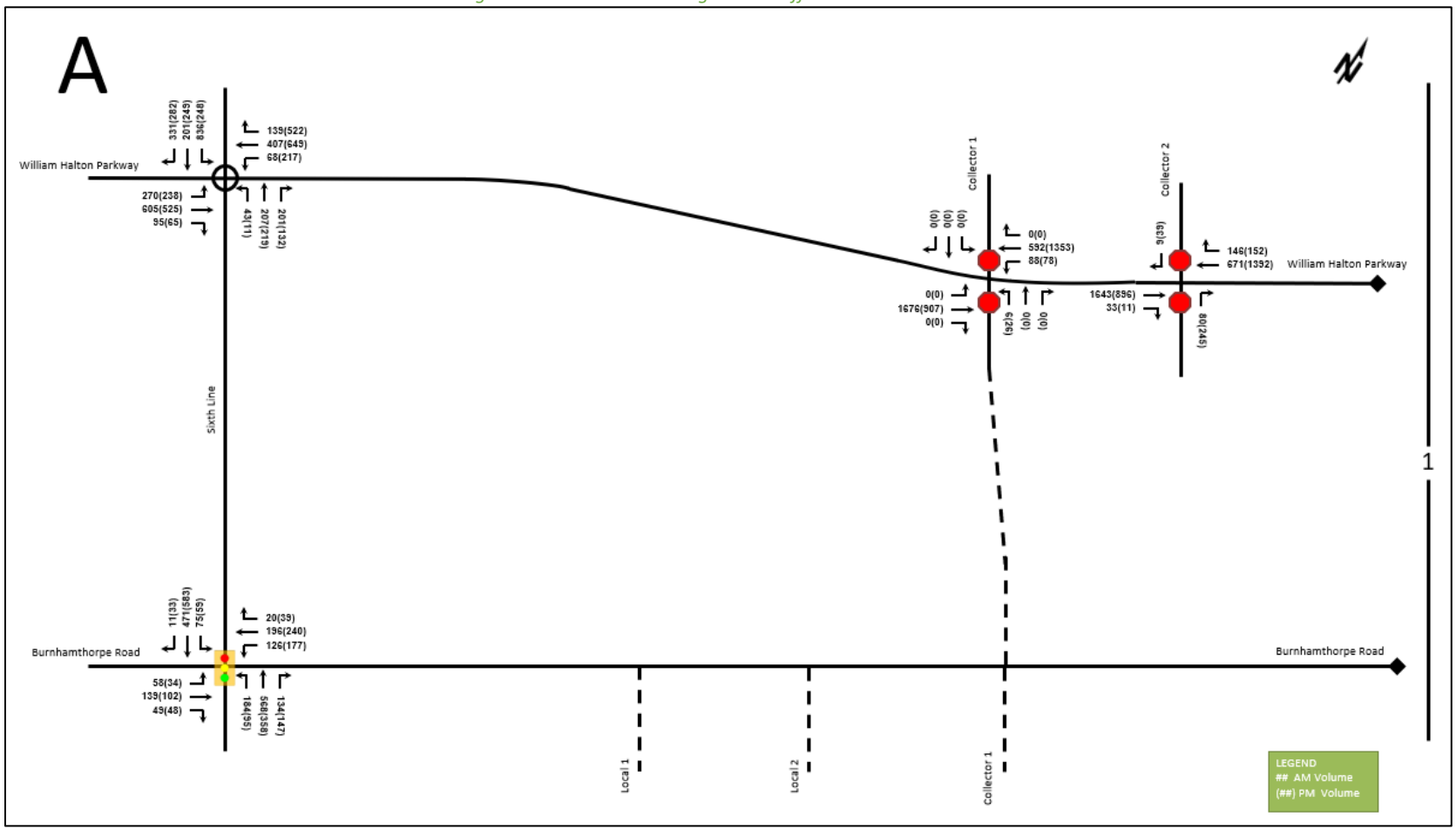


Figure 62: 2036 Future Background Traffic Volumes – Section B

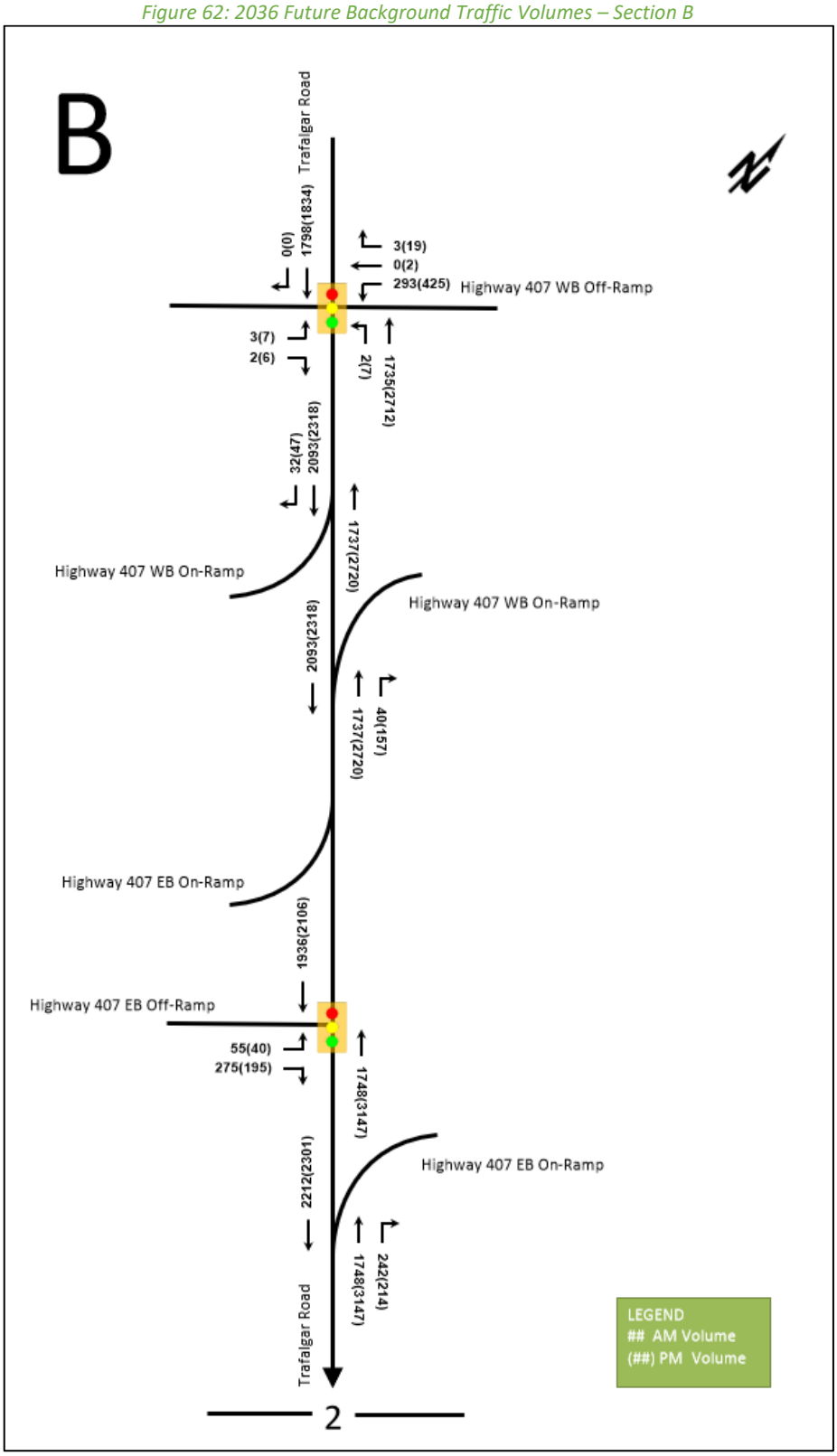


Figure 63: 2036 Future Background Traffic Volumes – Section C

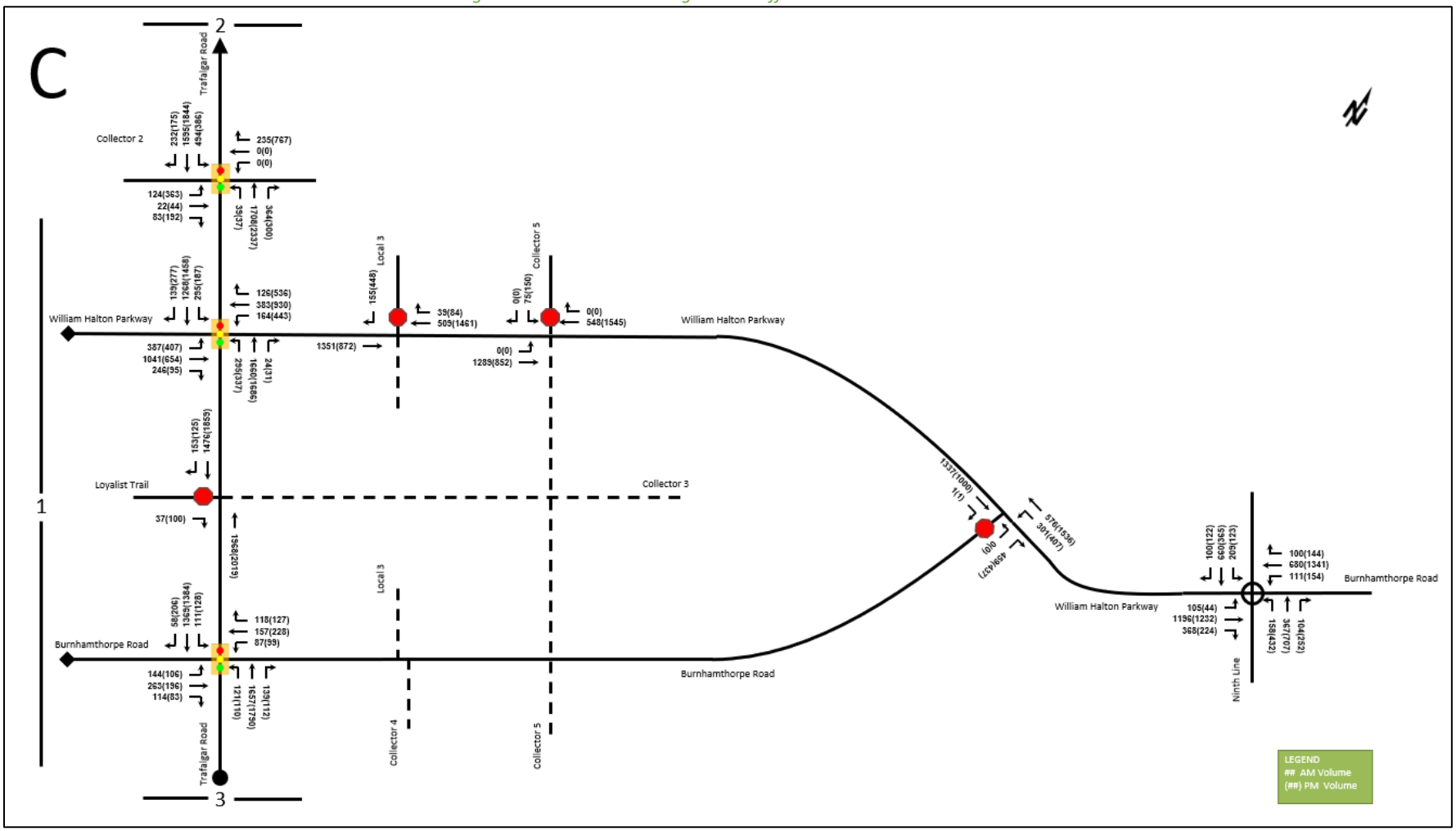


Figure 64: 2036 Future Background Traffic Volumes – Section D

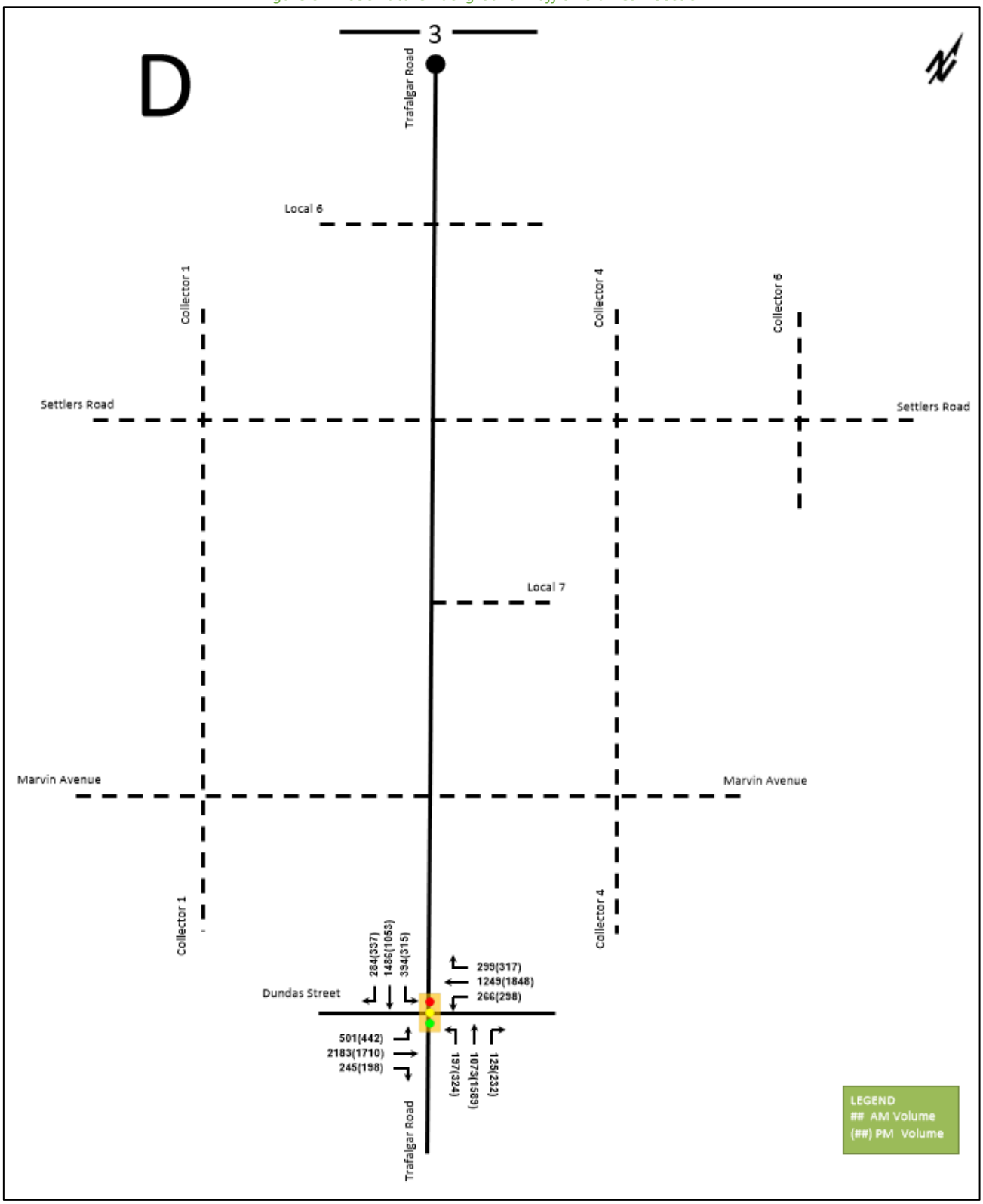


Figure 65: 2041 Future Background Traffic Volumes – Section A

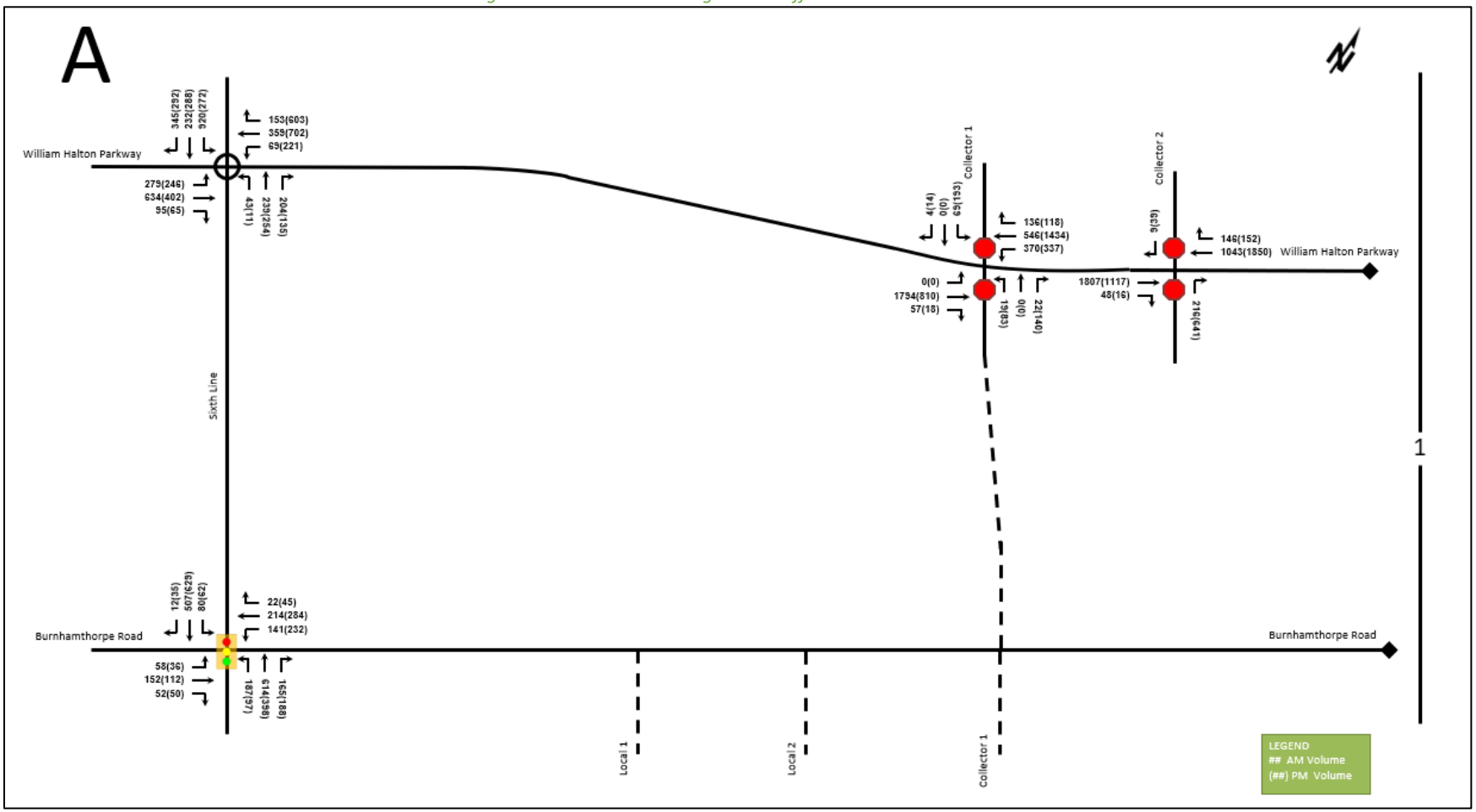


Figure 66: 2041 Future Background Traffic Volumes – Section B

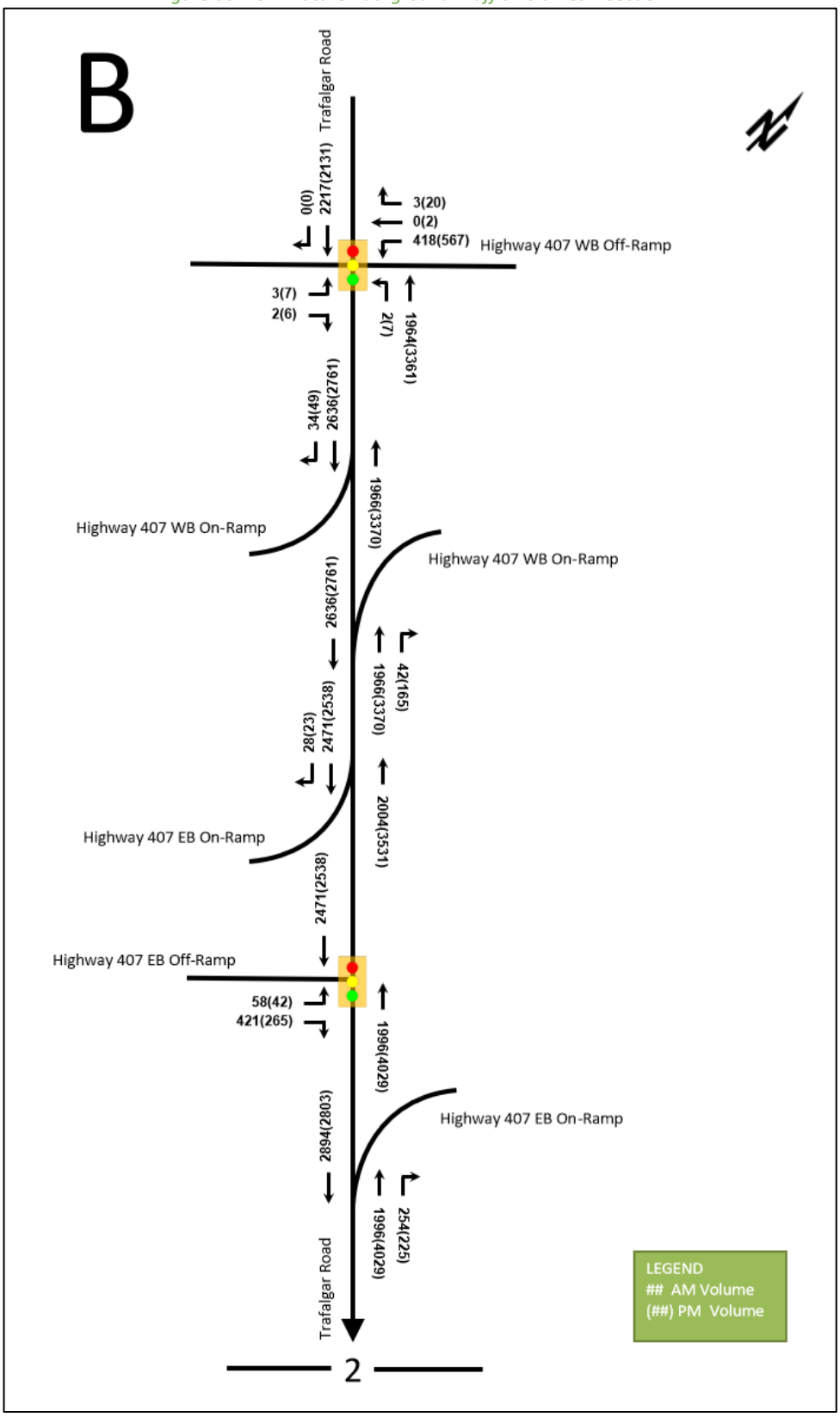


Figure 67: 2041 Future Background Traffic Volumes – Section C

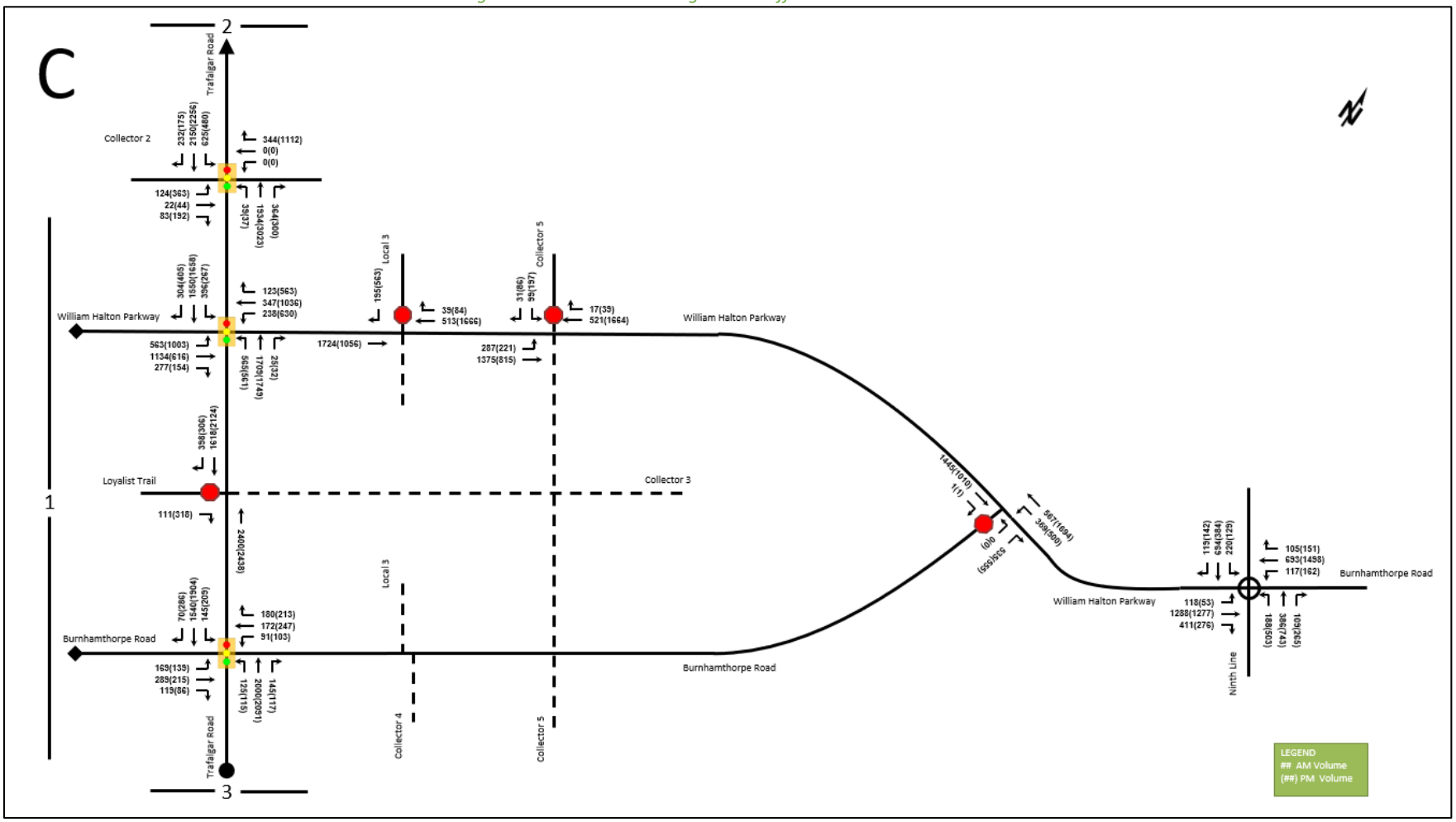
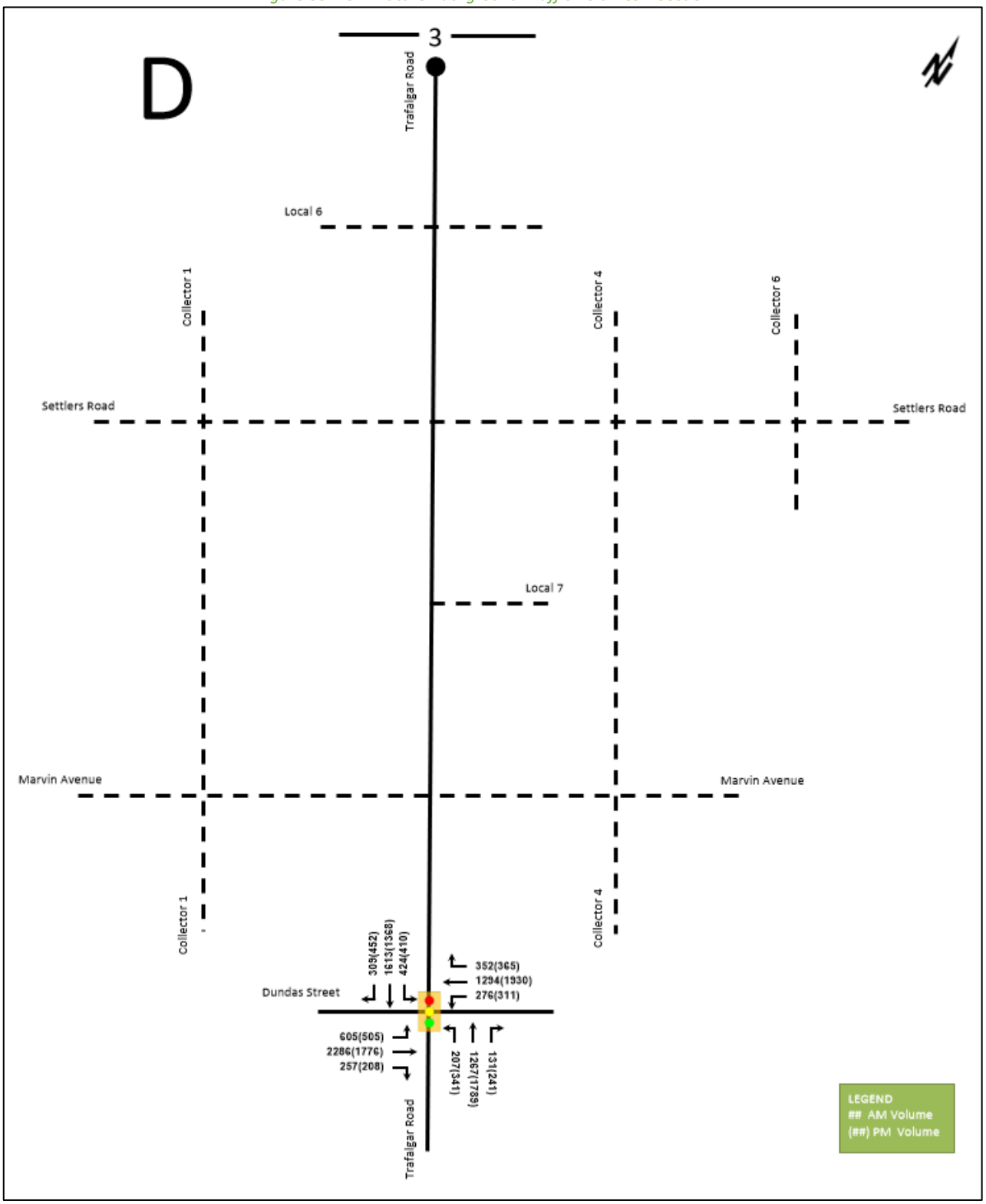


Figure 68: 2041 Future Background Traffic Volumes – Section D



4.1.11.1 Future Background Saturday Peak Hour Conditions

Background development traffic from other Study Area developments as discussed in Section 4.1.8 have been included within the Saturday analysis. As the TISs of the background developments do not include Saturday volumes, the site generated traffic from the PM peak period has been considered for the Saturday analysis. As Saturday trip generation rates are generally lower than weekday PM trip generation rates, this allows for a conservative development of the Saturday future background volumes.

Similar to the AM and PM peak period analysis, a compound annual growth rate (CAGR) of 2% from 2024 to 2031 and 1% from 2031 to 2041 will be applied to Trafalgar Road and the Highway 407 Interchanges for the Saturday analysis. Background growth rates indicated by the Region of Halton and Town of Oakville are discussed in Section 4.1.9.

Combining background development traffic, the background growth rate, and the existing traffic volumes, the future background Saturday traffic volumes were projected. Figure 69, Figure 70, and Figure 71 below illustrate the 2031, 2036, and 2041 future background Saturday traffic volumes respectively.

Figure 69: 2031 Future Background Saturday Traffic Volumes

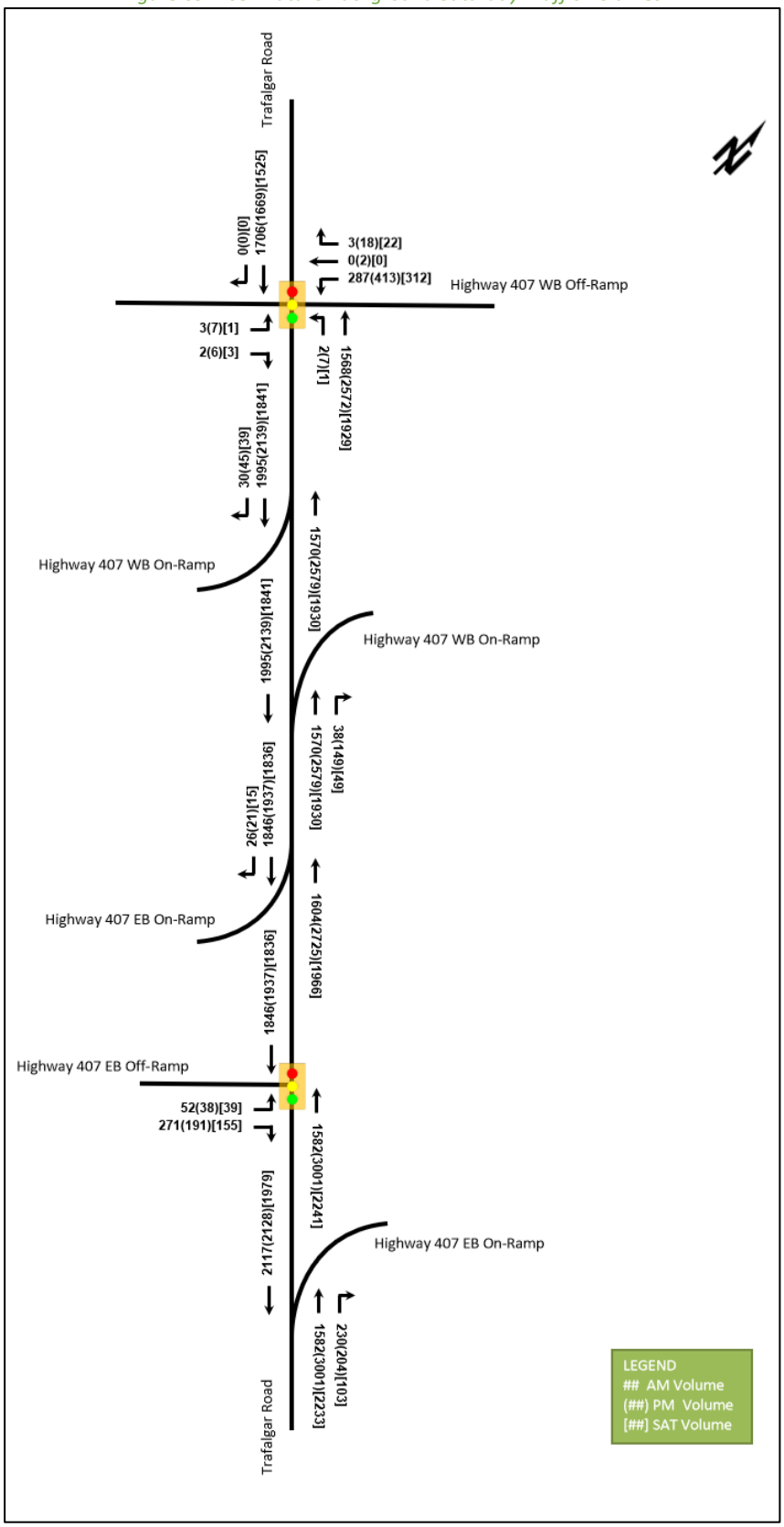


Figure 70: 2036 Future Background Saturday Traffic Volumes

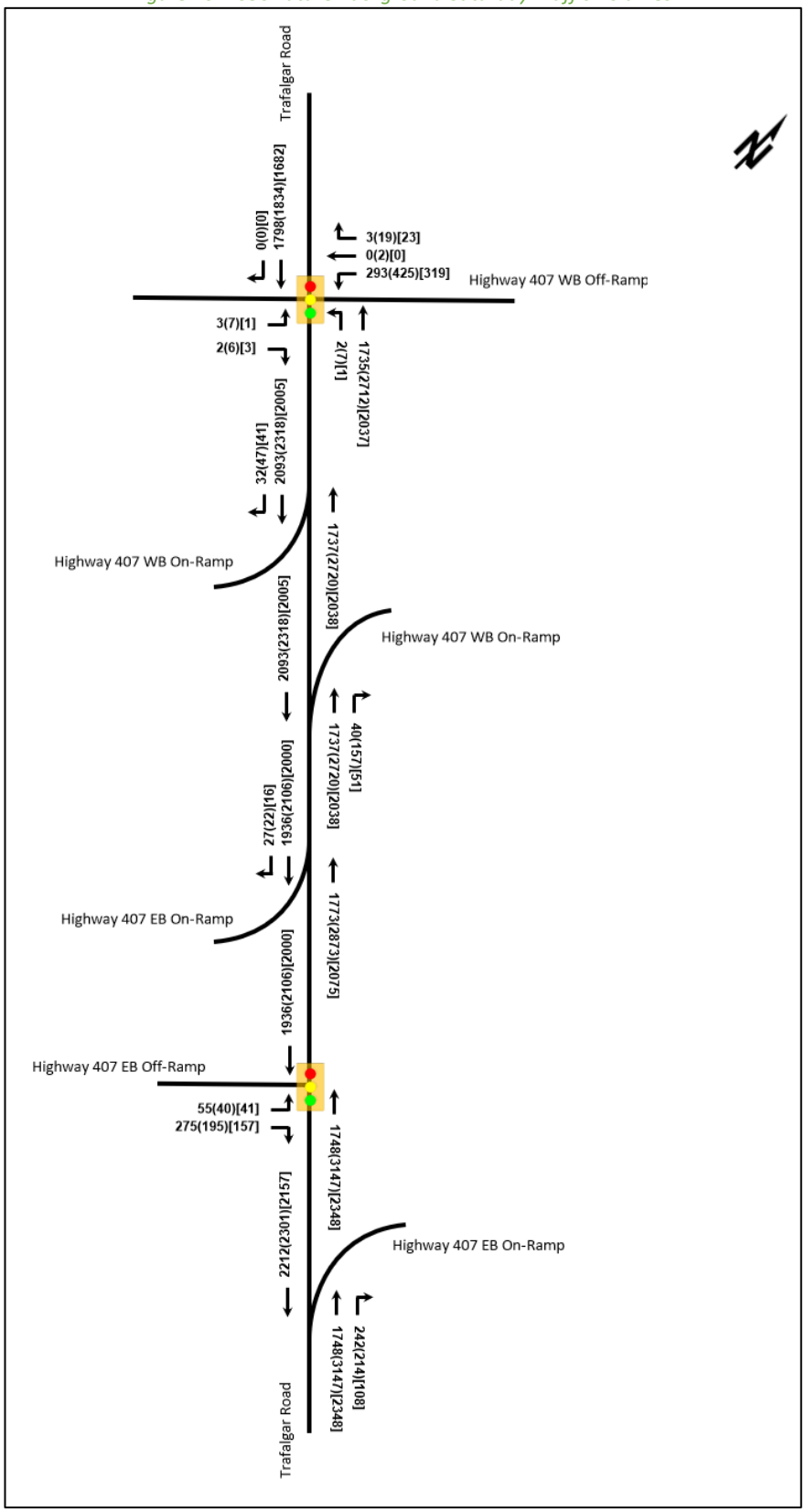
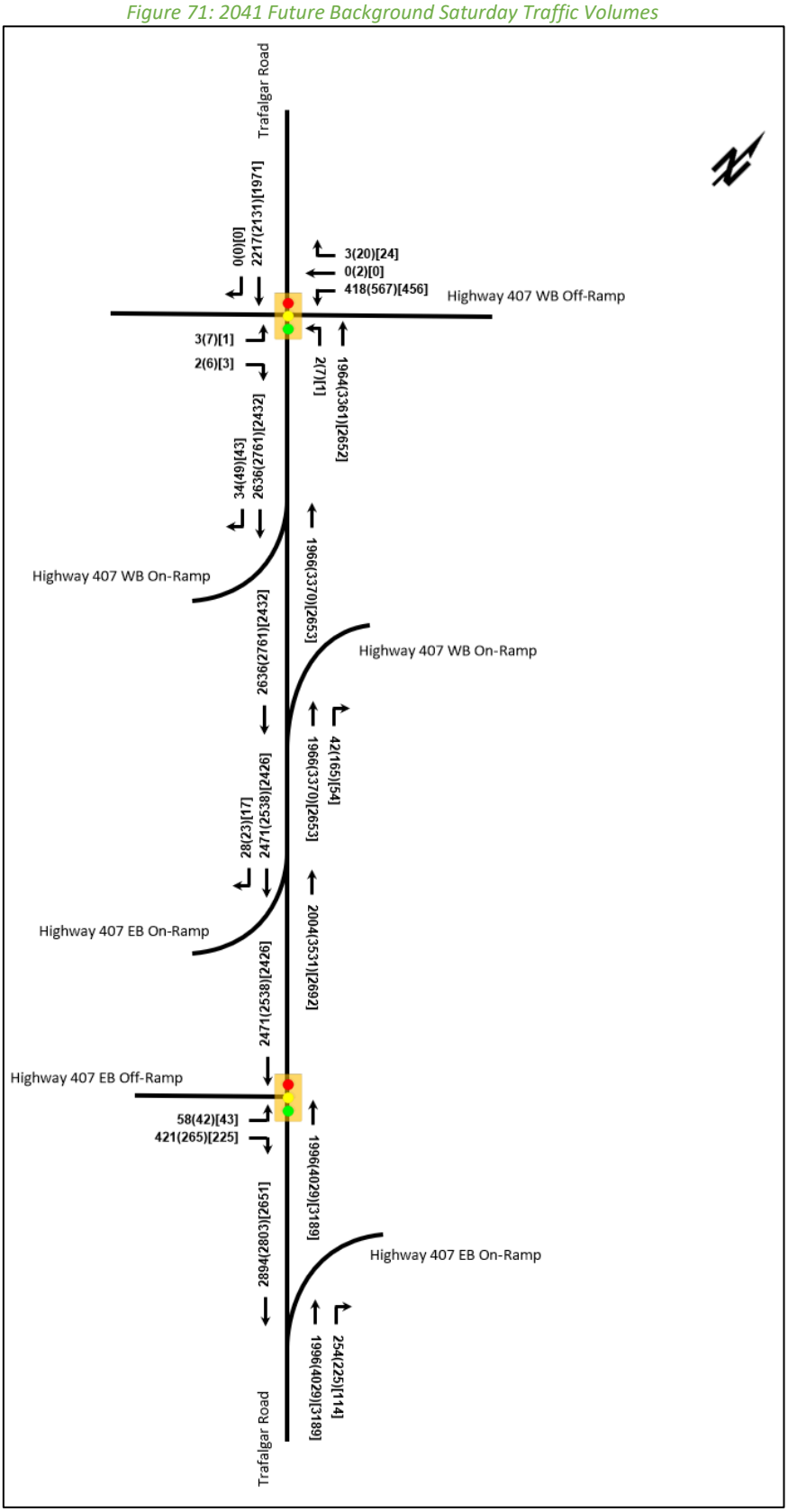


Figure 71: 2041 Future Background Saturday Traffic Volumes



5 Forecasting

5.1 Development-Generated Travel Demand

5.1.1 Trip Generation and Mode Shares

The major land uses of this proposed development consist of residential units, retail, and office. The land use information is preliminary and provides an estimate of the scale of the total trip generation. Unit counts and GFAs are subject to change at future Draft Plan and Site Plan stages. The site statistics for each participating landowner are summarized in Table 3.

Table 3: Landowners Site Statistics Summary

Land-Use	Townhouses (Units)	Mid-Rise (Units)	High Rise (Units)	Ground Floor Retail (GFA – ft^2)	Standalone Retail (GFA – ft^2)	Employment (GFA – ft^2)	School (Yes/No)
Star Oak	-	-	-	-	-	630,000	-
Oakville Woods	226	-	-	-	-	-	-
Fieldgate	50	-	-	-	100,000	-	-
River Thames	50	-	995	3530	-	-	-
DGB Trafalgar	-	-	1117	3962	-	-	-
Mel-Oak North	20	-	1674	7577	-	-	-
Mel-Oak	-	-	1214	8611	-	-	1 SS
Trafalgar Road	-	460	1155	8558	-	-	-
ARGO Trafalgar	130	-	3900	-	19,375	-	-
Westerkirk	-	2140	3210	-	200,000	-	1 Partial ES
Tribaden	180	-	4400	-	-	-	1 Partial ES
*	Townhouse numbers assumed based on proposed ARGO unit counts in adjacent Oakville Woods development. Apartment land use unit counts estimated based on 3444 Trafalgar Road report and land area of Block 3 and Block 4. Unit counts from 3444 Trafalgar Road report do not identify the type of units and are instead shown as a single total. As such, any units contained in the 3-storey buildings have been considered within the high-rise total as they are likely to be minimal.						
**	Apartment land use unit counts estimated based on 3444 Trafalgar Road report and land area of Block 3 and Block 4. Unit counts from 3444 Trafalgar Road report do not identify the type of units and are instead shown as a single total. As such, any units contained in the 3-storey buildings have been considered within the high-rise total as they are likely to be minimal.						

In addition to the secondary school and elementary school considered as part of the development, an additional secondary school located to the east of the subject site has been considered as part of the trip generation. As the secondary school is located immediately to the east of the Westerkirk development, school traffic will likely travel throughout the development road network and impact the Study Area intersections and will follow similar trip

generation assumptions as the secondary school within the subject lands. Figure 72 illustrates the locations of the secondary and elementary schools considered in the trip generation.

Figure 72: School Locations



The ITE Trip Generation Manual 11th Edition has been reviewed for appropriate trip generation rates and rate equations for each of the proposed land uses. The ITE vehicle trip generation rates and equations are summarized in Table 4.

Table 4: ITE Trip Generation Vehicle Trip Rates and Rate Equations

Land Use	ITE LUC	Peak Hour	Average Rate	Fitted Curve Equation	Method
Single Family Attached	215	AM	0.48	T=0.52(X)-5.70	Fitted Curve
		PM	0.57	T=0.60(X)-3.93	Fitted Curve
Multifamily Housing (Mid-Rise)	221	AM	0.37	T=0.44(X)-11.61	Fitted Curve
		PM	0.39	T=0.39(X)+0.34	Fitted Curve
Multifamily Housing (High-Rise)	222	AM	0.27	T=0.22(X)+18.85	Fitted Curve
		PM	0.32	T=0.26(X)+23.12	Fitted Curve
General Office Building	710	AM	1.52	LN(T)=0.86LN(X)+1.16	Fitted Curve
		PM	1.44	LN(T)=0.83LN(X)+1.29	Fitted Curve
Shopping Centre (>150k)	820	AM	0.84	T=0.59(X)+133.55	Fitted Curve
		PM	3.4	Ln(T)=0.72Ln(X)+3.02	Fitted Curve
Shopping Plaza (40-150k)	821	AM	1.73	N/A	Average Rate
		PM	5.19	N/A	Average Rate
Strip Retail Plaza (<40k)	822	AM	2.36	LN(T)=0.66LN(X)+1.84	Average Rate
		PM	6.59	LN(T)=0.71LN(X)+2.72	Fitted Curve
Elementary School	520	AM	0.74	N/A	Average Rate
		PM	0.16	N/A	Average Rate
High School	525	AM	0.52	LN(T)=0.71LN(X)+1.41	Fitted Curve
		PM	0.14	N/A	Average Rate

The Single Family Attached generation rates have been used to estimate trips for the approximately 660 townhouse units, and the Multifamily Housing (Mid-Rise) and Multifamily Housing (High-Rise) land use categories were used to estimate trips for the approximately 2,600 mid-rise and 17,665 high-rise units. While the final development concept will refine the built form and may include a mix of high-rise, mid-rise, and low-rise residential unit types, the foregoing represents a conservative estimate of the traffic that could be generated by the subject development. The rate equations are applied as the regressions were calculated based on more than 20 studies for each and the criteria of R^2 values being greater than 0.75 were met.

The General Office Building land use category has been used to estimate trips for the 58,530 square metre employment spaces. The rate equations were applied as the regressions were calculated based on more than 20 studies and the criteria of R^2 values being greater than 0.75 were met.

The trip generation at the retail land uses was calculated using the Shopping Centre (>150k), Shopping Plaza (40-150k), and Strip Retail Plaza (<40k) land use codes based on the retail GFAs of each land parcel. The total estimated GFA of the combined retail spaces is 32,665 square metres. The retail GFAs provided will be further refined as the development applications proceed and has been estimated for trip generation purposes within this study. The average rates were used for all peak hours with the exception of the PM peak for the Strip Retail Plaza. The size and projected trips may change when detailed site plans are developed.

The elementary school and secondary school trip generation were calculated using the Elementary School and High School land use codes. The student trip generation rates were chosen as it represents a more conservative trip generation compared to the employee trip generation rates. Additionally, students are expected to travel to and from the schools during the AM and PM peak periods, while school staff are likely to arrive before the AM peak period and leave after the PM peak period. The number of students for the elementary school is estimated based on the class size limit of 23 students per class based on the Ontario Education Act. The number of students for SS1 has been projected by the Halton Catholic District School Boad (HCDSB) and was used to estimate the number of students for SS2 based on a comparison of the school size. As a fitted curve equation was not provided for the Elementary School land use, the average rates were used for the AM and PM peak periods. For the High School land use code, the average rate was applied for the AM peak period and the rate equations were applied for the PM peak period.

Using the above trip rates, the total trip generation for the developments, excluding the school trip generation, has been determined and is summarized in Table 5. The total trip generation for the elementary school and two secondary schools is shown in Table 6.

Table 5: Non-School Person Trip Generation

Landowner	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Star Oak	715	98	813	130	632	762
Oakville Woods	28	83	111	77	54	131
Fieldgate	112	82	194	269	276	545
River Thames	72	196	268	206	136	342
DGB Trafalgar	75	202	277	214	139	353
Mel-Oak North	112	296	408	323	214	537
Trafalgar Road	127	359	486	344	228	572
Mel-Oak	88	223	311	246	164	410
ARGO Trafalgar	266	700	966	759	493	1252
Westerkirk	560	1350	1910	1493	1139	2632
Tribaden	330	946	1276	934	578	1512
Total	**2485**	**4535**	**7020**	**4995**	**4053**	**9048**

Table 6: Total School Person Trip Generation

School	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Elementary School	120	102	222	22	26	48
Secondary School 1	501	236	737	101	109	210
Secondary School 2	435	205	640	83	89	172
Total	**1056**	**543**	**1599**	**206**	**224**	**430**

The mode shares used for 2031, 2036, and 2041 analysis horizons for the residential, retail, and employment land uses are based on the target transit mode split for 2031 outlined in the Halton Region Transportation Master Plan (2011) and have been confirmed for use with Regional and Town staff. For the purposes of this study, a transit mode split of 20% will be used for the 2031 horizon year. While the Town of Oakville Transportation Master Plan Review (2018) projects a lower transit mode split in 2031, presence of transit routes both local and Regional within the Study Area will likely increase the potential for transit and active transportation modes and reduce auto driver percentages accordingly. While the auto driver percentage will likely decrease with the implementation of more transit routes as well as the completion of future higher order transit corridors including the Bus Rapid Transit (BRT) services along Dundas Street and Trafalgar Road, and the build-out of more cycling and pedestrian facilities, the same mode split will be used for the 2036 and 2041 horizons as a conservative measure as the current TMP only projects to 2031. The mode share percentages during the peak hours are summarized in Table 7.

Table 7: Mode Share Assumptions

Travel Mode	2031 Regional Projection	2031 Oakville Projection Scenario D	2031 Applied	2036 Applied	2041 Applied
Auto Driver	72%	76%	72%	72%	72%
Transit	20%	12%	20%	20%	20%
Active Transportation	5%	6%	5%	5%	5%
TDM	3%	6%	3%	3%	3%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Using the above mode shares and trip rates, the non-school trips by mode have been projected. Table 8 summarizes the total trip generation by mode.

Table 8: Non-School Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	72%	1789	3265	5054	3596	2918	6515
Transit	20%	497	907	1404	999	811	1810
Active Transportation	5%	124	227	351	250	203	452
TDM	3%	75	136	211	150	122	271
Total	**100%**	**2485**	**4535**	**7020**	**4995**	**4053**	**9048**

Where applicable, pass-by and diverted link trips have been accounted for using the ITE Trip Generation Manual 11th Edition Vehicle Pass-by Weekday PM tables. As land use 822 (Strip Retail Plaza) does not have pass-by tables, and land use 820 (Shopping Centre) includes developments with GFAs well beyond what is considered by the subject development, the Vehicle Pass-by table for land use 821 (Shopping Plaza) was considered. From this table, the primary trip percentage was selected to understand the number of non-pass-by and non-diverted link trips generated by the retail land uses within the subject development lands. The average primary trip percentages for the PM peak period were taken from this table. It is noted that no pass-by or diverted link trips are expected in the AM peak period for retail land uses. For the residential land uses, a primary trip percentage has not been applied as they are unlikely to attract pass-by or diverted link trips. The primary trip percentage used for the retail land use in the PM peak period has been summarized in Table 9 as per the ITE Trip Generation Manual. The resulting reductions are shown in Table 10.

Table 9: Land Use Pass-by Rates

Land Use	Pass-by Rate	
	AM	PM
Strip Retail Plaza	-	38.92%
Shopping Plaza		
Shopping Center		

Table 10: Vehicle Primary Trip Reductions

Landowner	PM Peak Hour		
	In	Out	Total
Fieldgate	-114	-114	-228
River Thames	-8	-8	-16
DGB Trafalgar	-9	-9	-18
Mel-Oak North	-17	-17	-34
Trafalgar Road	-16	-16	-32
Mel-Oak	-16	-16	-32
ARGO Trafalgar	-28	-28	-55
Westerkirk	-205	-205	-410
Total	**-413**	**-413**	**-823**

Based on these vehicle primary trip reductions, the net new non-school total trip generation by mode has been developed and is shown in Table 11 below.

Table 11: Non-School Net New Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	72%	1789	3265	5054	3596	2918	6515
Primary Trip Reduction		-	-	-	*-413*	*-413*	*-823*
Net New Auto Driver		*1789*	*3265*	*5054*	*3183*	*2505*	*5692*
Transit	20%	497	907	1404	999	811	1810
Active Transportation	5%	124	227	351	250	203	452
TDM	3%	75	136	211	150	122	271
Total	**100%**	**2485**	**4535**	**7020**	**4582**	**3640**	**8225**

As shown above, the proposed development is anticipated to generate 5054 AM and 5692 PM net new non-school trip two-way peak-hour auto trips.

Elementary school trips are assumed to be internal to the development, consisting mostly of active transportation or parents dropping students off on their way to work. As such, trips generated from the elementary school will not be considered in the site trip assignment. The secondary school trips were assumed to be split as follows 80% external and 20% internal trips. The external trips are assumed to consist of vehicle trips traveling to and from outside of the development, while the internal trips are assumed to be represented by auto passenger or active transportation trips within the development. The resulting secondary school internal and external trip generation is summarized in Table 12 below.

Table 12: Secondary School Internal and External Trip Generation

Internal/External	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Internal	749	352	1101	147	158	305
External	187	89	276	37	40	77
Total	936	441	1377	184	198	382

As shown above, the secondary schools are anticipated to generate 1101 AM and 305 PM external two-way peak-hour auto trips.

Under these assumptions, the EM4 JC7 JC9 lands will generate the same two-way vehicle trips during the AM and PM peak hours in the 2031, 2036, and 2041 analysis horizons. These two-way vehicle trips are 6155 in the AM peak hour and 5997 in the PM peak hour.

5.1.2 Trip Distribution

To understand the travel patterns of the developments, the aggregated Transportation Tomorrow Survey (TTS) data for trips of all purposes in Oakville during AM and PM peak periods has been used as a reference. The trips to/from the north and east are larger as a large portion of the trips are destined to Toronto, York, and Peel Region. The percentages of trips to each direction are kept constant between the 2031, 2036 and 2041 horizons. Table 13 summarizes the distribution.

Table 13: 2016 TTS Oakville Trip Distribution

To/From	Percent of Trips
North	15%
South	40%
East	30%
West	15%
Total	100%

5.1.3 Trip Assignment

Using the distribution outlined above, turning movement splits, intersection and access turning restrictions, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. The site trip generation of subject development based on the auto driver volumes discussed above are summarized in Figure 73, Figure 74, Figure 75, and Figure 76.

Figure 73: Site Trip Generation – Section A

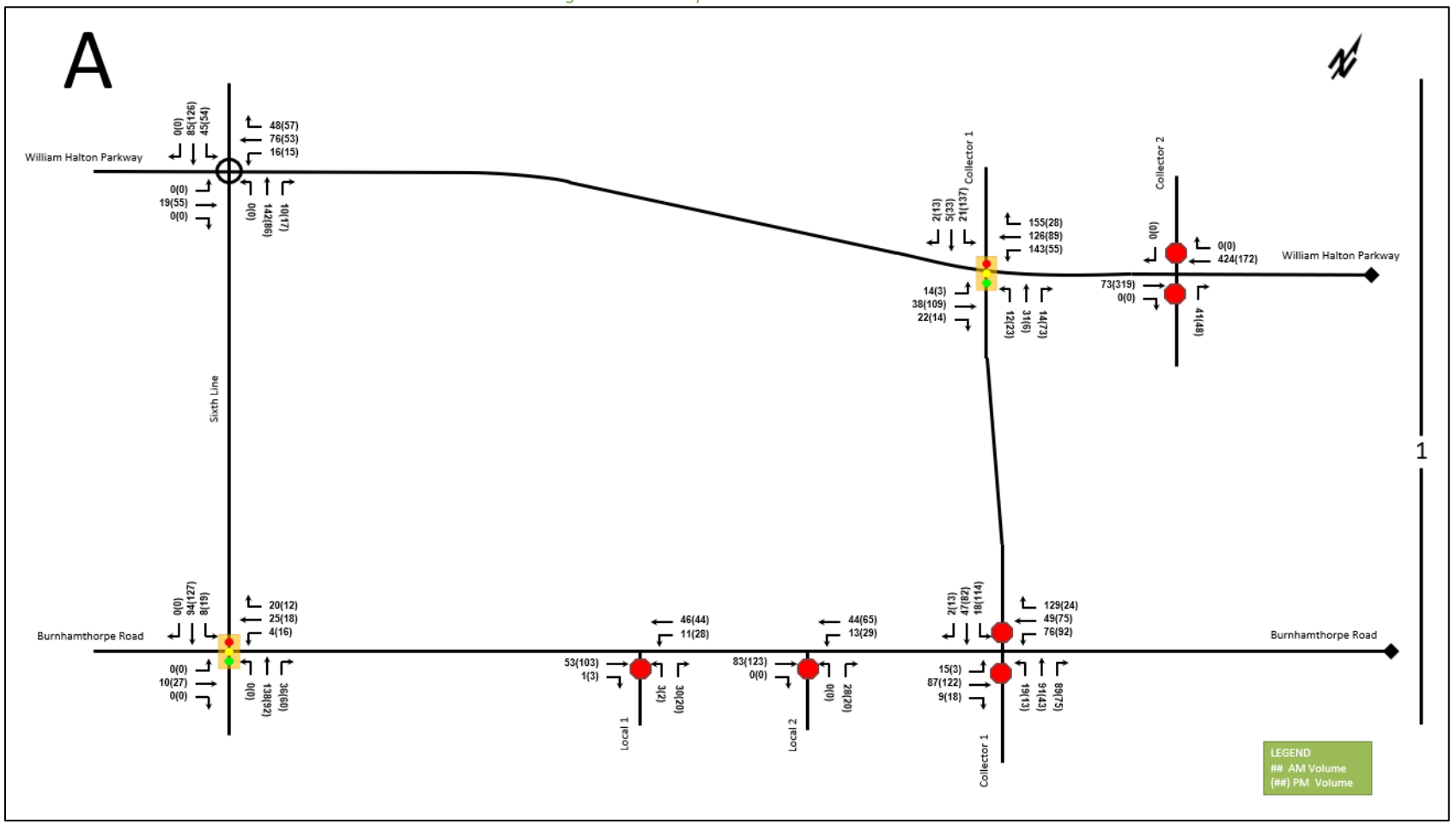


Figure 74: Site Trip Generation – Section B

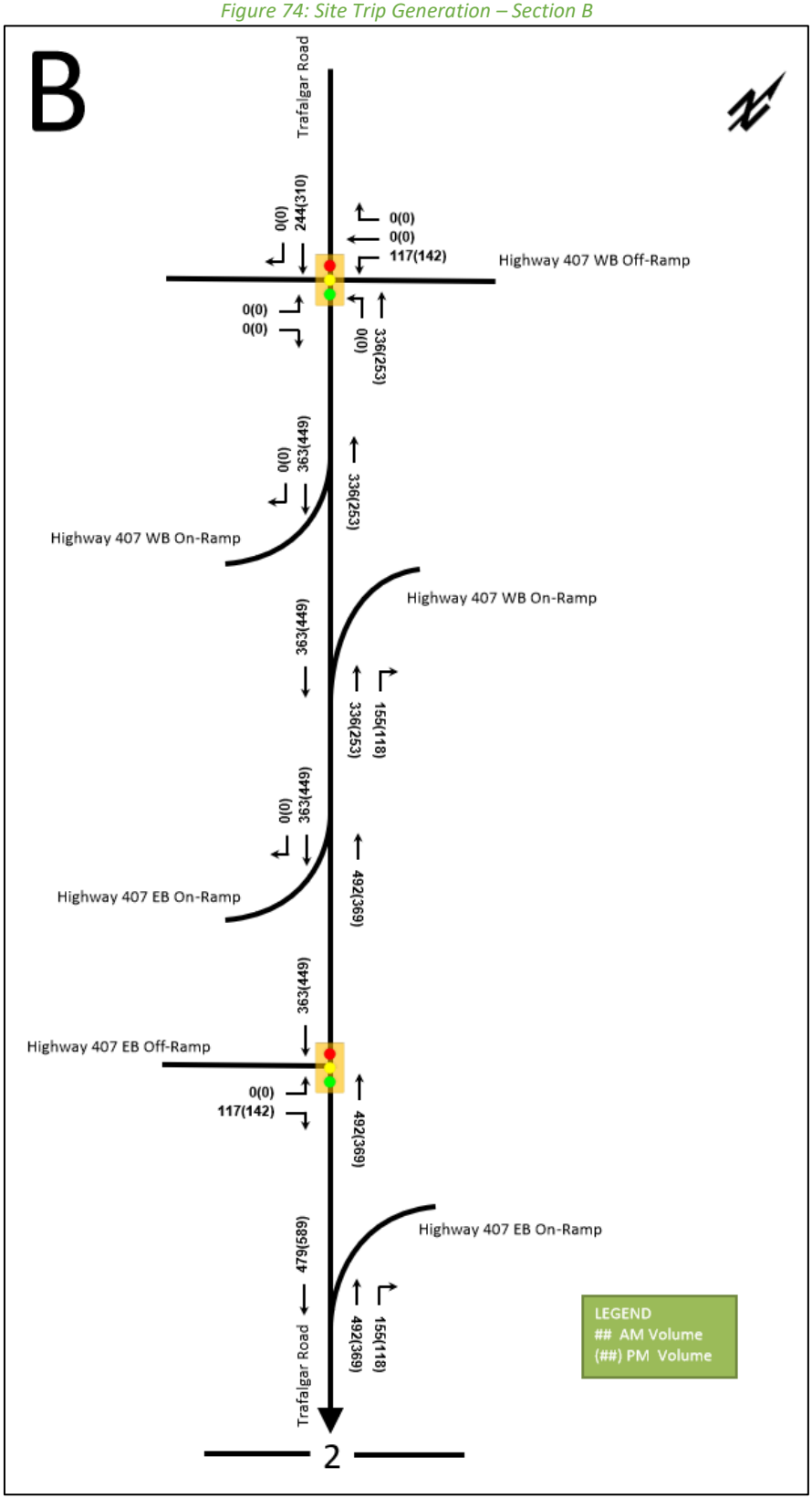


Figure 75: Site Trip Generation – Section C

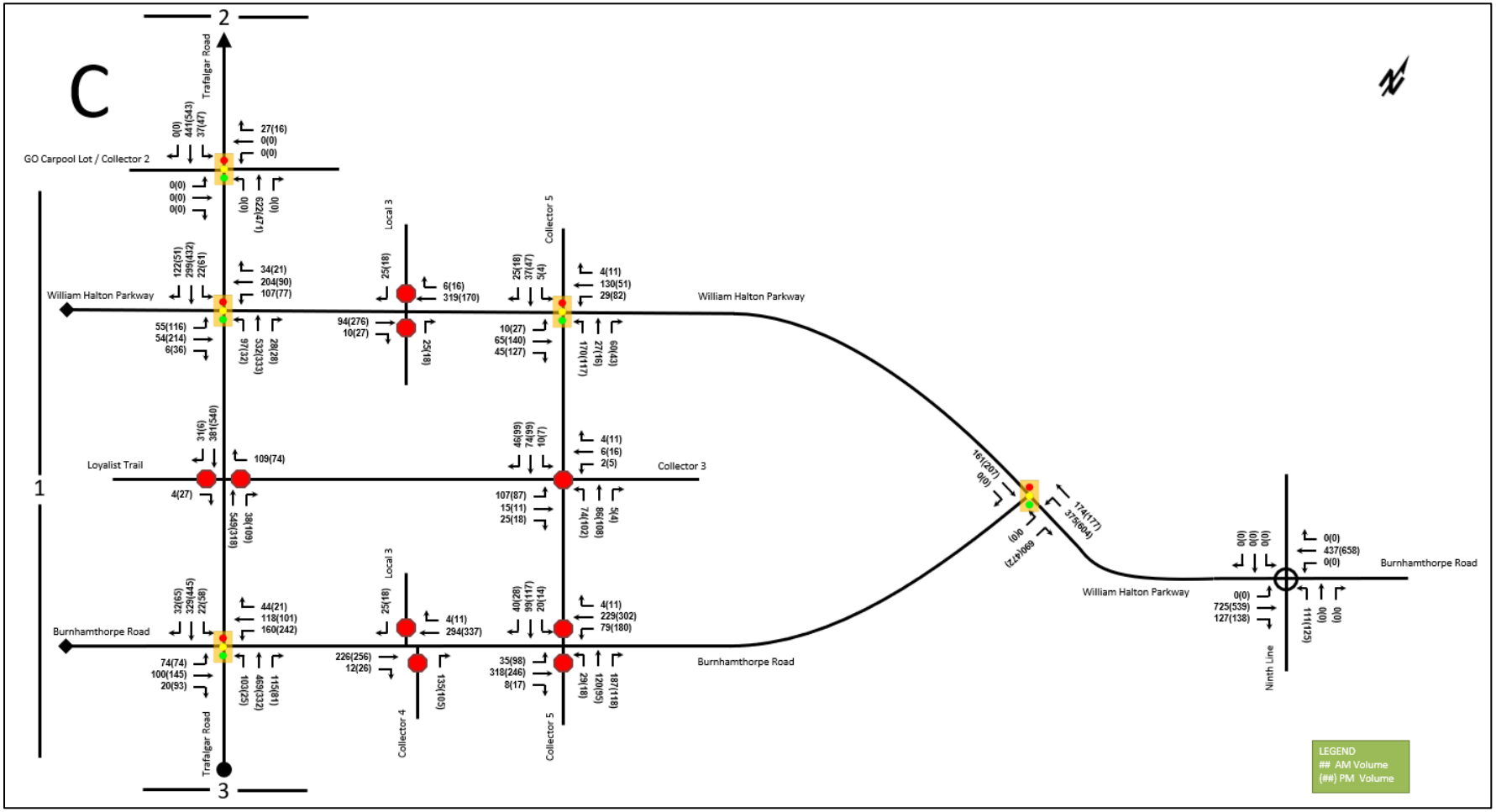
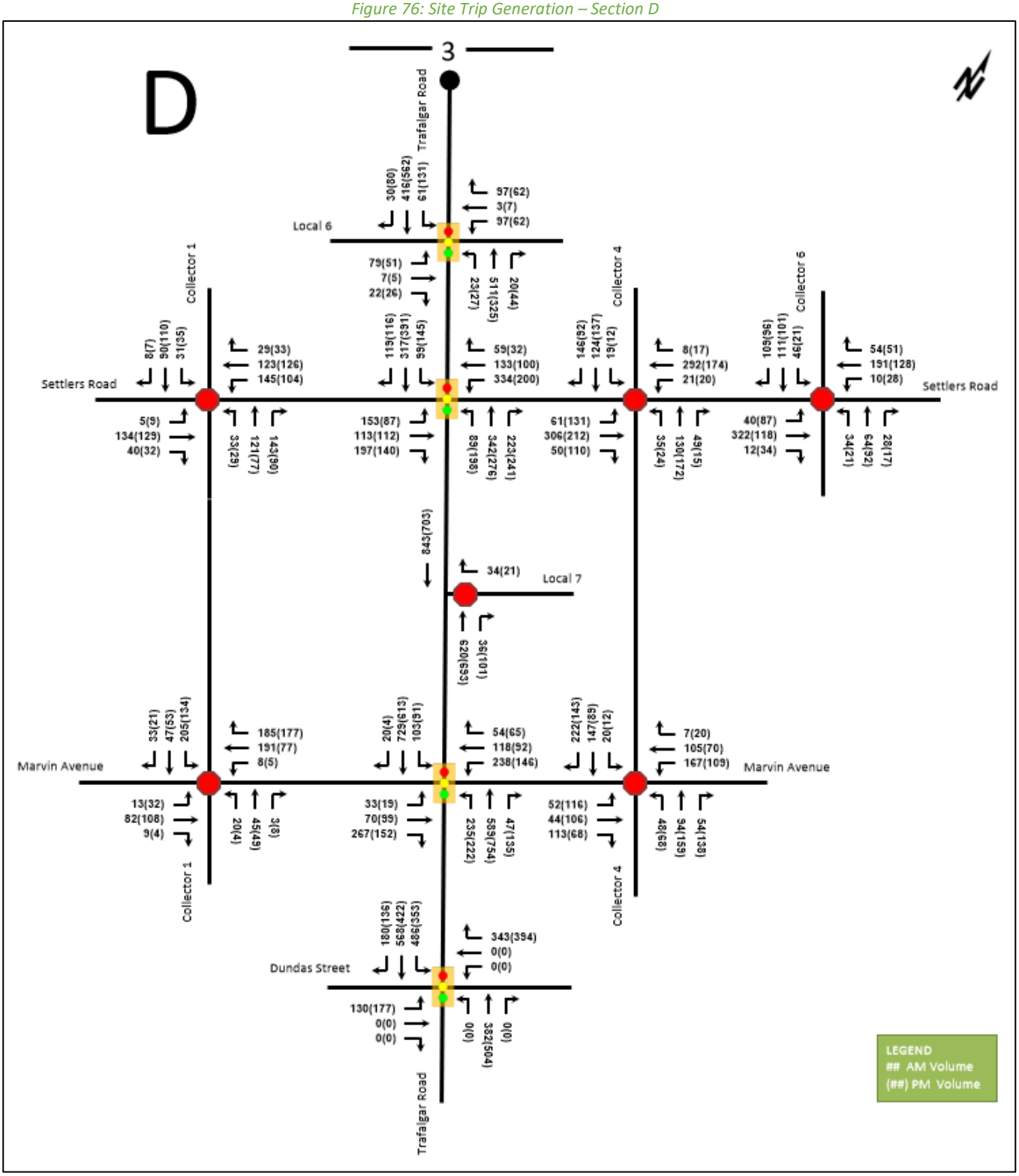


Figure 76: Site Trip Generation – Section D



5.1.4 Future Total Travel Demands

The site generated vehicle traffic has been combined with the 2031, 2036, and 2041 future background traffic volumes to estimate the future total traffic volumes. Figure 77, Figure 78, Figure 79, and Figure 80 illustrate the 2031 future total traffic volumes. Figure 81, Figure 82, Figure 83, and Figure 84 illustrate the 2036 future total traffic volumes. Figure 85, Figure 86, Figure 87, and Figure 88 illustrate the 2041 future total traffic volumes.

Figure 77: 2031 Future Total Traffic Volumes – Section A

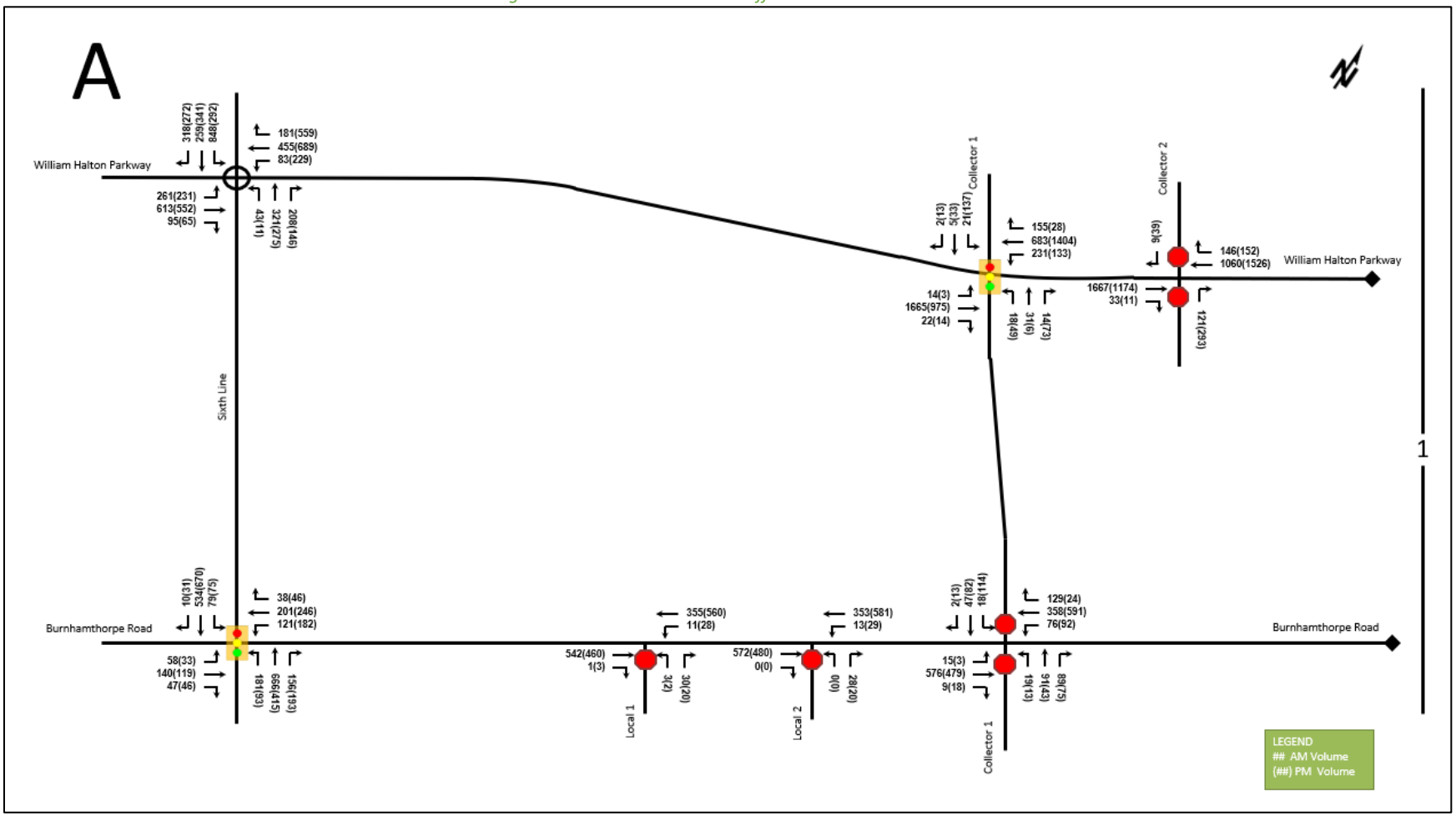


Figure 78: 2031 Future Total Traffic Volumes – Section B

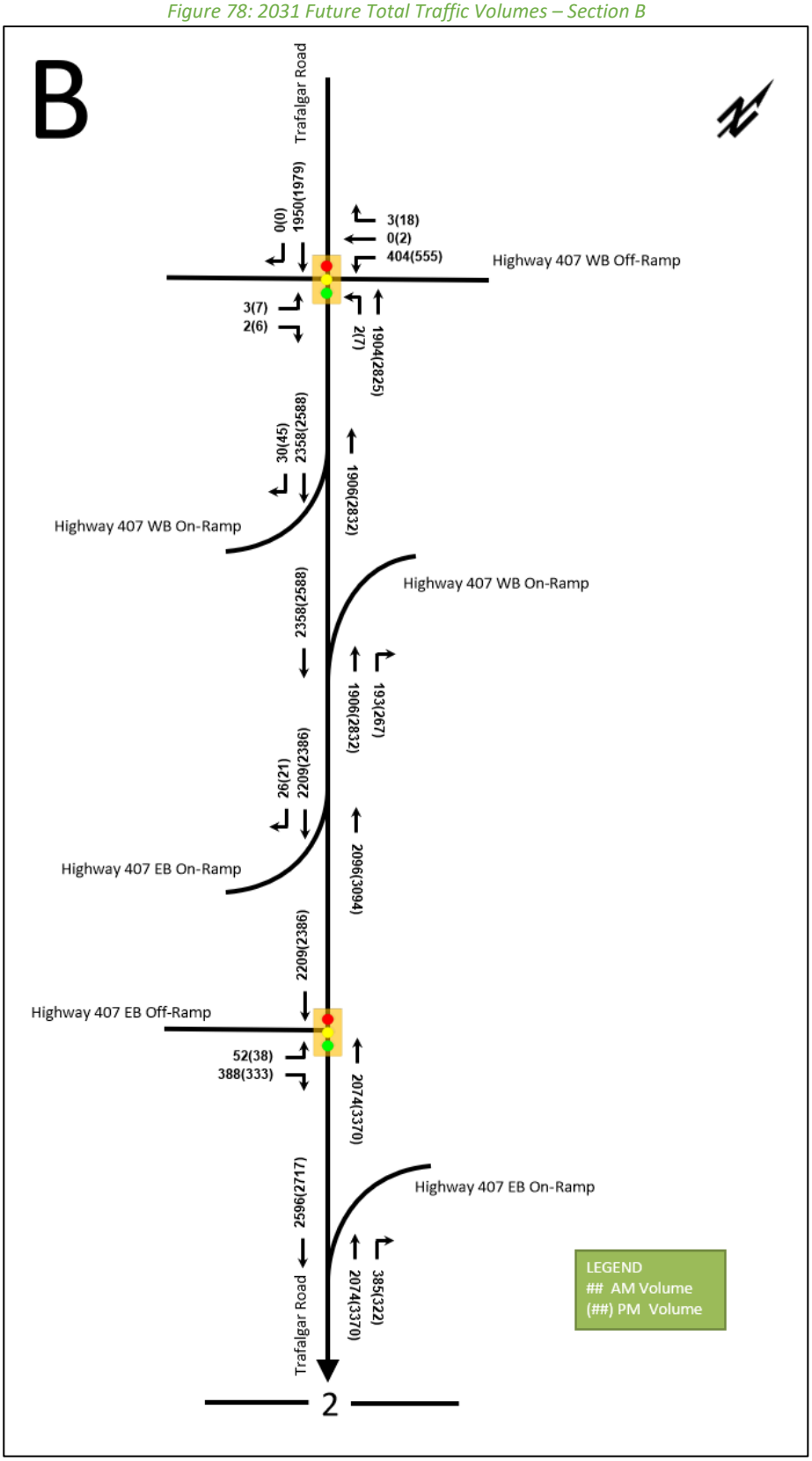


Figure 79: 2031 Future Total Traffic Volumes – Section C

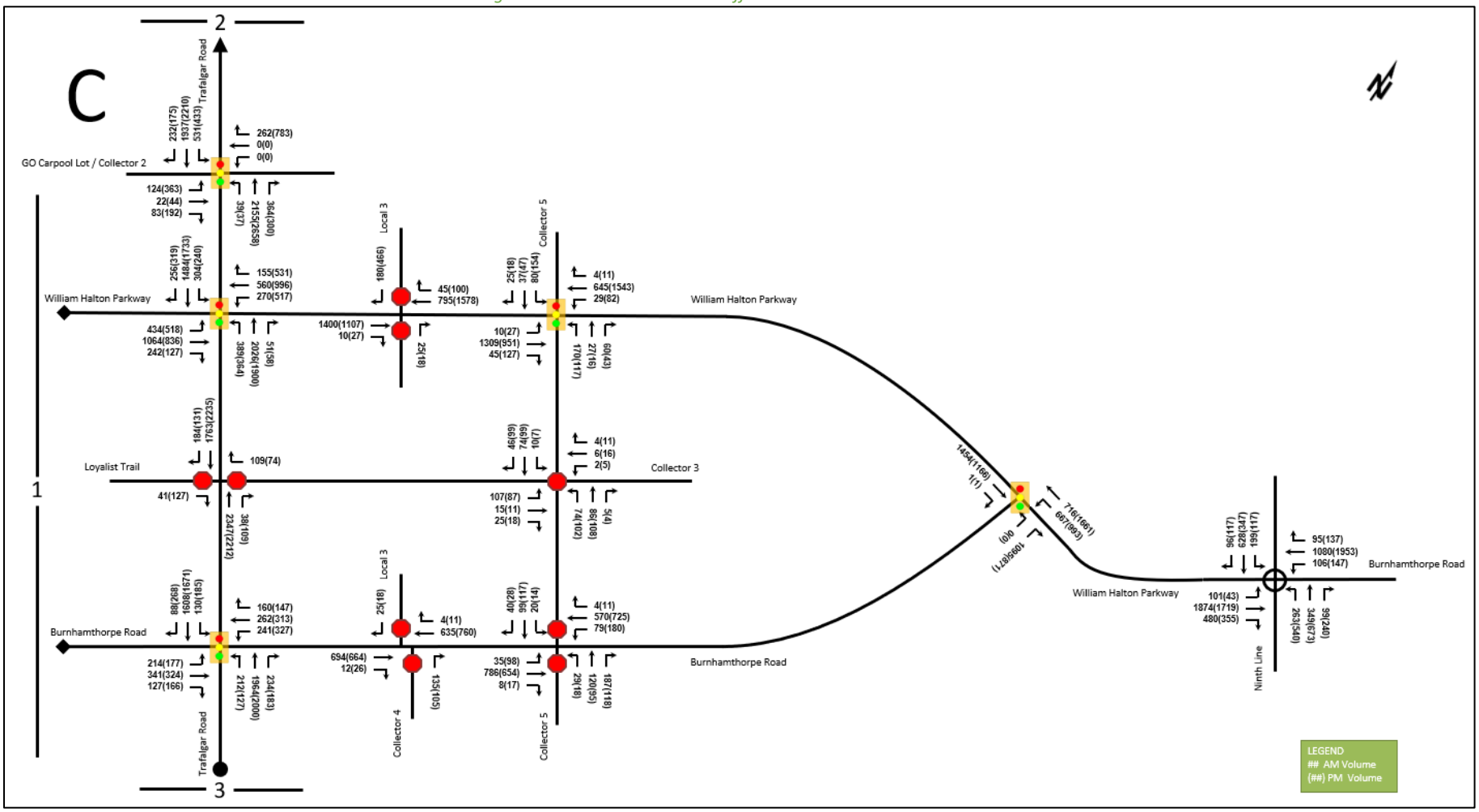


Figure 80: 2031 Future Total Traffic Volumes – Section D

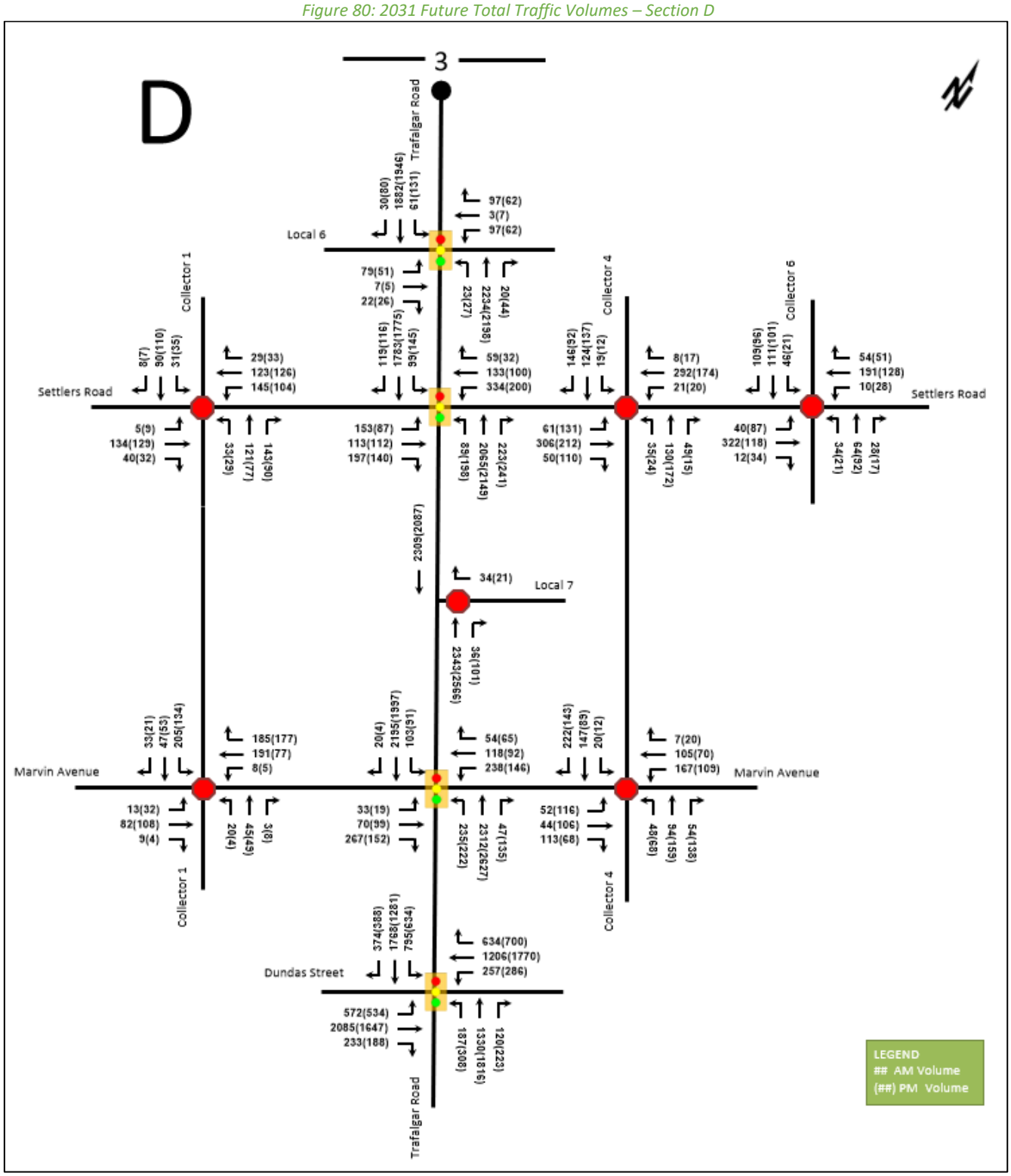


Figure 81: 2036 Future Total Traffic Volumes

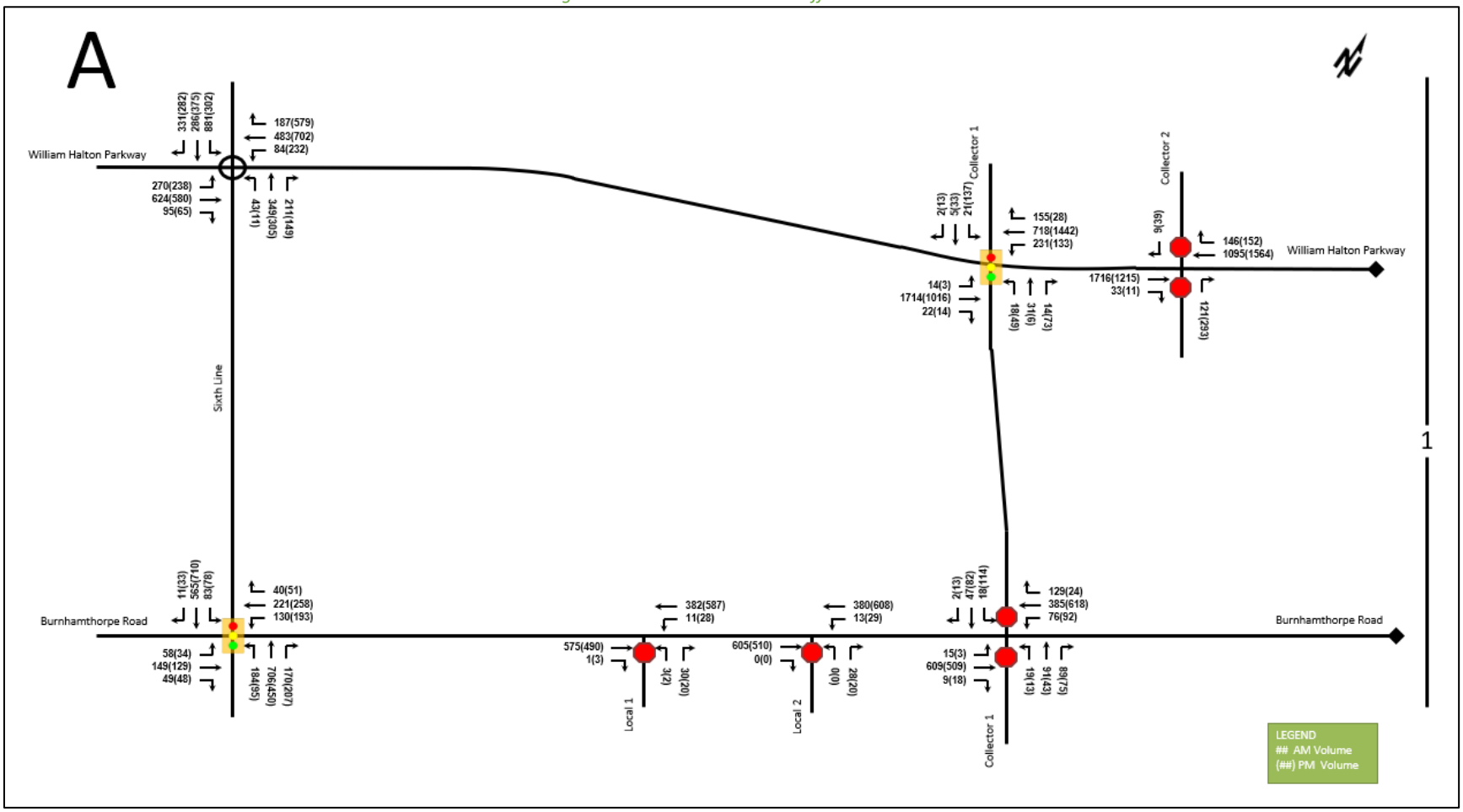


Figure 82: 2036 Future Total Traffic Volumes – Section B

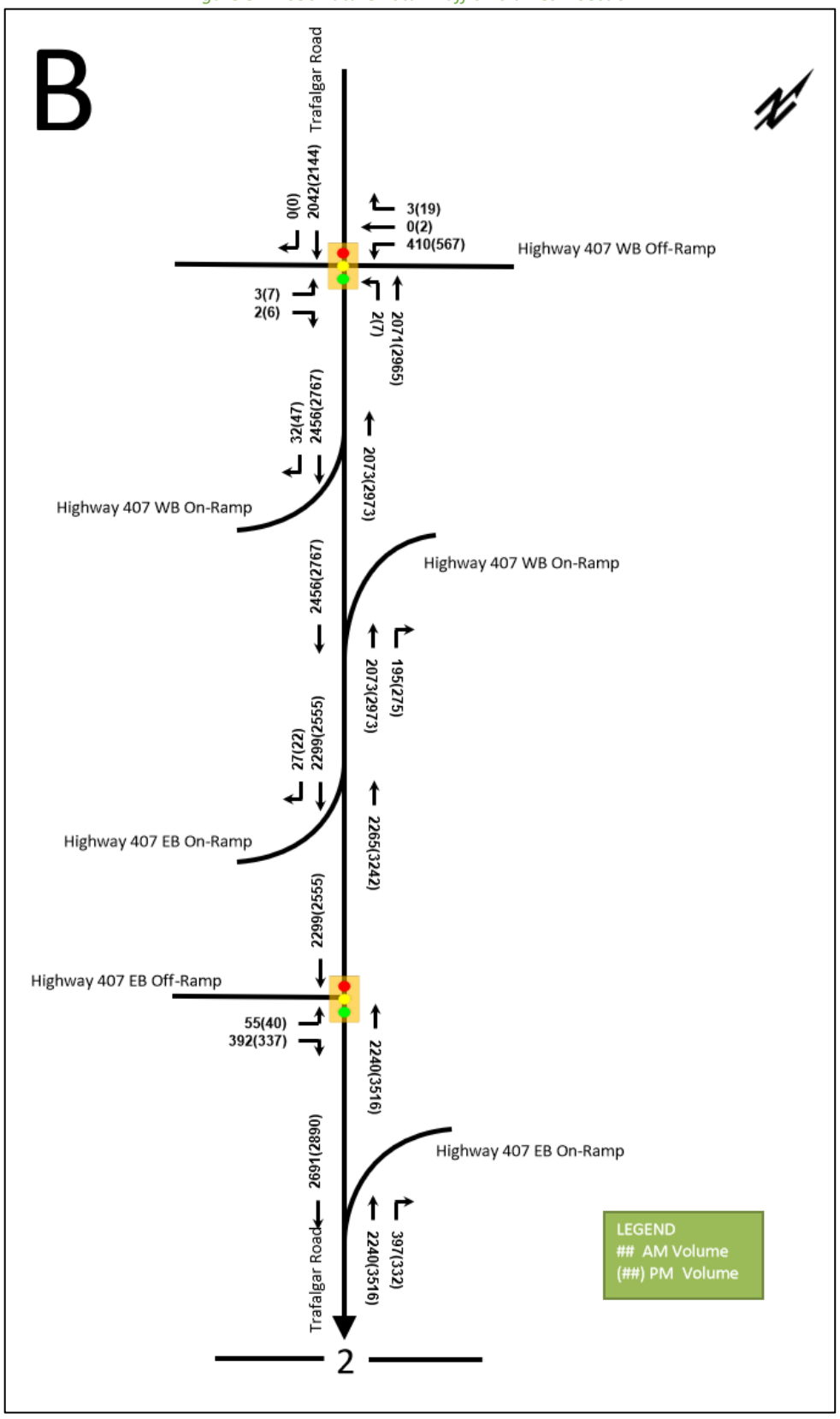


Figure 83: 2036 Future Total Traffic Volumes – Section C

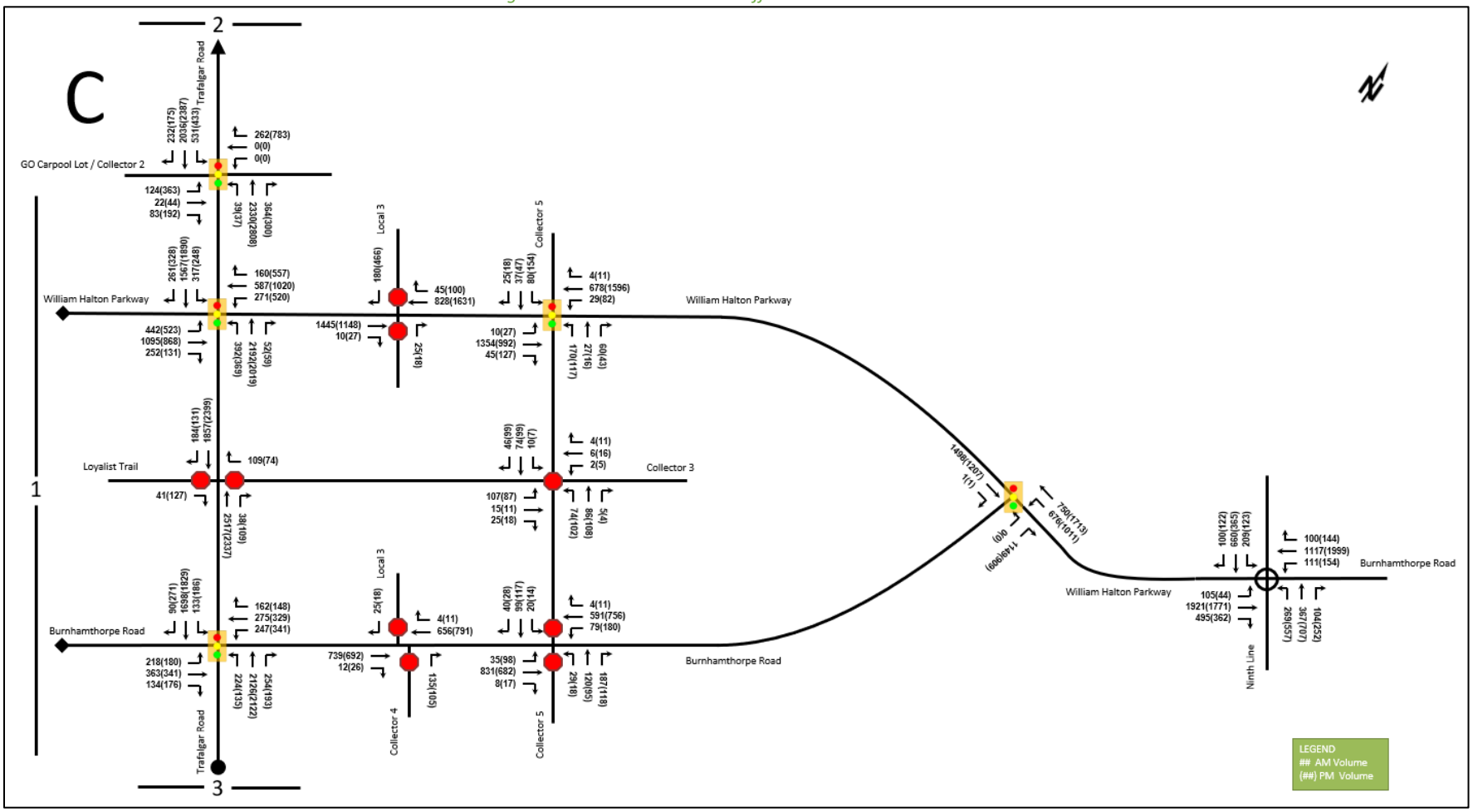


Figure 84: 2036 Future Total Traffic Volumes – Section D

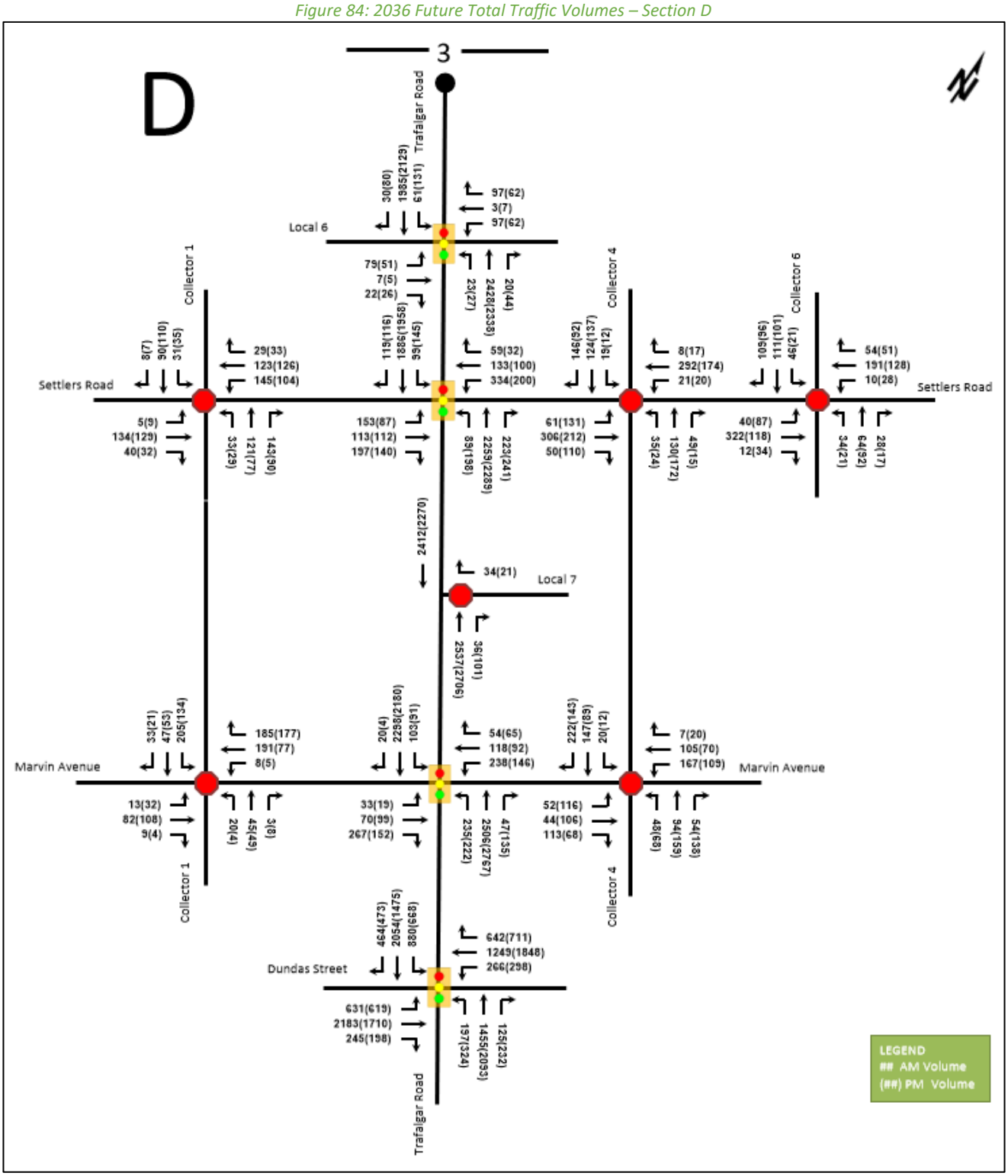


Figure 85: 2041 Future Total Traffic Volumes – Section A

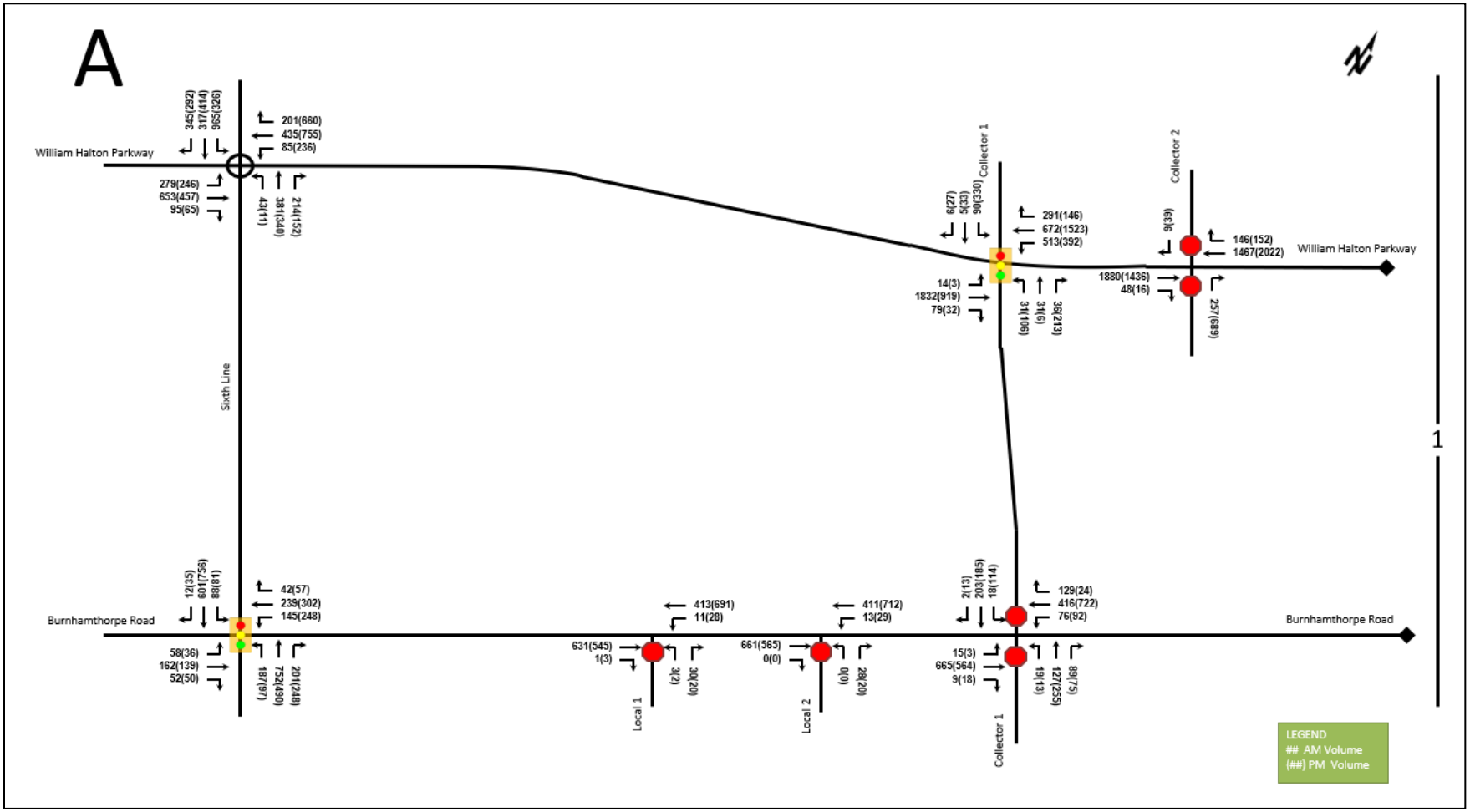


Figure 86: 2041 Future Total Traffic Volumes – Section B

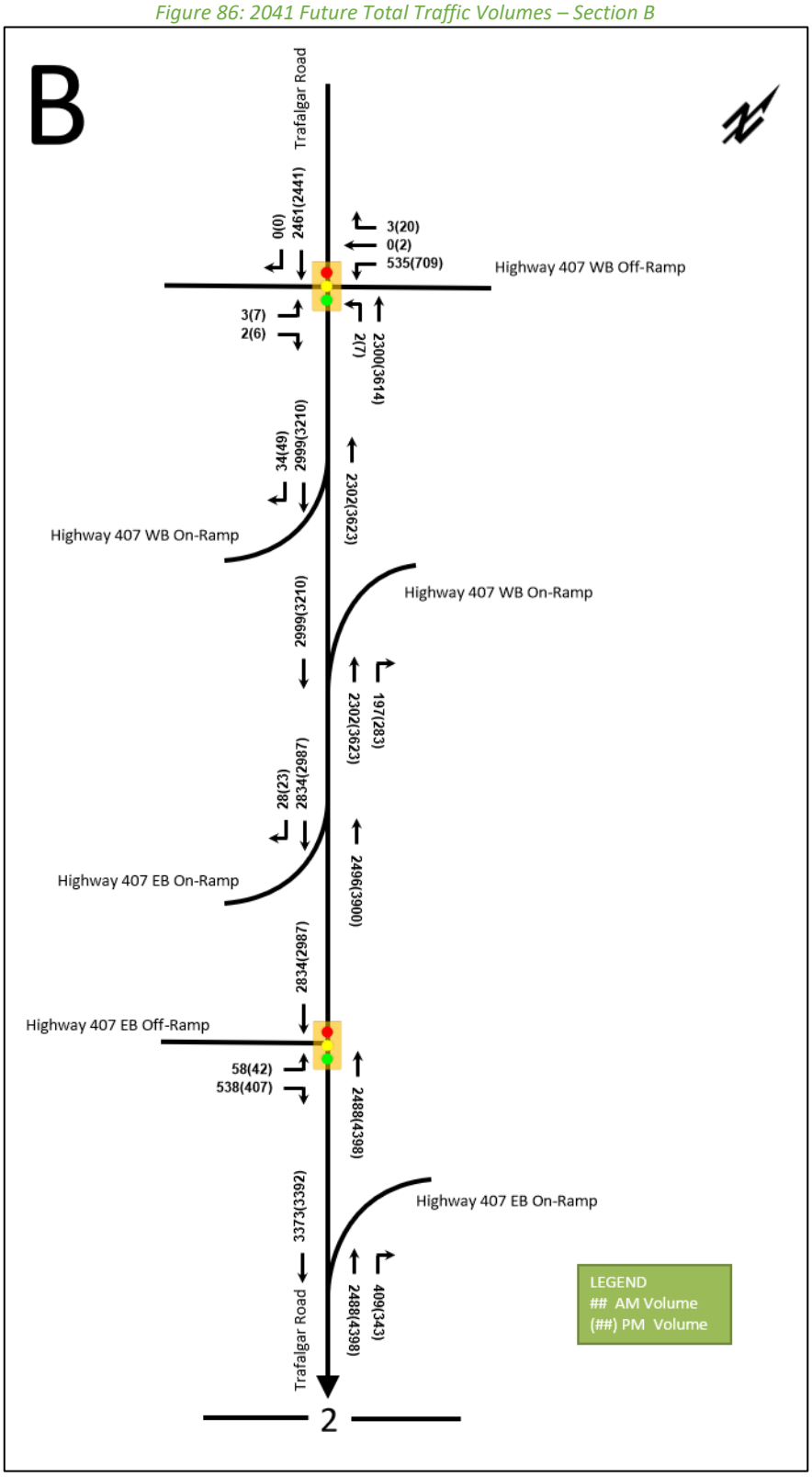


Figure 87: 2041 Future Total Traffic Volumes – Section C

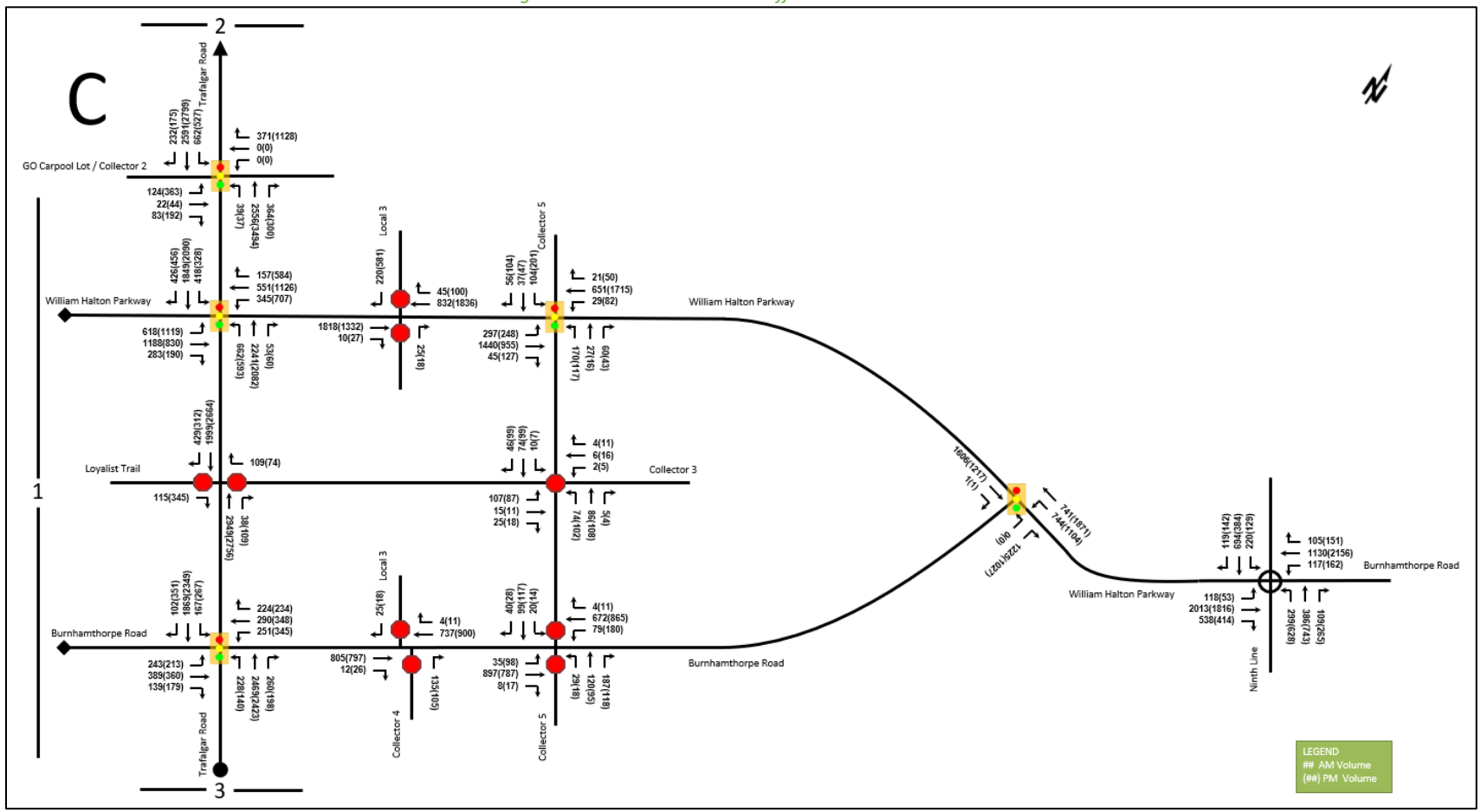
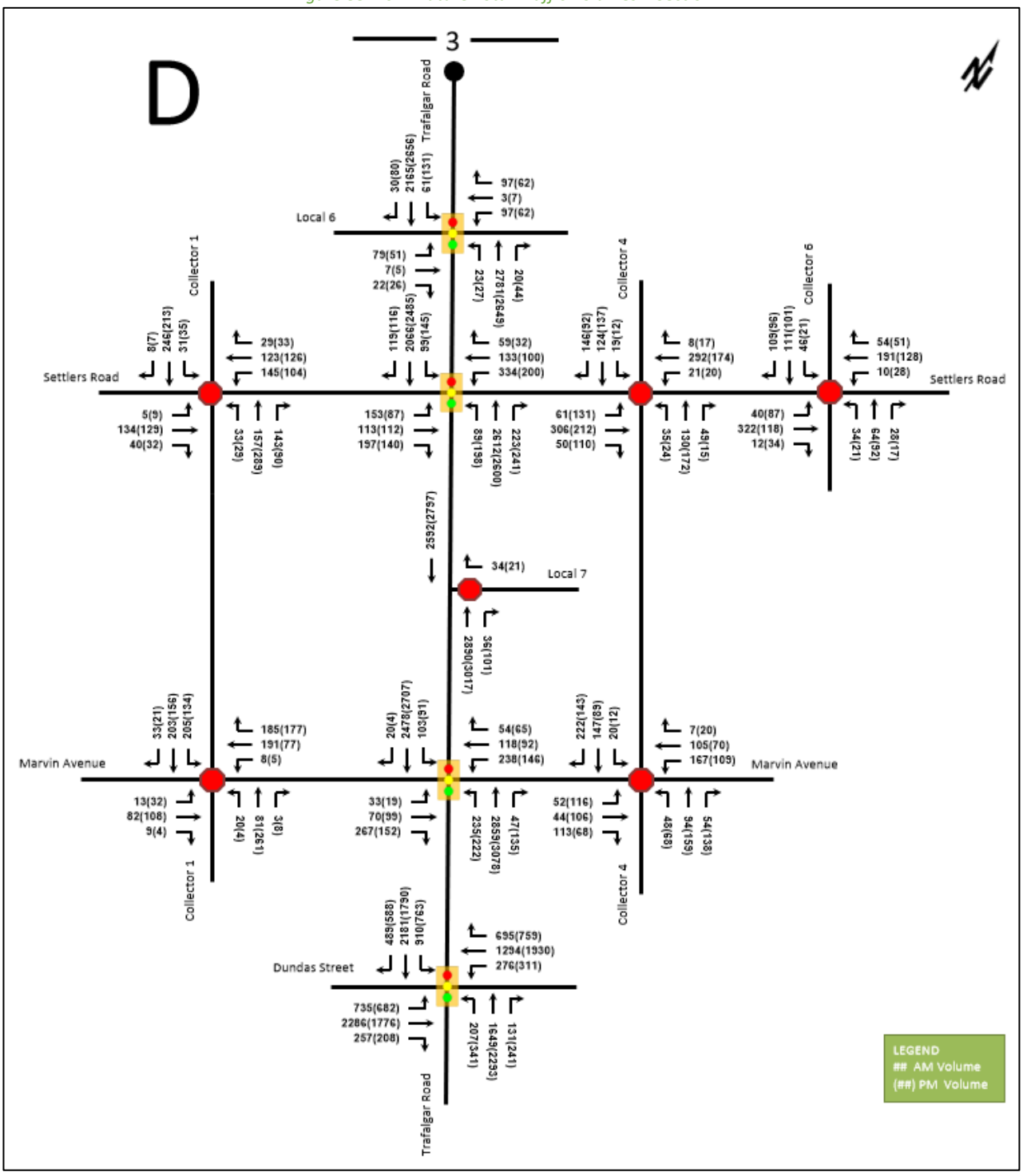


Figure 88: 2041 Future Total Traffic Volumes – Section D



5.1.5 Saturday Analysis

5.1.5.1 Development Generated Travel Demand

Site statistics for each landowner as summarized in Table 3 of Section 5.1.1 have been considered within the Saturday analysis. The ITE Trip Generation Manual 11th Edition has been reviewed for appropriate Saturday trip generation rates and rate equations for each of the proposed land uses. The ITE Saturday vehicle trip generation rates and equations are summarized in Table 14. It is noted that elementary and high school land uses have not been included in the Saturday analysis, as schools are not expected to generate significant vehicle traffic on Saturdays.

Table 14: ITE Saturday Trip Generation Vehicle Trip Rates and Rate Equations

Land Use	ITE LUC	Peak Hour	Average Rate	Fitted Curve Equation	Method
Single Family Attached	215	Sat	0.57	LN(T)=0.82LN(X)+0.43	Fitted Curve
Multifamily Housing (Mid-Rise)	221	Sat	0.39	LN(T)=1.00LN(X)-0.91	Fitted Curve
Multifamily Housing (High-Rise)	222	Sat	0.36	T=0.30(X)+30.34	Fitted Curve
General Office Building	710	Sat	0.53	N/A	Average Rate
Shopping Centre (>150k)	820	Sat	4.4	Ln(T)=0.76Ln(X)+3.00	Fitted Curve
Shopping Plaza (40-150k)	821	Sat	6.22	T=7.75(X)-98.93	Average Rate
Strip Retail Plaza (<40k)	822	Sat	6.57	N/A	Average Rate

Similar to the weekday AM and PM analysis, the fitted curve equation was selected where 20 or more data points were provided and the R^2 values being greater than 0.75 were met, based on the ITE Trip Generation Manual. Where these criteria were not met or a fitted curve equation was not provided, the average rate was selected. Using the above vehicle trip rates, the total Saturday trip generation for the development is summarized in Table 15.

Table 15: Total Saturday Person Peak Hour Trip Generation

Landowner	SAT Peak Hour		
	In	Out	Total
Star Oak	180	154	334
Oakville Woods	63	68	131
Fieldgate	341	319	660
River Thames	211	165	376
DGB Trafalgar	223	172	395
Mel-Oak North	337	261	598
Trafalgar Road	337	279	616
Mel-Oak	250	195	445
ARGO Trafalgar	794	625	1419
Westerkirk	1579	1377	2956
Tribaden	829	643	1472
Total	**4867**	**3977**	**8844**

The mode shares used for the 2031, 2036, and 2041 Saturday analysis horizons are consistent with those applied to the AM and PM peak period analysis. Under these assumptions, the EM4 JC7 JC9 lands will generate the same two-way vehicle trips during the AM, PM, and Saturday peak hours in the 2031, 2036, and 2041 analysis horizons. Mode share percentages used within the Saturday analysis are summarized in Section 5.1.1. Using those mode shares and above trip rates, the trips by mode have been projected and are summarized in Table 16 below.

Table 16: Trip Generation by Mode – Saturday Peak

Travel Mode	Mode Share	SAT Peak Hour		
		In	Out	Total
Auto Driver	72%	3204	2685	5889
Transit	20%	888	748	1637
Active Transportation	5%	222	185	408
TDM	3%	135	113	247
Total	**100%**	**5144**	**4258**	**9402**

Where applicable, pass-by and diverted link trips have been accounted for. The ITE Trip Generation Manual 11th Edition Vehicle Pass-by Saturday tables have not been used as only Saturday data is only available for land use 821 (Shopping Plaza), however only one site is included in the data set. As such, the Vehicle Pass-by Saturday tables from the ITE Trip Generation Manual 3rd Edition using the same methodology applied for the weekday PM analysis have been used. As land uses 821 (Shopping Plaza) and 822 (Strip Retail Plaza) do not have pass-by tables provided, the Vehicle Pass-by table for the Saturday peak period for land use 820 (Shopping Centre) was considered. From this table, the primary trip percentage was selected to understand the number of non-pass-by and non-diverted link trips generated by the retail land uses within the subject development lands. For the residential land uses, a primary trip percentage has not been applied as they are unlikely to attract pass-by or diverted link trips. The primary trip percentage used for the retail land use in the Saturday peak period has been summarized in Table 17 as per the ITE Trip Generation Manual. The resulting reductions are shown in Table 18.

Table 17: Land Use Saturday Pass-by Rates

Land Use	Pass-by Rate
	Sat
Strip Retail Plaza	38.50%
Shopping Plaza	
Shopping Center	

Table 18: Saturday Pass-by Reductions

Landowner	Sat Peak Hour		
	In	Out	Total
Fieldgate	-138	-138	-276
River Thames	-6	-6	-12
DGB Trafalgar	-6	-6	-12
Mel-Oak North	-11	-11	-22
Trafalgar Road	-13	-13	-26
Mel-Oak	-13	-13	-26
ARGO Trafalgar	-29	-29	-57
Westerkirk	-250	-250	-500
Total	**-466**	**-466**	**-927**

Based on these vehicle primary trip reductions, the net new trip generation by mode has been developed and is shown in Table 16 below.

Table 19: Saturday Trip Generation by Mode

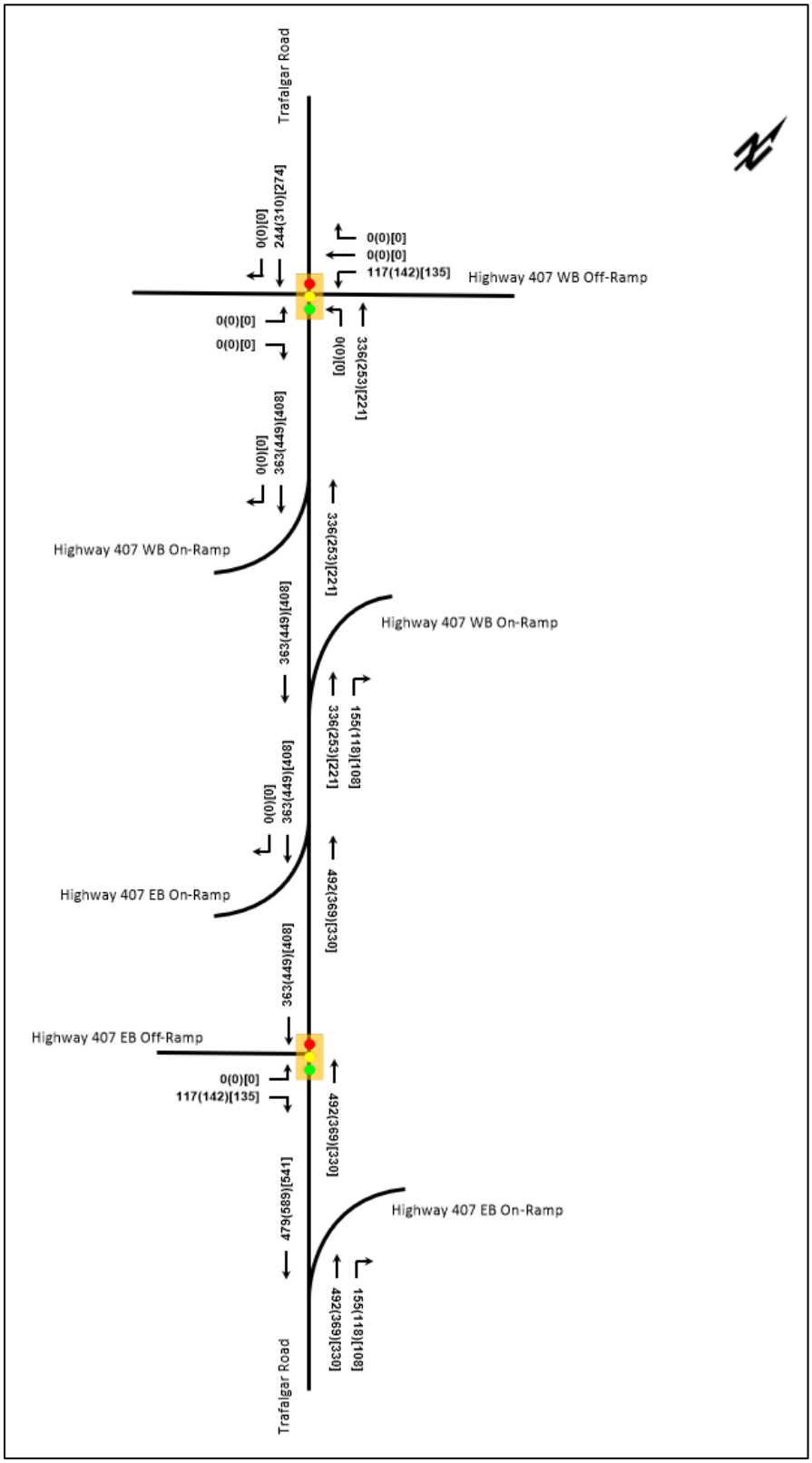
Travel Mode	Mode Share	SAT Peak Hour		
		In	Out	Total
Auto Driver	72%	3204	2685	5889
Primary Trip Reduction		*-466*	*-466*	*-927*
Net New Auto Driver		*2738*	*2219*	*4962*
Transit	20%	888	748	1637
Active Transportation	5%	222	185	408
TDM	3%	135	113	247
Total	100%	**4678**	**3792**	**8475**

As shown above, the proposed development is anticipated to generate 4962 net new Saturday external two-way peak hour auto trips. It is noted that this is less than the net new AM and PM external two-way peak hour auto trips shown to be generated by the subject development lands. As the collected Saturday intersection turning movement count volumes are observed to be generally lower than the AM and PM turning movement count volumes at the intersections where Saturday data was collected, the AM and PM peak periods selected for analysis at all Study Area intersections are deemed appropriate. Furthermore, as Saturday peak period analysis is not typically used to design and plan for future roadway and intersection needs, while the intersections requested to be analyzed during the Saturday peak period by MTO staff have been analyzed using Synchro software within this report, no other Study Area intersections have been analyzed during the Saturday peak period.

The travel patterns for the Saturday analysis are assumed to follow the same distribution applied for the weekday AM and PM peak periods. The trip distribution derived from the aggregated Transportation Tomorrow Survey (TTS) data has been discussed and summarized in Table 13 of Section 5.1.2. The percentages of trips to each direction are kept constant between the 2031, 2036 and 2041 horizons.

Using the distribution discussed, the Saturday trips generated by the site have been assigned to the Study Area road network based on the auto driver volumes discussed above and is summarized in Figure 89.

Figure 89: Site Saturday Trip Generation



The site generated Saturday vehicle traffic has been combined with the 2031, 2036, and 2041 future background traffic volumes to estimate the future total traffic volumes. Figure 90, Figure 91, and Figure 92 illustrate the 2031, 2036, and 2041 future total Saturday traffic volumes, respectively.

Figure 90: 2031 Future Total Saturday Traffic Volumes

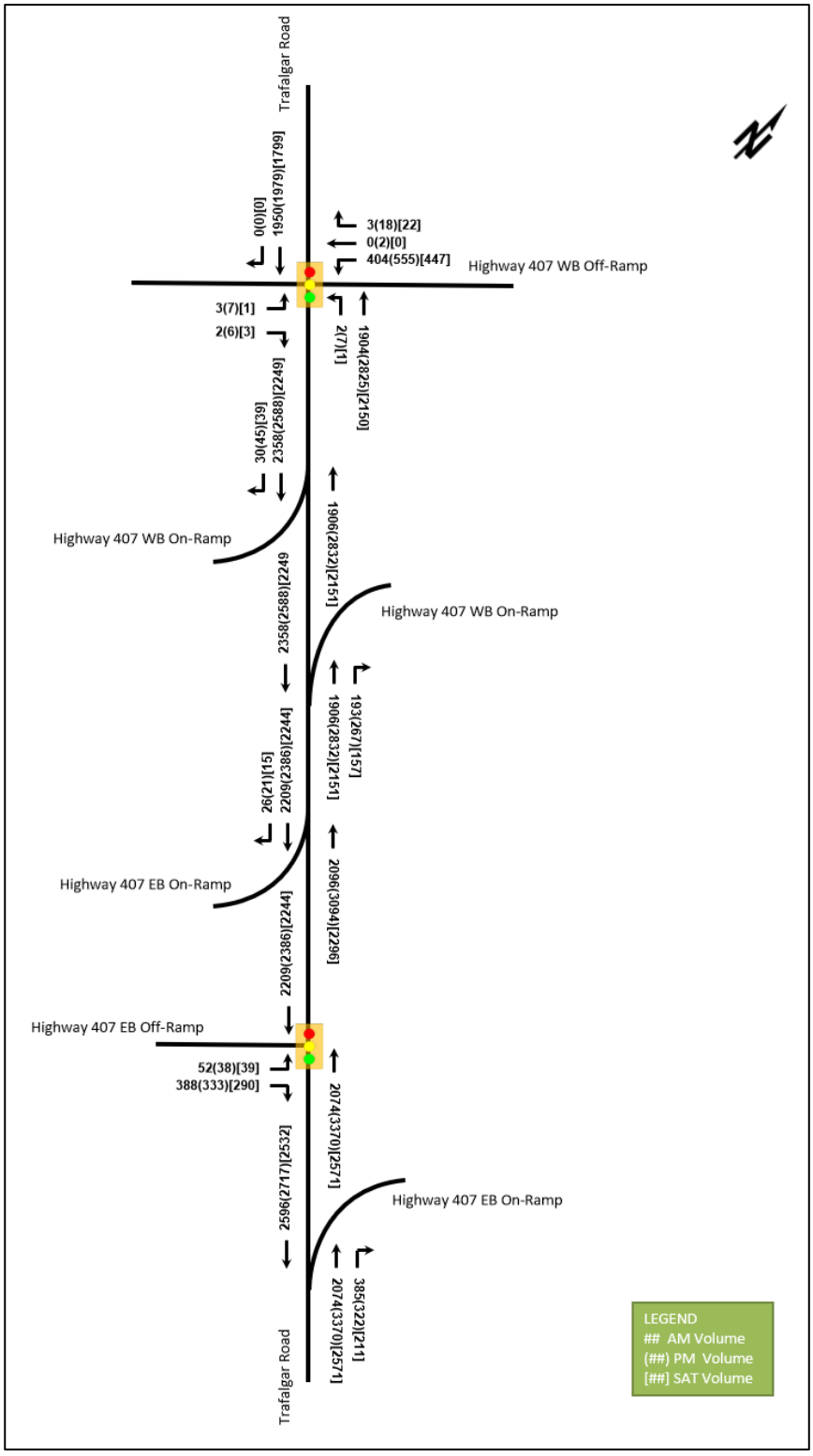


Figure 91: 2036 Future Total Saturday Traffic Volumes

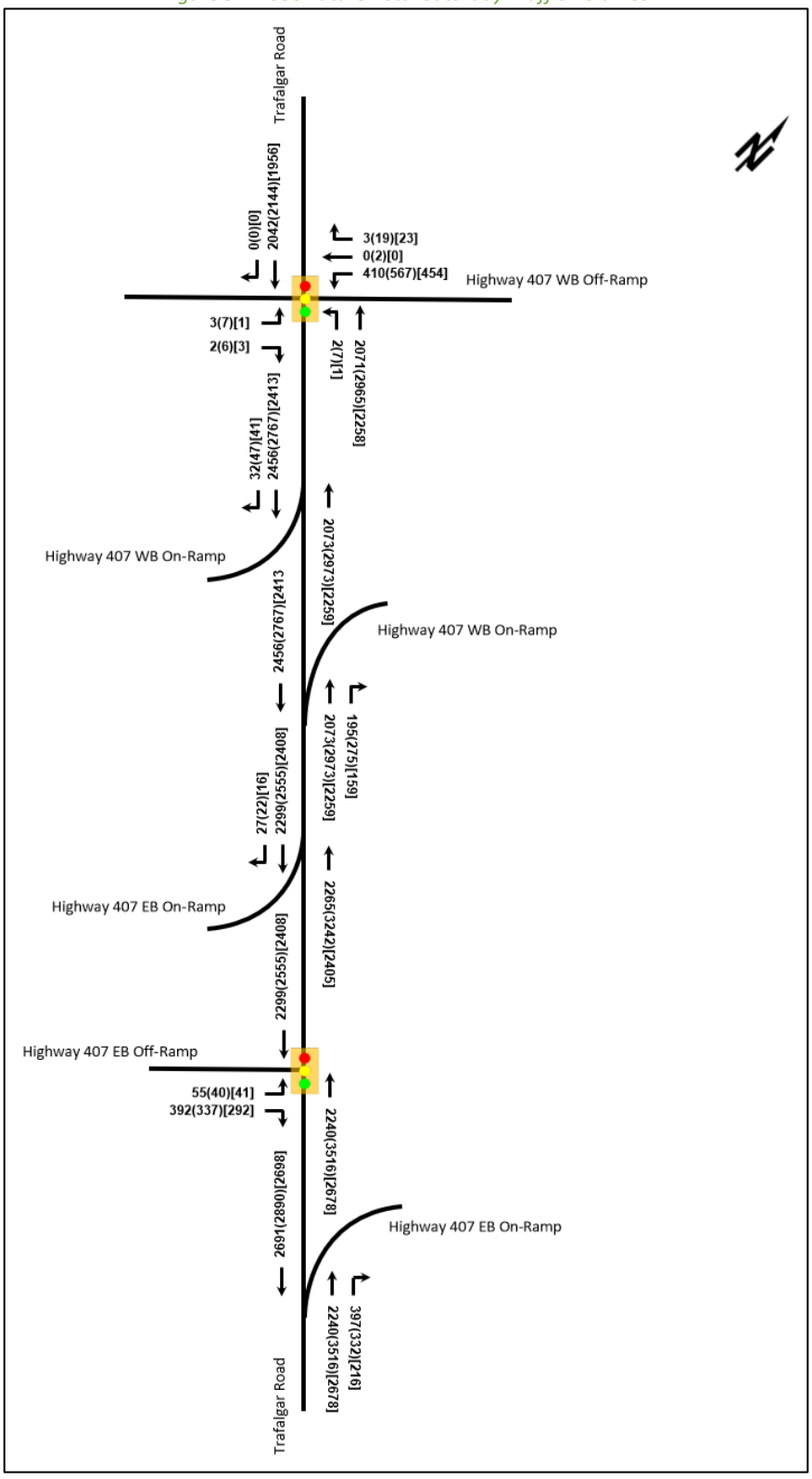
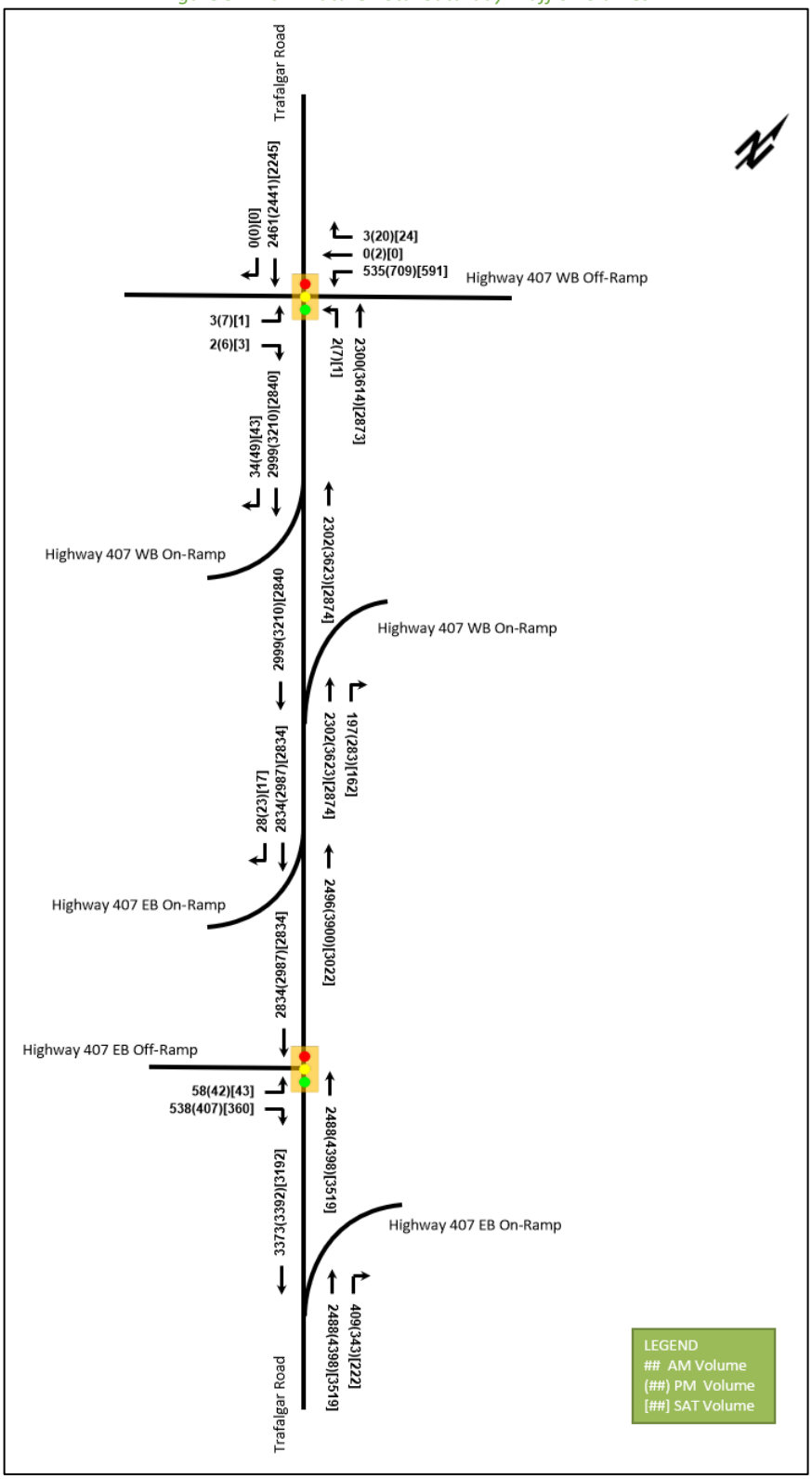


Figure 92: 2041 Future Total Saturday Traffic Volumes



6 Collector Road Network Assessment

Information on collector roads within the proposed development area and Study Area is summarized in Table 20 below. As Avenue/Transit Corridors and Connector/Transit Corridors function as collector roads within North Oakville, these roads have been referred to as collector roads for simplicity within this study.

Table 20: Study Area Collector Road Review

Collector Road	Direction	Secondary Plan Right-of-way
Collector 1	North-South	24
Collector 2		24
Collector 4		24
Collector 5		24
Collector 6		24/19
Collector 3	East-West	24
Settlers Road		24
Marvin Avenue		19

As discussed above, areas within the subject development area east and west of Trafalgar Road are designated as "Urban Core Areas". Within the Urban Core Area, the Avenue/Transit corridor roadways are identified as having the following 24-metre right-of-way cross-section and the Connector/Transit corridor roadways are identified as having the following 19-metre right-of-way cross-section within the North Oakville Urban Design and Open Space Guidelines (2009). The Urban Core Avenue/Transit corridor cross-section is shown in Figure 93 and the Urban Core Connector/Transit corridor cross-section is shown in Figure 94.

Figure 93: Urban Core 24-metre Avenue/Transit Corridor Cross-section

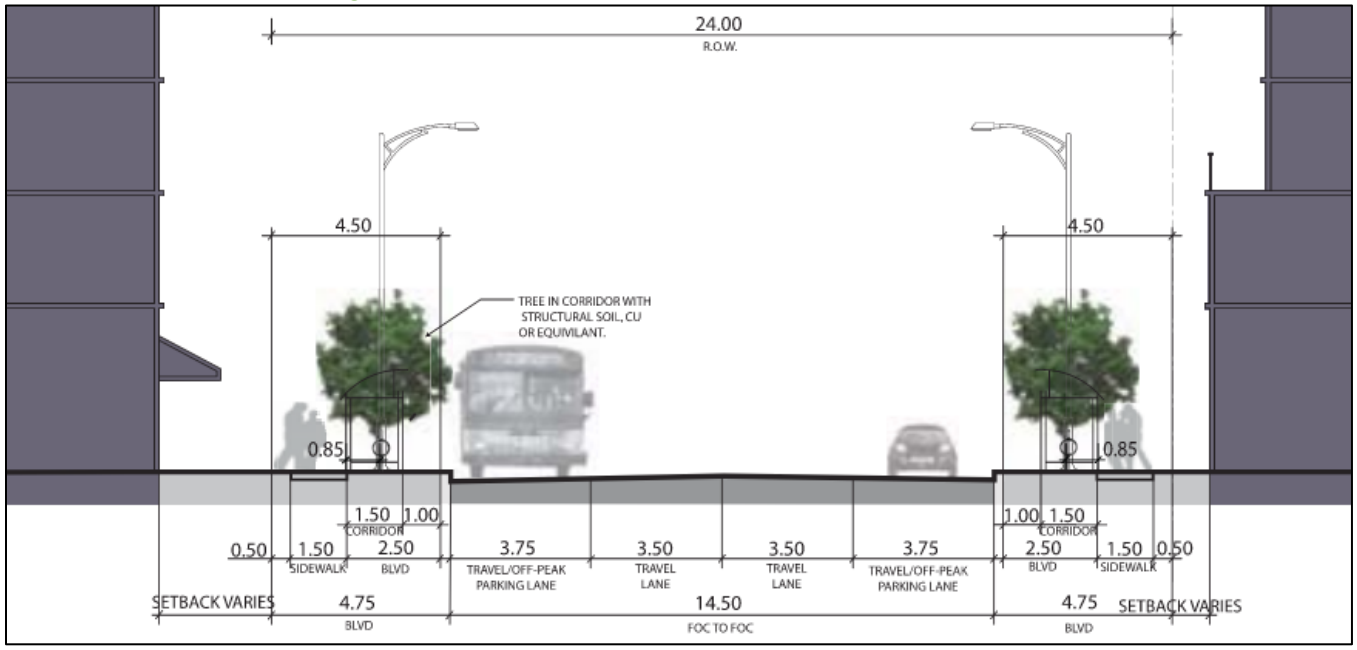
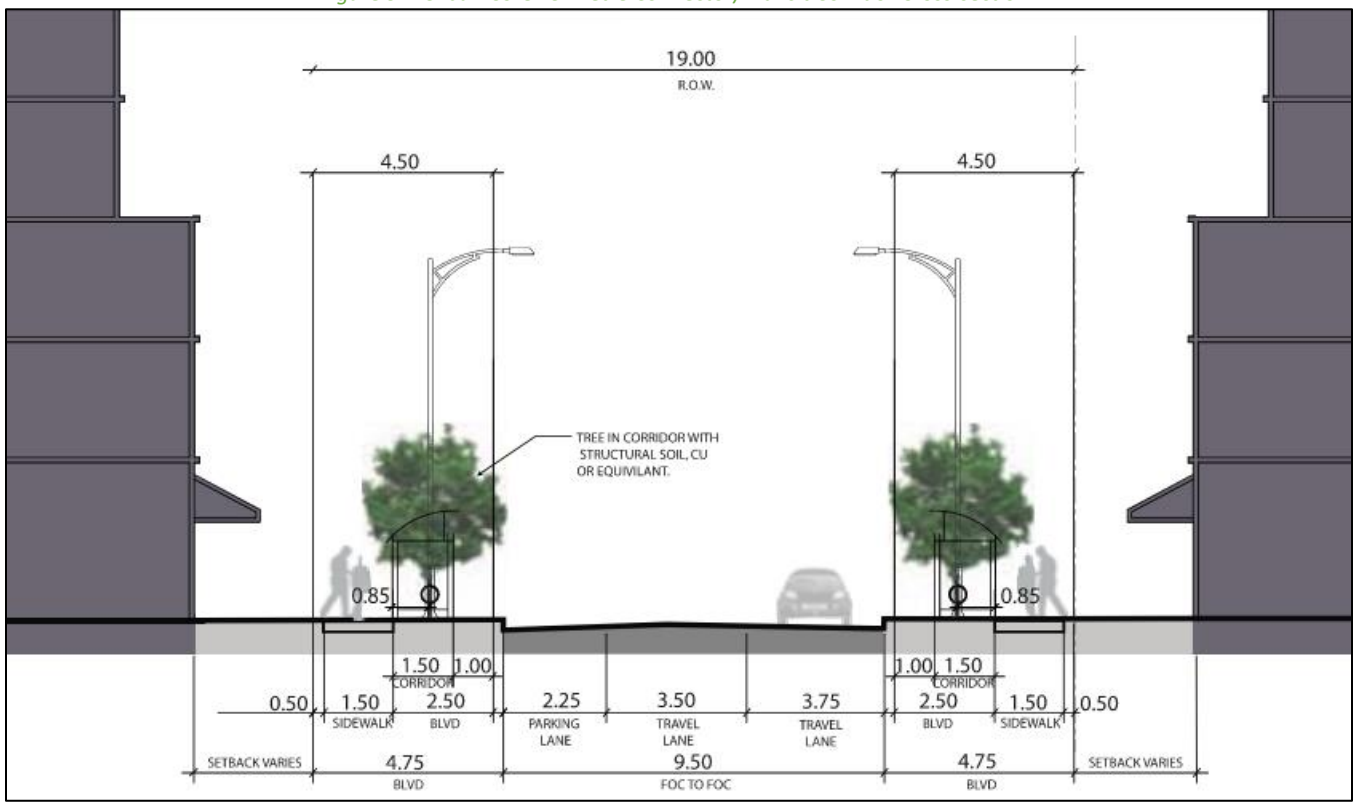
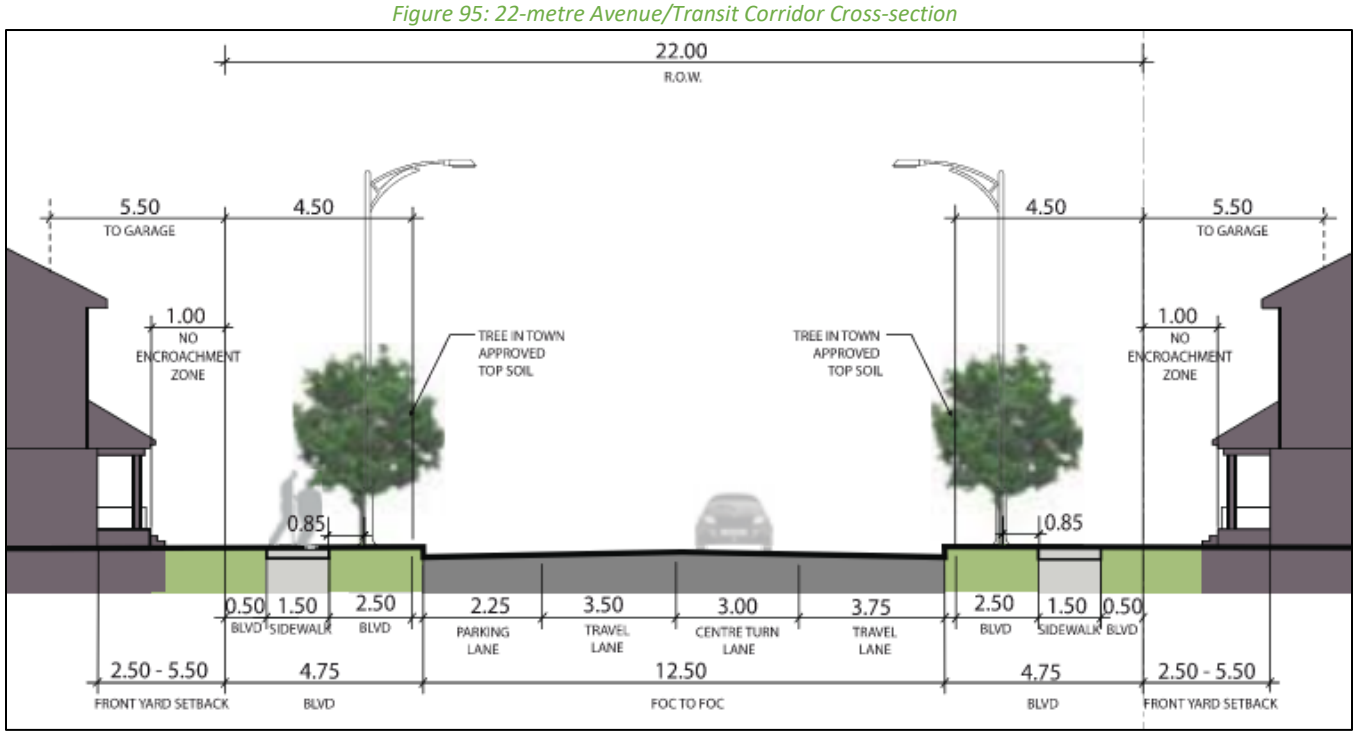


Figure 94: Urban Core 19-metre Connector/Transit Corridor Cross-section



It is noted that in other areas within North Oakville, a 19-metre cross-section is also considered for Connector/Transit Corridors, however a 22-metre cross-section is considered for Avenue/Transit Corridors as shown in Figure 95 below.

Figure 95: 22-metre Avenue/Transit Corridor Cross-section



Both the 24 and 22-metre Avenue/Transit Corridor cross-sections identify boulevards and sidewalks on both sides of the street. The 22-metre cross-section proposes one parking lane, one travel lane in each direction, and a centre turn lane. The 24-metre cross-section proposes one travel lane in each direction and one travel/off-peak parking lane in each direction. Within the Study Area, only one travel lane in each direction is anticipated to be required to support the projected 2041 volumes. The maximum projected volume and v/c ratio on each collector road in each direction of travel is presented below in Table 21.

Table 21: 2041 Projected Avenue/Transit Corridor Collector Road Volumes and V/C Ratios

Collector Road	Direction	AM(PM)							
		NB		SB		EB		WB	
		Volume	v/c	Volume	v/c	Volume	v/c	Volume	v/c
Collector 1	North-South	336 (**470**)	0.42 (0.59)	**597** (457)	0.75 (0.57)	-	-	-	-
Collector 2		257 (**689**)	0.32 (0.86)	**271** (212)	0.34 (0.27)	-	-	-	-
Collector 4		214 (**334**)	0.27 (0.42)	**427** (267)	0.53 (0.33)	-	-	-	-
Collector 5		**436** (314)	0.55 (0.39)	227 (**355**)	0.28 (0.44)	-	-	-	-
Collector 6		158 (**230**)	0.20 (0.29)	**266** (218)	0.33 (0.27)	-	-	-	-
Collector 3	East-West	-	-	-	-	147 (**116**)	0.18 (0.15)	126 (**217**)	0.16 (0.27)
Settlers Road		-	-	-	-	**463** (453)	0.58 (0.57)	**526** (414)	0.66 (0.52)

As shown above, the maximum one-way peak hour volume on the Avenue/Transit Corridors within the Study Area is 689 vehicles. Using the industry standard of 800 vehicles/lane/hour as the assumed capacity, the maximum v/c ratio on the Avenue/Transit Corridor collector roadways within the Study Area is 0.86. As such, a single travel lane in each direction along the Avenue/Transit Corridor collector roadways is considered sufficient to accommodate the projected traffic volumes along these roads. The 22-metre cross-section as shown in Figure 95 above, has therefore been applied within the Study Area instead of the 24-metre cross-section shown in Figure 93.

7 Operational Analysis

To understand the operational characteristics of the Study Area intersections, Synchro (Version 11), and Sidra (Version 9.1) have been used to model the Study Area intersections. The vehicle LOS for roundabouts modelled in Sidra has been based on the HCM average delay criteria.

Peak Hour Factors (PHF) have been calculated based on the existing turning movement counts and will be applied to both existing and future analysis horizons. At future intersections, a default PHF of 0.90 has been used. Peak Hour Factors can be seen in the collected traffic data shown in Appendix B.

The Heavy Vehicle percentage (HV %) has been calculated for each turning movement at the Study Area intersections. All Heavy Vehicle percentages calculated to be less than 2% were entered into the Synchro model as 2% in order to produce a conservative analysis. At intersections where no Heavy Vehicle percentage is available, 2% has been used.

Pedestrian volumes were provided for those intersections with turning movement count information in both existing and future analysis. Pedestrian volumes of 5 pedestrians/h and cycling volumes of 5 cyclists/h have been used at all new intersections in the future analysis horizons where applicable.

All other parameters have been coded using accepted best practices and default parameters where applicable.

LOS has been defined using HCM definition for LOS at signalized intersections in Table 22 and unsignalized intersections in Table 23.

Table 22: Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (Seconds/Vehicle)
A	≤10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

Table 23: Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Second/Vehicle)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Criteria for critical movements and critical intersections for both signalized and unsignalized intersections will be defined by both Town of Oakville and Halton Region guidelines for all Study Area intersections. Critical movements at the Highway 407 ramp terminal intersections will be defined by Ministry of Transportation Ontario guidelines.

The Town of Oakville *Terms of Reference (TOR) for Transportation Impact Studies (TIS)* and *Transportation Functional Design Studies (2009)* defines critical movements as v/c ratios of 0.85 for overall intersection operations, v/c ratios of 1.0 for individual through or turning movements, queues for individual movements that exceed available turning lane storage, and queues for through lanes that block vehicles from entering turning lanes. Critical movements at unsignalized intersections are defined as individual movements exceeding level of service (LOS) E based on average delay.

Halton Region *Transportation Impact Study Guidelines (2011)* define critical movements as v/c ratio of 0.85 or above for overall intersection operations, through movements, or shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. Critical movements at unsignalized intersections are defined as individual movements exceeding LOS D based on average delay. Critical movements are also defined as individual movements with 95th percentile queue lengths projected to exceed available turning lane storage for signalized and unsignalized intersections.

The Ministry of Transportation Ontario *General Guidelines for the Preparation of Traffic Impact Studies (2023)* defines critical movements as v/c ratios greater than 0.85 at signalized intersections and v/c ratio greater than 0.75 at ramp terminal approaches.

Therefore, at signalized intersections, critical movements and intersections are identified using Halton Region's criteria for v/c ratios of 0.85 or above for overall intersection operations, through movements, and shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. At unsignalized intersections, critical movements are identified as individual movements exceeding LOS D based on average delay, as per Halton Region's criteria. Critical movements for both signalized and unsignalized intersections are also identified as individual movements with queues exceeding available turning lane storage and queues for through lanes blocking vehicles from entering turning lanes, as per the Town of Oakville's guidelines. At the Highway 407 terminal ramp approaches, critical movements are defined as v/c ratios greater than 0.75. Critical movements have been noted in red in the operational analysis tables below.

Mitigation measures will be considered at over capacity movements (v/c ratios equal to or greater than 1.00, 95th percentile queues that exceed provided storage lengths, and LOS F at unsignalized intersections) identified in future horizon analysis.

7.1 2024 Existing Conditions

7.1.1 2024 Existing Intersection Configuration

The existing configurations of the Study Area intersections are illustrated in Figure 96 and Figure 97, as described in Section 3.2.

Figure 96: 2024 Existing Intersection Configuration – Section A

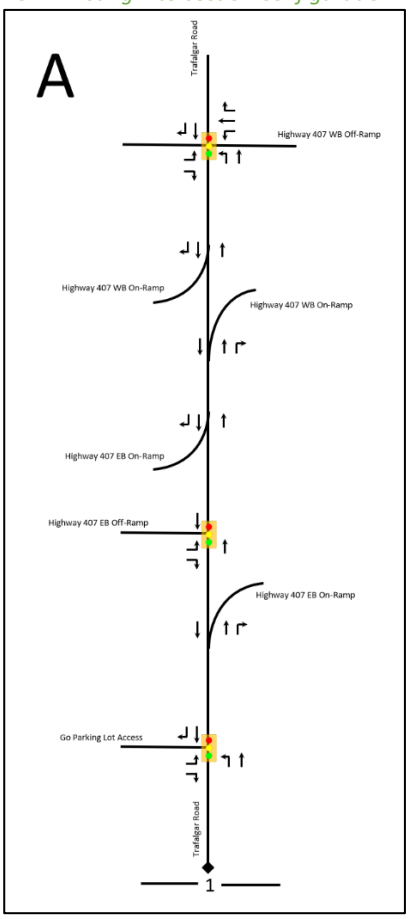
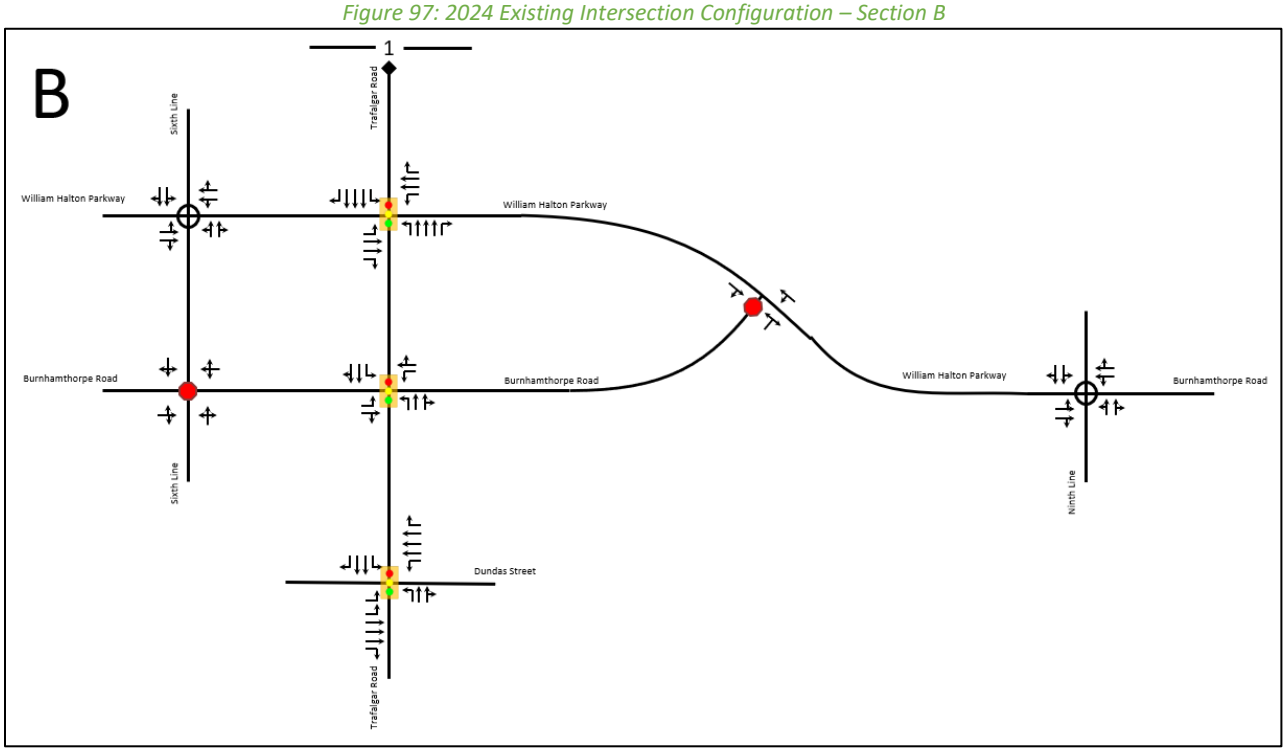


Figure 97: 2024 Existing Intersection Configuration – Section B



7.1.2 2024 Existing Conditions Operational Analysis

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development as well as the surrounding background developments on the Study Area road network. The Study Area intersections have been designed based on aerial photos and turning lane storage lengths have been rounded to the closest five-metre. The analyzed intersection configurations are reflective of those illustrated in Figure 96 and Figure 97 above.

Table 24 summarizes the operational analysis of the 2024 existing conditions and Table 25 summarizes the 95th percentile queue lengths. Appendix F contains the 2024 existing conditions Synchro and Sidra worksheets.

Table 24: 2024 Existing Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	D	0.40	39	D	0.38	38
	EBT	D	0.68	51	D	0.26	43
	EBR	D	0.11	42	D	0.05	41
	WBL	D	0.11	43	D	0.15	38
	WBT	D	0.22	47	D	0.55	49
	WBR	D	0.07	45	E	0.79	63
	NBL	B	0.17	15	B	0.24	16
	NBT	C	0.35	22	C	0.45	25
	NBR	B	0.01	18	B	0.02	19
	SBL	B	0.64	17	B	0.48	17
	SBT	B	0.33	19	C	0.31	22
	SBR	B	0.06	16	B	0.10	19
	Overall	**C**	**0.67**	**29**	**C**	**0.56**	**33**
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	D	0.42	48	D	0.33	50
	EBT/R	E	0.70	57	D	0.59	55
	WBL	E	0.74	72	E	0.61	60
	WBT/R	D	0.33	46	D	0.44	51
	NBL	A	0.20	9	A	0.18	6
	NBT/R	A	0.40	10	A	0.49	8
	SBL	A	0.14	5	A	0.04	4
	SBT/R	A	0.41	6	A	0.31	4
	Overall	**B**	**0.48**	**16**	**B**	**0.50**	**13**
William Halton Parkway at Burnhamthorpe Road *(Unsignalized)*	EBT/R	A	0.48	0	A	0.22	0
	WBL/T	A	0.17	5	A	0.12	3
	NBL/R	D	0.57	27	B	0.26	12
	Overall	**A**	**-**	**6**	**A**	**-**	**6**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Dundas Street at Trafalgar Road *(Signalized)*	EBL	E	0.66	59	E	0.65	60
	EBT	D	0.89	44	D	0.70	41
	EBR	C	0.18	27	C	0.11	32
	WBL	D	0.72	39	D	0.78	41
	WBT	C	0.44	32	D	0.85	47
	WBR	C	0.09	28	C	0.13	32
	NBL	E	0.86	67	D	0.76	42
	NBT/R	D	0.71	48	E	0.91	56
	SBL	D	0.65	35	D	0.71	44
	SBT	D	0.79	48	D	0.47	37
	SBR	D	0.12	35	C	0.12	33
	Overall	**D**	**0.85**	**43**	**D**	**0.85**	**45**
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	B	0.31	10	A	0.17	6
	EBT/R	B	0.31	10	A	0.17	9
	WBL/T	A	0.18	6	A	0.33	8
	WBT/R	A	0.18	6	B	0.33	13
	NBL/T	A	0.21	9	A	0.14	6
	NBT/R	A	0.21	10	A	0.14	7
	SBL/T	B	0.65	13	A	0.29	7
	SBT/R	B	0.43	11	A	0.29	9
	Overall	**B**	**0.65**	**11**	**A**	**0.39**	**8**
Sixth Line at Burnhamthorpe Road *(Unsignalized)*	EBL/T/R	A	0.08	11	A	0.05	9
	WBL/T/R	A	0.19	10	A	0.19	9
	NBL/T/R	B	0.41	11	A	0.34	10
	SBL/T/R	A	0.28	10	A	0.32	10
	Overall	**A**	**-**	**10**	**A**	**-**	**10**
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.03	25	C	0.03	22
	EBR	C	0.00	25	C	0.00	22
	WBL	C	0.38	28	C	0.41	25
	WBL/T/R	C	0.40	28	C	0.43	25
	WBR	C	0.00	25	C	0.01	22
	NBL	A	0.01	3	A	0.02	4
	NBT	A	0.40	4	A	0.65	8
	SBT/R	A	0.37	6	A	0.32	8
	Overall	**A**	**0.44**	**7**	**A**	**0.66**	**9**
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	C	0.30	29	C	0.22	28
	EBR	C	0.09	27	C	0.05	27
	NBT	A	0.38	4	A	0.64	6
	SBT	A	0.44	5	A	0.40	4
	Overall	**A**	**0.42**	**6**	**A**	**0.59**	**6**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	1.05	77	B	0.51	12
	EBT/R	F	1.05	70	B	0.51	14
	WBL/T	A	0.35	9	D	0.81	32
	WBT/R	B	0.35	13	E	0.81	36
	NBL/T	C	0.57	20	E	0.92	40
	NBT/R	C	0.57	17	C	0.92	33
	SBL/T	C	0.68	18	C	0.58	19
	SBT/R	C	0.68	16	C	0.58	21
	Overall	**D**	**1.05**	**31**	**D**	**0.92**	**27**
GO Parking Lot at Trafalgar Road *(Signalized)*	EBL	D	0.42	42	D	0.37	38
	EBR	D	0.02	37	D	0.03	35
	NBL	A	0.12	3	A	0.12	3
	NBT	A	0.27	3	A	0.43	5
	SBT	A	0.35	6	A	0.34	7
	SBR	A	0.01	5	A	0.02	5
	Overall	**A**	**0.36**	**6**	**A**	**0.45**	**6**

Table 25: 2024 Existing Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	210	43	30
	EBT	-	94	37
	EBR	60	18	8
	WBL	160	8	18
	WBT	-	28	71
	WBR	150	14	107
	NBL	180	14	20
	NBT	-	69	93
	NBR	60	0	0
	SBL	-	49	28
	SBT	-	69	61
	SBR	-	9	13
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	40	30	21
	EBT/R	-	62	45
	WBL	30	33	30
	WBT/R	-	32	36
	NBL	130	16	15
	NBT/R	-	74	92
	SBL	170	8	2
	SBT/R	-	65	38
William Halton Parkway at Burnhamthorpe Road *(Unsignalized)*	EBT/R	-	0	0
	WBL/T	-	5	3
	NBL/R	-	26	8

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Dundas Street at Trafalgar Road ***(Signalized)***	EBL	110	48	47
	EBT	-	#203	109
	EBR	85	25	16
	WBL	165	#65	#67
	WBT	-	75	140
	WBR	85	9	18
	NBL	120	#49	#68
	NBT/R	-	86	#160
	SBL	45	44	#48
	SBT	-	110	70
	SBR	55	17	16
Sixth Line at William Halton Parkway ***(Roundabout)***	EBL/T	-	7	4
	EBT/R	-	7	4
	WBL/T	-	4	8
	WBT/R	-	4	10
	NBL/T	-	4	3
	NBT/R	-	4	3
	SBL/T	-	47	7
	SBT/R	-	12	7
Sixth Line at Burnhamthorpe Road ***(Unsignalized)***	EBL/T/R	-	1	1
	WBL/T/R	-	3	3
	NBL/T/R	-	7	6
	SBL/T/R	-	4	5
Trafalgar Road at Highway 407 WB Off-Ramp ***(Signalized)***	EBL	-	2	4
	EBR	5	0	0
	WBL	-	17	26
	WBL/T/R	-	18	27
	WBR	60	0	0
	NBL	-	1	1
	NBT	-	35	81
	SBT/R	-	38	35
Trafalgar Road at Highway 407 EB Off-Ramp ***(Signalized)***	EBL	-	14	9
	EBR	875	11	9
	NBT	-	31	55
	SBT	-	37	26
Ninth Line at William Halton Parkway / Burnhamthorpe Road ***(Roundabout)***	EBL/T	-	169	19
	EBT/R	-	169	19
	WBL/T	-	9	45
	WBT/R	-	9	45
	NBL/T	-	20	118
	NBT/R	-	20	118
	SBL/T	-	41	18
	SBT/R	-	41	18
GO Parking Lot at Trafalgar Road ***(Signalized)***	EBL	-	13	16
	EBR	-	8	9
	NBL	110	4	4
	NBT	-	25	44
	SBT	-	44	42
	SBR	40	3	3

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

In general, the Study Area intersections operate with acceptable LOS in both the AM and PM peak periods.

Critical movements are noted at the signalized intersection of Dundas Street at Trafalgar Road. The eastbound through movement in the AM peak period, and the westbound through and shared northbound through / right-turn movement in the PM peak period operates at a v/c ratio greater than or equal to 0.85. The overall intersection also operates at a v/c ratio greater than or equal to 0.85 in both the AM and PM peak periods. This is a likely result of the high eastbound and westbound through volumes at this intersection.

It is also noted that the 95th percentile queue length of the southbound left-turn at Dundas Street and Trafalgar Road extends beyond the available storage distance in the PM peak period and the westbound left-turn at Burnhamthorpe and Trafalgar Road extends beyond the available storage distance in the AM peak period. The northbound through at William Halton Parkway and Trafalgar Road, the eastbound through at Burnhamthorpe Road and Trafalgar Road, and the eastbound through, northbound through / right-turn, and the southbound through at Dundas Street and Trafalgar Road have queue lengths extending past adjacent turning lanes.

Critical and over capacity movements are also noted at Ninth Line at William Halton Parkway / Burnhamthorpe Road for the eastbound movements in the AM and the westbound movements in the PM peak period. This is a result of high eastbound and westbound through movements during the AM and PM peak periods respectively.

7.1.2.1 Existing Conditions Operational Analysis – Saturday Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 26 summarizes the operational analysis of the 2024 Saturday existing conditions and Table 27 summarizes the 95th percentile queue lengths. Appendix F contains the 2024 Saturday existing conditions Synchro worksheets.

Table 26: 2024 Existing Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.01	25
	EBR	C	0.00	25
	WBL	C	0.37	28
	WBL/T/R	C	0.04	25
	WBR	C	0.01	25
	NBL	A	0.00	3
	NBT	A	0.37	4
	SBT/R	A	0.26	6
	Overall	**A**	**0.41**	**7**
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	C	0.27	26
	EBR	C	0.02	24
	NBT	A	0.37	4
	SBT	A	0.37	4
	Overall	**A**	**0.36**	**5**

Table 27: 2024 Existing Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	1
	EBR	5	0
	WBL	-	18
	WBL/T/R	-	8
	WBR	60	0
	NBL	-	0
	NBT	-	32
	SBT/R	-	26
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	10
	EBR	875	6
	NBT	-	29
	SBT	-	29
Notes:	# - 95% percentile exceeds capacity		

As shown above, the selected Study Area intersections operate with acceptable LOS in the Saturday peak period. No critical or over capacity movements are noted.

7.2 Future Background Conditions

7.2.1 Future Background Intersection Control

Using the Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the following unsignalized intersections have been reviewed:

- Burnhamthorpe Road at Sixth Line
- William Halton Parkway at Burnhamthorpe Road
- William Halton Parkway at Collector 1
- William Halton Parkway at Collector 2
- William Halton Parkway at Collector 5

A summary of the traffic control signal warrant analysis for future background conditions can be found in Table 28. Traffic control warrant sheets have been included in Appendix G.

Table 28: Future Background Signal Warrant Summary

Intersection	Horizon	Warranted?
Sixth Line at Burnhamthorpe Road	2031 FB	No
	2036 FB	
	2041 FB	Yes
William Halton Parkway at Burnhamthorpe Road	2031 FB	Yes
	2036 FB	
	2041 FB	
William Halton Parkway at Collector 1	2031 FB	No
	2036 FB	
	2041 FB	Yes
William Halton Parkway at Collector 2	2031 FB	No
	2036 FB	
	2041 FB	
William Halton Parkway at Collector 5	2031 FB	No
	2036 FB	
	2041 FB	

As indicated above, signals are warranted at William Halton Parkway and Burnhamthorpe Road in all future background analysis horizons. Although signal warrants are not met at Sixth Line and Burnhamthorpe Road in the 2031 future background analysis horizon, the Sixth Line Class Environmental Assessment Study (2014) report recommends signals at this intersection as discussed in Section 4.1.4. As such, both the intersections of William Halton Parkway at Burnhamthorpe Road and Sixth Line at Burnhamthorpe Road will be analyzed as signalized intersections beginning in the 2031 future background horizon. In the 2041 future background analysis horizon, the intersection of William Halton Parkway at Collector 1 meets signalization warrants and will be analyzed as a signalized intersection. Signal warrants at the intersection of Willaim Halton Parkway at Collector 2 and Collector 5 are not met in any future analysis horizon and as such, signals have not been considered at these intersections.

At applicable signalized intersections, Amber Clearance, All Red Clearance, Walk, and Flash Don't Walk times were calculated using the methodology provided in OTM Book 12-Traffic Signals. A walk time of 7 seconds was assumed, and a pedestrian walking speed of 1.2 m/s was used. The minimum initial values for the Study Area intersections were taken from OTM Book 12.

Intersection methods of control for all other existing intersections will be consistent with those considered in the existing conditions analysis.

7.2.2 Future Background Intersection Design

As discussed in Section 4.1, road widening and improvement projects assumed to be completed by 2031 include the widening of Trafalgar Road from four to six lanes south of Highway 407, the widening of Burnhamthorpe Road in the Urban Core area from two to four lanes, the widening of Sixth Line from two to four lanes, and the widening of Ninth Line from two to four lanes. The configurations of these corridors have been coded into Synchro to be consistent with the preliminary designs outlined within the New North Oakville Transportation Corridor ESR (2010), Trafalgar Road Improvements ESR (2015), Burnhamthorpe Road Character Study ESR (2014), Sixth Line ESR (2014), and Ninth Line Transportation Corridor Improvements ESR (2020) where applicable. Where more than one configuration is available for an intersection, the drawings from the most recent report has been referenced for the intersection design. The intersections of Trafalgar Road at William Halton Parkway and Dundas Street have been coded based on the configurations presented in the Trafalgar Road Improvements ESR. The Burnhamthorpe

Road Character Study ESR has been used to inform the intersection configurations of Burnhamthorpe Road at Sixth Line, Trafalgar Road, and William Halton Parkway.

It is noted that the North Oakville East Secondary Plan indicates that the intersection of William Halton Parkway and Burnhamthorpe Road is planned to be a four-legged intersection. However, as no information regarding the build out of the north leg of the intersection is available, it is assumed that William Halton Parkway and Burnhamthorpe Road will operate as a three-legged intersection for all future analysis horizons.

Along Dundas Street and Trafalgar Road, a lane utilization factor of 0.80 has been applied in accordance with the Halton Region Transportation Impact Study Guidelines to account for the capacity reduction on these roads as a result of the implementation of the outer HOV lanes in the 2031 and 2036 future background horizons. In the 2041 future background horizon, the HOV lanes are expected to be converted to BRT lanes along Dundas Street and Trafalgar Road. As a result, Dundas Street and Trafalgar Road will be reduced and modelled as a four-lane road in the 2041 future background horizon.

The need for auxiliary right-turn lanes along arterial roads have been assessed using the criteria presented in the Halton Region Access Management Guidelines. These guidelines indicate that a right-turn lane may be warranted at accesses that have sufficient volume of decelerating vehicles, have right turn volume at signalized intersections of 10% of the through traffic volume, or have constrained sight distance approaching the access. At unsignalized intersections on arterial roads, a vehicle threshold of 60 vehicles during the peak period has been used to determine the need for an auxiliary right-turn lane. As such, right-turn lanes have been added to movements satisfying these conditions within all future background horizons.

All other applicable future background intersections have been modelled with intersection configurations and signal timing plans that are consistent with those used in the existing conditions operational analysis.

The resulting intersection configurations analyzed in the initial 2031 future background horizon are summarized below in Figure 98, Figure 99, Figure 100, and Figure 101.

Figure 98: 2031 Future Background Base Intersection Configuration – Section A

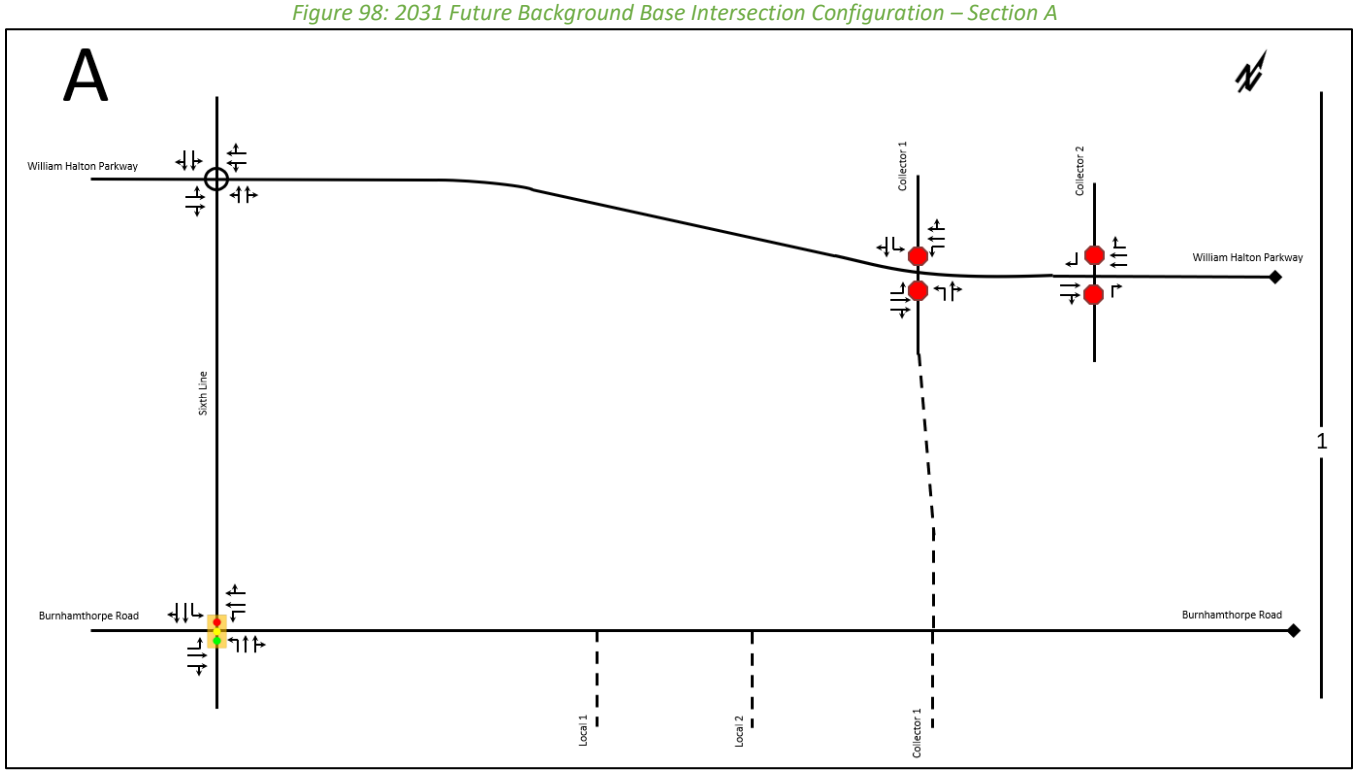


Figure 99: 2031 Future Background Base Intersection Configuration – Section B

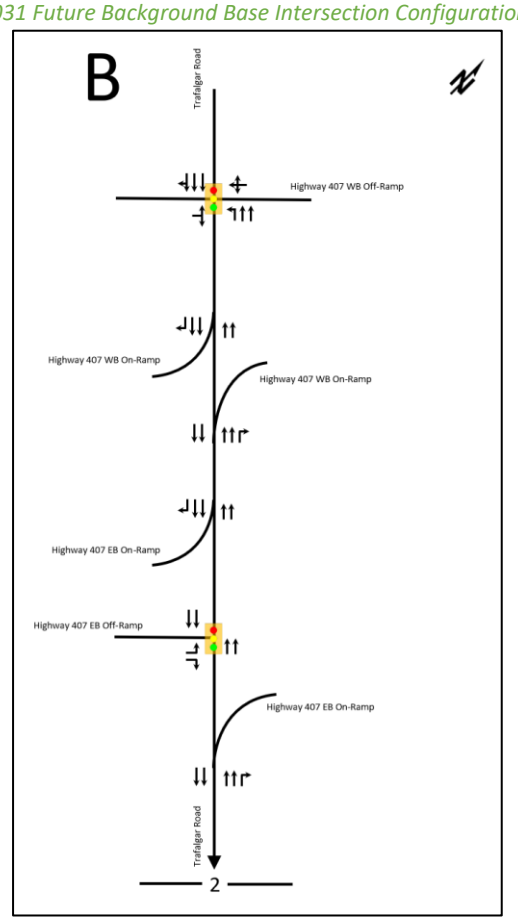


Figure 100: 2031 Future Background Base Intersection Configuration – Section C

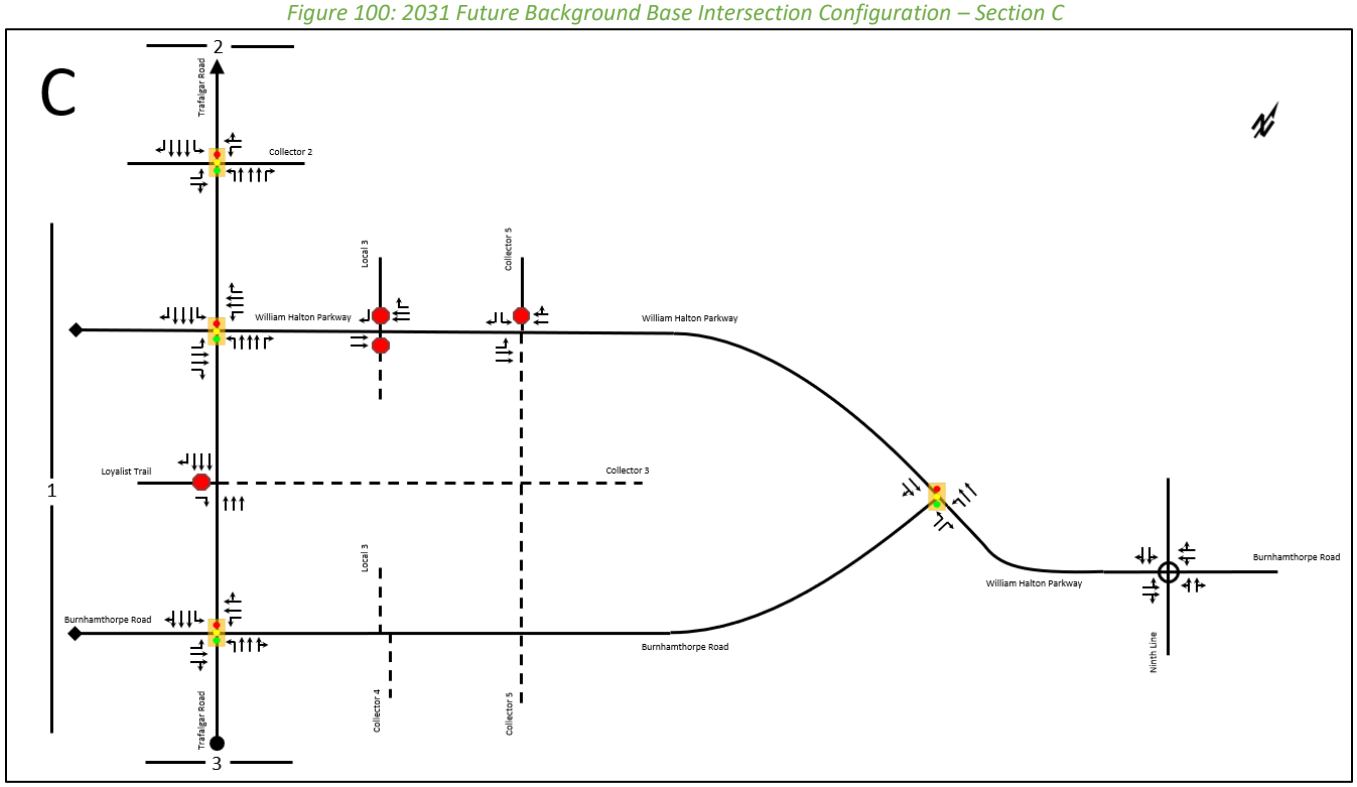
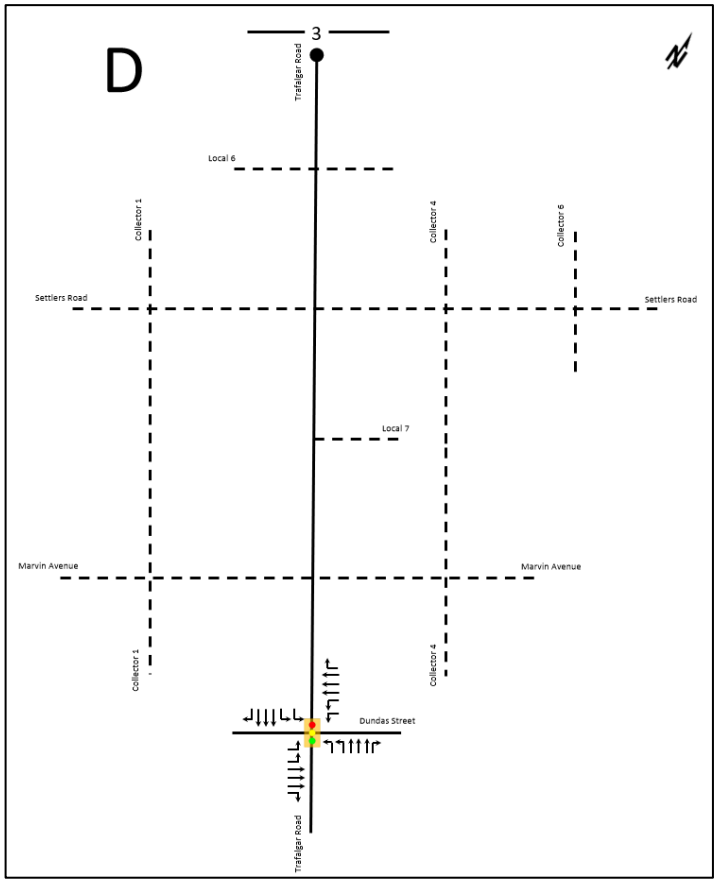


Figure 101: 2031 Future Background Base Intersection Configuration – Section D



7.2.3 2031 Future Background Conditions Operational Analysis

The 2031 future background conditions have been examined to determine the future traffic conditions without the addition of the proposed development. Table 29 summarizes the operational analysis and Table 30 summarizes the queue lengths of 2031 future background conditions. Synchro and Sidra worksheets have been included in Appendix H.

Table 29: 2031 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.13	129	F	1.43	256
	EBT	E	1.00	73	D	0.66	46
	EBR	C	0.30	35	D	0.06	36
	WBL	F	1.18	167	F	1.36	211
	WBT	D	0.36	36	E	0.98	75
	WBR	C	0.09	33	F	1.03	102
	NBL	F	1.11	127	F	1.35	223
	NBT	E	1.03	71	E	1.03	76
	NBR	C	0.02	27	C	0.02	28
	SBL	F	1.20	161	F	1.32	220
	SBT	D	0.86	46	E	1.02	77
	SBR	C	0.15	30	D	0.38	40
	Overall	**E**	**1.17**	**75**	**F**	**1.43**	**104**
Mitigation: AM & PM EB, WB, NB, SB double left-turn lanes, EBL storage of 105 m, WBL storage of 120 m, NBL storage of 85 m, SBL storage of 80 m, signal timing optimization							
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*F*	*1.06*	*125*	*F*	*1.05*	*119*
	EBT	*D*	*0.89*	*52*	*D*	*0.63*	*44*
	EBR	*C*	*0.28*	*33*	*C*	*0.06*	*35*
	WBL	*F*	*0.81*	*85*	*F*	*1.17*	*162*
	WBT	*D*	*0.37*	*39*	*E*	*0.91*	*59*
	WBR	*D*	*0.09*	*35*	*F*	*0.97*	*82*
	NBL	*F*	*0.92*	*90*	*F*	*0.98*	*105*
	NBT	*F*	*1.06*	*86*	*E*	*1.03*	*76*
	NBR	*C*	*0.02*	*30*	*C*	*0.02*	*28*
	SBL	*F*	*1.02*	*122*	*F*	*1.03*	*141*
	SBT	*D*	*0.88*	*52*	*E*	*0.97*	*65*
	SBR	*C*	*0.13*	*33*	*D*	*0.35*	*38*
	Overall	***E***	***1.02***	***70***	***E***	***1.05***	***78***
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	E	0.83	71	F	0.90	101
	EBT/R	D	0.53	44	D	0.39	45
	WBL	D	0.63	52	D	0.53	49
	WBT/R	D	0.29	41	D	0.48	46
	NBL	E	0.87	69	D	0.75	47
	NBT/R	B	0.70	19	B	0.70	18
	SBL	C	0.62	29	C	0.64	32
	SBT/R	A	0.49	9	A	0.48	8
	Overall	**C**	**0.84**	**23**	**C**	**0.76**	**22**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	D	0.99	48	D	0.85	35
	WBL	F	1.03	85	E	0.95	56
	WBT	A	0.29	9	B	0.76	16
	NBL	A	0.00	0	A	0.00	0
	NBR	C	0.53	30	C	0.27	25
	Overall	**D**	**0.88**	**41**	**C**	**0.74**	**28**
Mitigation: AM & PM cycle length extension to 120 s, signal timing optimization, WBL storage of 100 m							
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	*C*	*0.85*	*33*	*C*	*0.69*	*29*
	WBL	*E*	*0.88*	*58*	*D*	*0.84*	*36*
	WBT	*A*	*0.25*	*7*	*B*	*0.67*	*12*
	NBL	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	NBR	*D*	*0.51*	*45*	*D*	*0.27*	*36*
	Overall	***C***	***0.81***	***32***	***C***	***0.70***	***23***
Dundas Street at Trafalgar Road *(Signalized)*	EBL	F	1.56	327	F	1.41	266
	EBT	F	1.29	175	F	1.06	81
	EBR	C	0.26	29	C	0.18	29
	WBL	F	1.52	297	F	1.54	306
	WBT	D	0.81	42	F	1.13	107
	WBR	C	0.36	32	C	0.38	32
	NBL	F	1.21	172	F	1.43	249
	NBT	D	0.71	41	D	0.93	54
	NBR	C	0.12	32	C	0.29	33
	SBL	F	1.69	366	F	1.65	348
	SBT	D	0.88	48	D	0.61	38
	SBR	C	0.20	32	C	0.29	33
	Overall	**F**	**1.61**	**121**	**F**	**1.59**	**105**
Mitigation: AM & PM WB, NB, SB double left-turn lanes, EBL storage of 125 m, WBL storage of 80 m, NBL storage of 90 m, SBL storage of 90 m, signal timing optimization							
Dundas Street at Trafalgar Road (Signalized)	*EBL*	*F*	*1.62*	*354*	*F*	*1.41*	*266*
	EBT	*F*	*1.26*	*163*	*E*	*1.04*	*73*
	EBR	*C*	*0.26*	*28*	*C*	*0.18*	*28*
	WBL	*F*	*1.19*	*182*	*F*	*1.26*	*205*
	WBT	*D*	*0.80*	*41*	*F*	*1.13*	*107*
	WBR	*C*	*0.36*	*31*	*C*	*0.37*	*32*
	NBL	*F*	*0.96*	*111*	*F*	*1.35*	*245*
	NBT	*D*	*0.70*	*40*	*D*	*0.93*	*54*
	NBR	*C*	*0.12*	*31*	*C*	*0.29*	*33*
	SBL	*F*	*1.58*	*344*	*F*	*1.25*	*204*
	SBT	*D*	*0.89*	*50*	*D*	*0.61*	*38*
	SBR	*C*	*0.21*	*32*	*C*	*0.32*	*34*
	Overall	***F***	***1.19***	***113***	***F***	***1.10***	***94***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	F	1.01	70	C	0.69	20
	EBT/R	F	1.01	69	C	0.69	20
	WBL/T	B	0.43	11	E	0.96	45
	WBT/R	B	0.43	10	E	0.96	45
	NBL/T	E	0.73	42	B	0.36	13
	NBT/R	E	0.73	41	B	0.36	13
	SBL/T	F	1.82	113	D	0.73	26
	SBT/R	C	0.75	21	D	0.73	25
	Overall	**F**	**1.18**	**58**	**D**	**0.96**	**31**
Mitigation: AM & PM channelized EB and SB right turn lane							
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*E*	*0.91*	*48*	*C*	*0.63*	*18*
	EBT	*E*	*0.91*	*47*	*C*	*0.63*	*17*
	EBR	*A*	*0.06*	*3*	*A*	*0.04*	*3*
	WBL/T	*B*	*0.43*	*11*	*E*	*0.96*	*45*
	WBT/R	*B*	*0.43*	*11*	*E*	*0.96*	*45*
	NBL/T	*E*	*0.74*	*43*	*B*	*0.36*	*13*
	NBT/R	*E*	*0.74*	*43*	*B*	*0.36*	*13*
	SBL/T	*F*	*1.18*	*113*	*B*	*0.47*	*14*
	SBT	*A*	*0.26*	*8*	*B*	*0.45*	*14*
	SBR	*A*	*0.19*	*4*	*A*	*0.16*	*4*
	Overall	***E***	***1.18***	***49***	***D***	***0.96***	***27***
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	C	0.30	27	C	0.15	21
	EBT/R	C	0.24	26	C	0.15	21
	WBL	C	0.61	33	C	0.65	29
	WBT/R	C	0.32	26	C	0.34	22
	NBL	A	0.37	9	A	0.22	8
	NBT/R	A	0.33	7	A	0.23	7
	SBL	A	0.19	7	A	0.12	7
	SBT/R	A	0.23	6	A	0.30	8
	Overall	**B**	**0.43**	**13**	**B**	**0.40**	**13**
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.02	28	C	0.06	35
	EBR	C	0.00	28	C	0.00	34
	WBL	C	0.60	35	D	0.71	47
	WBL/T/R	D	0.62	36	D	0.76	51
	WBR	C	0.00	28	C	0.01	34
	NBL	A	0.03	7	A	0.05	7
	NBT	B	0.81	13	E	1.11	74
	SBT/R	B	0.67	12	B	0.55	11
	Overall	**B**	**0.81**	**14**	**D**	**1.09**	**49**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: PM cycle length extended to 120 s, signal optimization to ensure ramp does not exceed v/c of 0.75							
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.02*	*28*	*C*	*0.06*	*34*
	EBR	*C*	*0.00*	*28*	*C*	*0.00*	*33*
	WBL	*C*	*0.60*	*35*	*D*	*0.71*	*45*
	WBL/T/R	*D*	*0.62*	*36*	*D*	*0.75*	*49*
	WBR	*C*	*0.00*	*28*	*C*	*0.01*	*33*
	NBL	*A*	*0.03*	*7*	*A*	*0.05*	*7*
	NBT	*B*	*0.81*	*13*	***E***	*1.12*	*77*
	SBT/R	*B*	*0.67*	*12*	*B*	*0.55*	*11*
	Overall	***B***	***0.81***	***14***	***D***	***1.09***	***51***
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	C	0.12	21	C	0.10	22
	EBR	D	0.78	36	C	0.69	33
	NBT	C	0.95	27	F	1.53	257
	SBT	E	1.09	68	C	1.00	34
	Overall	**D**	**0.99**	**48**	**F**	**1.30**	**164**
Mitigation: AM & PM cycle length extended to 120 s, signal optimization to ensure ramp does not exceed v/c of 0.75							
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*B*	*0.12*	*18*	*C*	*0.11*	*31*
	EBR	*C*	*0.75*	*30*	*D*	*0.75*	*46*
	NBT	*D*	*1.01*	*40*	*F*	*1.39*	*197*
	SBT	*F*	*1.17*	*97*	*C*	*0.91*	*21*
	Overall	***E***	***1.02***	***67***	***F***	***1.24***	***124***
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	2.10	519	F	1.38	193
	EBT/R	F	2.10	458	F	1.38	153
	WBL/T	C	0.68	19	F	1.36	190
	WBT/R	C	0.68	19	F	1.36	190
	NBL/T	D	0.65	25	F	1.85	421
	NBT/R	D	0.65	26	F	1.85	421
	SBL/T	F	1.00	67	F	0.87	53
	SBT/R	F	1.00	66	F	0.87	51
	Overall	**F**	**2.10**	**191**	**F**	**1.85**	**220**
Mitigation: AM & PM channelized EB and SB right turn lane							
Ninth Line at William Halton Parkway / Burnhamthorpe Road (Roundabout)	*EBL/T*	*F*	*1.41*	*211*	*F*	*1.16*	*108*
	EBT	*F*	*1.41*	*150*	*F*	*1.16*	*79*
	EBR	*A*	*0.22*	*6*	*A*	*0.14*	*4*
	WBL/T	*C*	*0.70*	*20*	*F*	*1.30*	*163*
	WBT/R	*C*	*0.70*	*20*	*F*	*1.30*	*163*
	NBL/T	*F*	*0.91*	*68*	*F*	*2.08*	*525*
	NBT/R	*F*	*0.91*	*57*	*F*	*2.08*	*516*
	SBL/T	*B*	*0.44*	*15*	*D*	*0.71*	*35*
	SBT	*F*	*1.33*	*180*	*D*	*0.71*	*33*
	SBR	*A*	*0.06*	*3*	*A*	*0.07*	*4*
	Overall	***F***	***1.41***	***92***	***F***	***2.08***	***216***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	F	1.02	118	F	2.53	736
	EBT/R	C	0.13	28	C	0.27	23
	WBL	A	0.00	0	A	0.00	0
	WBT/R	D	0.17	37	F	1.46	256
	NBL	B	0.25	15	C	0.34	28
	NBT	C	0.86	31	F	1.29	172
	NBR	C	0.51	24	C	0.46	31
	SBL	F	1.35	200	F	2.65	789
	SBT	B	0.61	16	D	0.95	48
	SBR	B	0.23	12	C	0.22	26
	Overall	**D**	**1.36**	**45**	**F**	**2.69**	**203**
Mitigation: AM & PM WBR turn lane with storage of 300 m, protected NBL turn phase, double SBL turn lanes with storage of 105 m, signal timing optimization							
Collector 2 at Trafalgar Road (Signalized)	*EBL*	*D*	*0.75*	*47*	*C*	*0.67*	*29*
	EBT/R	*C*	*0.13*	*27*	*C*	*0.23*	*21*
	WBL	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	WBT/R	*D*	*0.17*	*36*	*F*	*1.31*	*190*
	NBL	*D*	*0.55*	*50*	*E*	*0.51*	*61*
	NBT	*C*	*0.81*	*27*	*F*	*1.49*	*263*
	NBR	*B*	*0.36*	*19*	*C*	*0.43*	*35*
	SBL	*F*	*1.04*	*87*	*F*	*1.53*	*310*
	SBT	*B*	*0.62*	*16*	*E*	*1.02*	*64*
	SBR	*B*	*0.23*	*12*	*C*	*0.22*	*27*
	Overall	***C***	***0.88***	***28***	***F***	***1.36***	***160***
Collector 1 at William Halton Parkway *(Unsignalized)*	EBL	A	0.00	0	A	0.00	0
	EBT	A	0.71	0	A	0.38	0
	EBT/R	A	0.35	0	A	0.19	0
	WBL	C	0.29	20	A	0.12	11
	WBT	A	0.24	0	A	0.57	0
	WBT/R	A	0.12	0	A	0.29	0
	NBL	F	0.46	374	F	0.52	127
	NBT/R	A	0.00	0	A	0.00	0
	SBL	A	0.00	0	A	0.00	0
	SBT/R	A	0.00	0	A	0.00	0
	Overall	**C**	**-**	**2**	**B**	**-**	**2**
Mitigation: AM & PM intersection signalization with 90 s cycle length, signal timing optimization							
Collector 1 at William Halton Parkway (Unsignalized)	*EBL*	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	EBT/R	*A*	*0.63*	*4*	*A*	*0.34*	*3*
	WBL	*C*	*0.62*	*20*	*A*	*0.20*	*3*
	WBT/R	*A*	*0.22*	*2*	*A*	*0.52*	*3*
	NBL	*D*	*0.00*	*37*	*D*	*0.00*	*38*
	NBT/R	*A*	*0.08*	*0*	*A*	*0.28*	*0*
	SBL	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	SBT/R	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	Overall	***A***	***0.60***	***4***	***A***	***0.50***	***4***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	A	0.69	0	A	0.37	0
	EBT/R	A	0.37	0	A	0.19	0
	WBT	A	0.21	0	A	0.44	0
	WBR	A	0.10	0	A	0.10	0
	NBR	C	0.33	24	C	0.52	19
	SBR	A	0.01	10	A	0.05	10
	Overall	**B**	-	**1**	**A**	-	**2**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.43	0	A	0.27	0
	WBT	A	0.16	0	A	0.46	0
	WBR	A	0.03	0	A	0.05	0
	SBR	B	0.24	12	F	1.51	276
	Overall	**A**	-	**1**	**D**	-	**45**
Mitigation to William Halton Parkway at Trafalgar Road							
Local 3 at William Halton Parkway (Unsignalized)	*EBT*	*A*	*0.43*	*0*	*A*	*0.27*	*0*
	WBT	*A*	*0.16*	*0*	*A*	*0.46*	*0*
	WBR	*A*	*0.03*	*0*	*A*	*0.05*	*0*
	SBR	*B*	*0.23*	*11*	*C*	*0.66*	*19*
	Overall	***A***	-	***1***	***D***	-	***3***
Loyalist Trail at Trafalgar Road *(Unsignalized)*	EBR	A	0.05	10	B	0.15	11
	NBT	A	0.39	0	A	0.41	0
	SBT	A	0.30	0	A	0.37	0
	SBR	A	0.10	0	A	0.08	0
	Overall	**A**	-	**<1**	**A**	-	**<1**
Collector 5 at William Halton Parkway *(Unsignalized)*	EBL	A	0.00	0	A	0.00	0
	EBT	A	0.41	0	A	0.27	0
	WBT	A	0.22	0	A	0.65	0
	WBT/R	A	0.11	0	A	0.33	0
	SBL	C	0.26	20	F	3.57	Err
	SBR	A	0.00	0	A	0.00	0
	Overall	**A**	-	**1**	**B**	-	**613**
Mitigation: AM & PM intersection signalization with 90 s cycle length, signal timing optimization							
Collector 5 at William Halton Parkway (Signalized)	*EBL*	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	EBT	*A*	*0.53*	*5*	*A*	*0.38*	*6*
	WBT/R	*A*	*0.22*	*3*	*A*	*0.69*	*8*
	SBL	*C*	*0.35*	*32*	*C*	*0.50*	*29*
	SBR	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	Overall	***A***	***0.50***	***5***	***A***	***0.65***	***9***

Table 30: 2031 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	210	#167	#211
	EBT	-	#196	107
	EBR	60	42	9
	WBL	160	#83	#201
	WBT	-	55	#186
	WBR	150	14	#205
	NBL	60	#134	#175
	NBT	-	#218	#242
	NBR	55	0	0
	SBL	45	#136	#102
	SBT	-	150	#204
	SBR	55	24	57
Mitigation: AM & PM EB, WB, NB, SB double left-turn lanes, EBL storage of 105 m, WBL storage of 120 m, NBL storage of 85 m, SBL storage of 80 m, signal timing optimization				
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*105*	*#97*	*#100*
	EBT	*-*	*179*	*105*
	EBR	*60*	*42*	*9*
	WBL	*120*	*#44*	*#115*
	WBT	*-*	*59*	*#175*
	WBR	*205*	*15*	*#199*
	NBL	*85*	*#74*	*#84*
	NBT	*-*	*#239*	*#242*
	NBR	*55*	*0*	*0*
	SBL	*80*	*#78*	*#54*
	SBT	*-*	*163*	*#196*
	SBR	*60*	*20*	*52*
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	100	55	#44
	EBT/R	-	48	33
	WBL	120	34	33
	WBT/R	-	26	39
	NBL	130	#70	#59
	NBT/R	-	182	176
	SBL	170	33	37
	SBT/R	-	95	87
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	-	#173	#117
	WBL	50	#92	#106
	WBT	-	34	124
	NBL	30	0	0
	NBR	-	56	20
Mitigation: AM & PM cycle length extension to 120 s, signal timing optimization, WBL storage of 100 m				
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	*-*	*185*	*131*
	WBL	*100*	*#99*	*86*
	WBT	*-*	*32*	*117*
	NBL	*30*	*0*	*0*
	NBR	*-*	*61*	*15*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Dundas Street at Trafalgar Road *(Signalized)*	EBL	110	#124	#96
	EBT	-	#327	#233
	EBR	85	37	25
	WBL	165	#139	#147
	WBT	-	142	#259
	WBR	85	52	55
	NBL	120	#91	#137
	NBT	-	110	#173
	NBR	50	19	41
	SBL	50	#157	#14
	SBT		146	96
	SBR	65	27	40
Mitigation: AM & PM WB, NB, SB double left-turn lanes, EBL storage of 125 m, WBL storage of 80 m, NBL storage of 90 m, SBL storage of 90 m, signal timing optimization				
Dundas Street at Trafalgar Road (Signalized)	*EBL*	*125*	*#124*	*#96*
	EBT	*-*	*#323*	*#229*
	EBR	*85*	*36*	*24*
	WBL	*80*	*#73*	*#77*
	WBT	*-*	*140*	*#259*
	WBR	*85*	*51*	*54*
	NBL	*90*	*#50*	*#84*
	NBT	*-*	*110*	*#173*
	NBR	*50*	*19*	*41*
	SBL	*90*	*#90*	*#76*
	SBT	*-*	*147*	*96*
	SBR	*65*	*29*	*45*
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	115	34
	EBT/R	-	119	34
	WBL/T	-	14	175
	WBT/R	-	14	176
	NBL/T	-	22	9
	NBT/R	-	22	9
	SBL/T	-	422	33
	SBT/R	-	54	33
Mitigation: AM & PM channelized EB and SB right turn lane				
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*-*	*65*	*28*
	EBT	*-*	*66*	*28*
	EBR	*-*	*0*	*0*
	WBL/T	*-*	*14*	*175*
	WBT/R	*-*	*14*	*177*
	NBL/T	*-*	*23*	*9*
	NBT/R	*-*	*23*	*9*
	SBL/T	*-*	*422*	*13*
	SBT	*-*	*6*	*12*
	SBR	*-*	*0*	*0*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	55	18	10
	EBT/R	-	17	11
	WBL	40	33	38
	WBT/R	-	22	23
	NBL	30	30	16
	NBT/R	-	37	23
	SBL	30	12	10
	SBT/R	-	26	35
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	3	5
	EBR	5	0	0
	WBL	-	51	66
	WBL/T/R	-	54	71
	WBR	60	0	0
	NBL	-	1	2
	NBT	-	161	#416
	SBT/R	-	118	111
Mitigation: PM cycle length extended to 120 s, signal optimization to ensure ramp does not exceed v/c of 0.75				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*3*	*5*
	EBR	*5*	*0*	*0*
	WBL	*-*	*51*	*70*
	WBL/T/R	*-*	*54*	*76*
	WBR	*60*	*0*	*0*
	NBL	*-*	*1*	*2*
	NBT	*-*	*161*	*#431*
	SBT/R	*-*	*118*	*111*
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	14	11
	EBR	875	66	45
	NBT	-	#205	#427
	SBT	-	#256	#230
Mitigation: AM & PM cycle length extended to 120 s, signal optimization to ensure ramp does not exceed v/c of 0.75				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*-*	*13*	*14*
	EBR	*875*	*59*	*58*
	NBT	*-*	*#196*	*#518*
	SBT	*-*	*#242*	*#272*
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	-	1320	664
	EBT/R	-	1320	664
	WBL/T	-	37	587
	WBT/R	-	37	606
	NBL/T	-	24	783
	NBT/R	-	25	891
	SBL/T	-	110	37
	SBT/R	-	113	38

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM & PM channelized EB and SB right turn lane				
Ninth Line at William Halton Parkway / Burnhamthorpe Road (Roundabout)	*EBL/T*	*-*	*591*	*353*
	EBT	*-*	*591*	*353*
	EBR	*-*	*0*	*0*
	WBL/T	*-*	*38*	*530*
	WBT/R	*-*	*38*	*546*
	NBL/T	*-*	*44*	*864*
	NBT/R	*-*	*48*	*1008*
	SBL/T	*-*	*12*	*22*
	SBT	*-*	*436*	*22*
	SBR	*-*	*0*	*0*
Collector 2 at Trafalgar Road *(Signalized)*	EBL	30	#57	#203
	EBT/R	-	16	35
	WBL	30	0	0
	WBT/R	-	12	#323
	NBL	45	6	11
	NBT	-	116	#297
	NBR	30	63	68
	SBL	30	#169	#219
	SBT	-	88	#194
	SBR	40	25	31
Mitigation: AM & PM WBR turn lane with storage of 300 m, protected NBL turn phase, double SBL turn lanes with storage of 105 m, signal timing optimization				
Collector 2 at Trafalgar Road (Signalized)	*EBL*	*95*	*#42*	*92*
	EBT/R	*-*	*16*	*31*
	WBL	*30*	*0*	*0*
	WBT	*-*	*0*	*0*
	WBR	*300*	*17*	*#299*
	NBL	*45*	*17*	*24*
	NBT	*-*	*111*	*#320*
	NBR	*70*	*35*	*67*
	SBL	*105*	*#83*	*#104*
	SBT	*-*	*90*	*#206*
	SBR	*40*	*26*	*34*
Collector 1 at William Halton Parkway (Unsignalized)	EBL	30	0	0
	EBT	-	0	0
	EBT/R	-	0	0
	WBL	30	9	3
	WBT	-	0	0
	WBT/R	-	0	0
	NBL	30	9	16
	NBT/R	-	0	0
	SBL	30	0	0
	SBT/R	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM & PM intersection signalization with 90 s cycle length, signal timing optimization				
Collector 1 at William Halton Parkway (Signalized)	*EBL*	*30*	*0*	*0*
	EBT/R	*-*	*132*	*63*
	WBL	*50*	*#49*	*16*
	WBT/R	*-*	*37*	*116*
	NBL	*30*	*5*	*11*
	NBT/R	*-*	*0*	*0*
	SBL	*30*	*0*	*0*
	SBT/R	*-*	*0*	*0*
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	10	23
	SBR	-	<1	1
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	7	229
Mitigation to William Halton Parkway at Trafalgar Road				
Local 3 at William Halton Parkway (Unsignalized)	*EBT*	*-*	*0*	*0*
	WBT	*-*	*0*	*0*
	WBT/R	*-*	*0*	*0*
	SBR	*-*	*7*	*39*
Loyalist Trail at Trafalgar Road *(Unsignalized)*	EBR	-	1	4
	NBT	-	0	0
	SBT	-	0	0
	SBT/R	-	0	0
Collector 5 at William Halton Parkway *(Unsignalized)*	EBL	30	0	0
	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBL	30	8	Err
	SBR	-	0	0
Mitigation: AM & PM intersection signalization with 90 s cycle length, signal timing optimization				
Collector 5 at William Halton Parkway (Signalized)	*EBL*	*30*	*0*	*0*
	EBT	*-*	*115*	*63*
	WBT/R	*-*	*37*	*159*
	SBL	*40*	*20*	*35*
	SBR	*-*	*0*	*0*
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of background traffic growth as well as the nearby background development traffic, critical and over-capacity movements are noted at some Study Area intersections.

The signalized intersection of William Halton Parkway at Trafalgar Road is expected to operate at an overall v/c ratio greater than or equal to 0.85 in both the AM and PM peak periods. The left-turn and through movements are anticipated to operate at a v/c ratio greater than or equal to 0.95 and 0.85 respectively in all directions in one

or both peak periods. The eastbound left, westbound right, northbound left, southbound left, and southbound right turn movements are also expected to have 95th percentile queues exceeding available storage distances in one or both peak periods. This is expected due to high volumes along Trafalgar Road and William Halton Parkway at this intersection in both the AM and PM peak periods. As a mitigation measure, double left-turn lanes have been added to the eastbound, westbound, northbound, and southbound approaches, with adjustments to left-turn storage distances on each approach, and signal timing optimization. Despite these mitigation measures, critical and over capacity movements are still noted due to high intersection volumes.

The signalized intersection of William Halton Parkway at Burnhamthorpe Road is expected to operate at an overall v/c ratio greater than or equal to 0.85 during the AM peak period. The eastbound through / right-turn operates at a v/c ratio greater than or equal to 0.85 in the AM peak period and the westbound left operates at a v/c ratio greater than or equal to 0.95 in both the AM and PM peak periods. The 95th percentile queue on the westbound left is also expected to extend past the available storage distance in both peak periods. As a mitigation measure, the cycle length has been extended with signal timing optimization in the AM and PM peak periods. The westbound left-turn storage has also been extended to accommodate the 95th percentile queue length.

The signalized intersection of Dundas Street at Trafalgar Road is expected to operate at an overall v/c ratio greater than or equal to 0.85 in both the AM and PM peak periods. The left-turn and through movements are anticipated to operate at a v/c ratio greater than or equal to 0.95 and 0.85 respectively in all directions in one or both peak periods. The eastbound left, northbound left, and southbound left 95th percentile queues are also expected to exceed available storage distances. This is expected due to high volumes at this intersection in both the AM and PM peak periods. As a mitigation measure, double left-turn lanes have been added to the westbound, northbound, and southbound approaches, with adjustments to left-turn storage distances on each approach, and signal timing optimization. Despite these mitigation measures, critical and over capacity movements are still noted due to high intersection volumes.

The signalized intersection of Trafalgar Road at the Highway 407 WB off-ramp is expected to operate at an overall v/c ratio greater than or equal to 0.85 in the PM peak hour. The northbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 and the westbound left / through / right movement on the ramp terminal is expected to operate at a v/c ratio greater than or equal to 0.75 in the PM peak period. This is expected due to high northbound volumes on Trafalgar Road. As a mitigation measure, the cycle length has been extended with signal timing optimization during the PM peak period to ensure the ramp movements do not exceed a v/c ratio of 0.75. The operation of ramp movements has been prioritized over other movements at the ramp intersections as poor operation of ramp movements can present a safety issue should queues back up to through traffic along the highway. As such, critical and over capacity movements are still noted due to high volumes along Trafalgar Road.

The roundabout at Sixth Line and William Halton Parkway is expected to operate at LOS E or worse in the AM peak period. The eastbound, northbound, and southbound approaches experience movements LOS E or worse in the AM peak and the westbound approach experiences movements LOS E or worse in the PM peak. This is likely due to high volumes of southbound left turning vehicles at this intersection. As a mitigation measure, channelized right-turn lanes are added to the eastbound and southbound approaches. Despite these mitigation measures, critical and over capacity movements are still noted as the result of high intersection volumes along William Halton Parkway and high southbound left volumes in the AM peak period.

The signalized intersection of Trafalgar Road at the Highway 407 EB off-ramp is expected to operate at an overall v/c ratio greater than or equal to 0.85 in both the AM and PM peak hours. The northbound and southbound through movements are expected to operate at a v/c ratio greater than or equal to 0.85 and the eastbound right movement on the ramp terminal is expected to operate at a v/c ratio greater than or equal to 0.75 in the AM peak period. As a mitigation measure, the cycle length has been extended with signal timing optimization in both peak periods to ensure the ramp does not exceed a v/c ratio of 0.75. The operation of ramp movements has been prioritized over other movements at the ramp intersections as poor operation of ramp movements can present a safety issue should queues back up to through traffic along the highway. As such, critical and over capacity movements are still noted due to high volumes along Trafalgar Road.

The roundabout at Ninth Line at William Halton Parkway / Burnhamthorpe Road is expected to operate at LOS E or worse in both the AM and PM peak hours. This is a result of high volumes travelling through this intersection during both peak hours. As a mitigation measure, channelized right turn lanes are added to the eastbound and southbound approaches. Despite these mitigation measures, critical and over capacity movements are still noted as the result of high intersection volumes.

The signalized intersection of Collector 2 at Trafalgar Road is expected to operate at an overall v/c ratio greater than or equal to 0.85 in both the AM and PM peak hours. The eastbound left, westbound through / right, northbound through, southbound left, and southbound through movements are expected to be critical in one or both peak periods. The eastbound left, northbound right, and southbound left turn 95th percentile queues are also expected to extend past available storage distances in the AM and PM peak periods. This is expected due to high volumes at this intersection in both peak periods. As a mitigation measure, a westbound right-turn lane has been added, with the implementation of a protected northbound left turn phase, double southbound left turn lanes and signal timing optimization. Despite these mitigation measures, critical and over capacity movements are still noted as the result of high intersection volumes. It is noted that the presence of over capacity movements is consistent with the operational analysis results presented in the I/O Highway 407 & Trafalgar Road TIS prepared by Paradigm Transportation Solutions Limited discussed in Section 4.1.8.6. In addition to high volumes on Trafalgar Road, the southbound left and westbound right movements are also expected to experience high volumes due to the background development traffic. Further mitigation to this intersection should be addressed within the I/O Highway 407 & Trafalgar Road TIS.

The northbound left turn at the unsignalized intersection of Collector 1 at William Halton Parkway is expected to operate at LOS E or worse in the AM and PM peak periods. This is expected due to a high eastbound and westbound through volume on William Halton Parkway. As a mitigation measure, the intersection has been signalized and signal timing optimization has been performed.

The southbound right turn at the unsignalized intersection of Local 3 at William Halton Parkway is expected to operate at LOS E or worse in the PM peak period. Due to the close proximity of this intersection to William Halton Parkway and Trafalgar Road, the mitigation measures at that intersection are shown to influence the results and improve the operations at Local 3 and Trafalgar Road.

The southbound left turn at the unsignalized intersection of Collector 5 at William Halton Parkway is expected to operate at LOS E or worse in the PM peak period. This is expected due to a high eastbound and westbound through volume on William Halton Parkway. As a mitigation measure, the intersection has been signalized and signal timing optimization has been performed.

The poor operation of some Study Area intersections is expected due to the high traffic volumes projected along Trafalgar Road, William Halton Parkway, and Dundas Street. Additionally, due to the planned HOV lanes along Trafalgar Road and Dundas Street, capacity is also constrained along these corridors within the Study Area. As a result of the high volumes and reduced capacity, some over-capacity movements are not able to be mitigated using reasonable mitigation measures.

7.2.3.1 2031 Future Background Conditions Analysis – Saturday Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 31 summarizes the operational analysis of the 2031 Saturday existing conditions and Table 32 summarizes the 95th percentile queue lengths. Appendix H contains the 2031 Saturday future background conditions Synchro worksheets.

Table 31: 2031 Future Background Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.01	33
	EBR	C	0.00	33
	WBL	D	0.65	42
	WBL/T/R	D	0.42	36
	WBR	C	0.01	33
	NBL	A	0.01	5
	NBT	B	0.86	14
	SBT/R	A	0.51	9
	Overall	**B**	**0.86**	**14**
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	B	0.12	19
	EBR	C	0.58	24
	NBT	F	1.20	108
	SBT	C	0.98	29
	Overall	**E**	**1.04**	**70**
Mitigation: Signal cycle length extension to 120 s, signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*D*	*0.16*	*42*
	EBR	*E*	*0.72*	*58*
	NBT	*C*	*0.94*	*21*
	SBT	*B*	*0.77*	*11*
	Overall	***B***	***0.90***	***18***

Table 32: 2031 Future Background Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2
	EBR	5	0
	WBL	-	53
	WBL/T/R	-	39
	WBR	60	0
	NBL	-	1
	NBT	-	210
	SBT/R	-	86
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	10
	EBR	875	32
	NBT	-	#240
	SBT	-	#181

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Mitigation: Signal cycle length extension to 120 s, signal timing optimization			
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*-*	*18*
	EBR	*875*	*54*
	NBT	*-*	*#350*
	SBT	*-*	*189*
Notes:	# - 95% percentile exceeds capacity		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramps are expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period. The northbound through movement at both off-ramps are expected to operate at a v/c ratio greater than or equal to 0.85 and the southbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 at the EB off-ramp. This is expected due to high through volumes along Trafalgar Road at these intersections. As a mitigation measure, the signal cycle length has been extended and signal timing optimization has been performed at the intersection of Trafalgar Road at the Highway 407 EB off-ramp.

7.2.4 2036 Future Background Conditions Operational Analysis

The analysis parameters and mitigation measures used in the 2031 future background conditions have been carried forward as part of the analysis of 2036 future background conditions.

Table 33 summarizes the results of the operational analysis and Table 34 summarizes the 95th percentile queue lengths for 2036 future background conditions. Synchro and Sidra worksheets have been included in Appendix I.

Table 33: 2036 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.09	132	F	1.06	124
	EBT	D	0.92	55	D	0.66	44
	EBR	C	0.30	33	C	0.07	35
	WBL	F	0.82	85	F	1.18	165
	WBT	D	0.39	39	E	0.94	63
	WBR	D	0.09	35	F	1.03	98
	NBL	F	0.93	94	F	1.00	109
	NBT	F	1.18	132	F	1.11	104
	NBR	C	0.02	30	C	0.02	28
	SBL	F	1.10	146	F	1.08	155
	SBT	E	0.95	59	F	1.09	99
	SBR	C	0.14	33	D	0.38	39
	Overall	**F**	**1.08**	**86**	**F**	**1.10**	**94**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: AM & PM signal timing optimization, SBR storage of 70 m							
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*F*	*0.92*	*83*	*F*	*0.91*	*81*
	EBT	*D*	*0.86*	*47*	*D*	*0.66*	*44*
	EBR	*C*	*0.28*	*31*	*C*	*0.07*	*35*
	WBL	*F*	*0.92*	*107*	*E*	*0.89*	*75*
	WBT	*D*	*0.40*	*40*	*D*	*0.88*	*53*
	WBR	*D*	*0.09*	*36*	*E*	*0.92*	*68*
	NBL	*F*	*0.92*	*91*	*F*	*0.92*	*88*
	NBT	*F*	*1.29*	*185*	*F*	*1.31*	*195*
	NBR	*C*	*0.02*	*33*	*C*	*0.02*	*33*
	SBL	*F*	*0.92*	*91*	*F*	*0.84*	*87*
	SBT	*E*	*0.99*	*71*	*F*	*1.28*	*184*
	SBR	*C*	*0.14*	*35*	*D*	*0.45*	*45*
	Overall	***F***	***1.06***	***97***	***F***	***1.08***	***120***
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	E	0.83	71	F	0.91	103
	EBT/R	D	0.56	44	D	0.43	44
	WBL	E	0.69	57	D	0.63	53
	WBT/R	D	0.30	40	D	0.50	45
	NBL	F	1.16	157	F	1.03	116
	NBT/R	C	0.79	23	C	0.77	20
	SBL	C	0.62	31	C	0.65	34
	SBT/R	A	0.53	10	A	0.54	9
	Overall	**C**	**1.03**	**28**	**C**	**0.96**	**25**
Mitigation: AM & PM permitted + protected NBL, signal timing optimization							
Burnhamthorpe Road at Trafalgar Road (Signalized)	*EBL*	*E*	*0.83*	*71*	*F*	*0.92*	*105*
	EBT/R	*D*	*0.54*	*43*	*D*	*0.41*	*44*
	WBL	*E*	*0.69*	*57*	*D*	*0.63*	*53*
	WBT/R	*D*	*0.30*	*40*	*D*	*0.50*	*45*
	NBL	*B*	*0.63*	*20*	*B*	*0.55*	*15*
	NBT/R	*C*	*0.80*	*23*	*C*	*0.77*	*20*
	SBL	*C*	*0.60*	*28*	*C*	*0.64*	*32*
	SBT/R	*B*	*0.64*	*18*	*B*	*0.64*	*17*
	Overall	***C***	***0.79***	***27***	***C***	***0.78***	***25***
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	D	0.88	35	C	0.73	31
	WBL	E	0.90	61	D	0.86	41
	WBT	A	0.26	7	B	0.68	12
	NBL	A	0.00	0	A	0.00	0
	NBR	D	0.68	52	D	0.29	37
	Overall	**C**	**0.86**	**35**	**C**	**0.70**	**21**
Mitigation: AM signal timing optimization, WBL storage of 120 m							
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	*C*	*0.84*	*32*	*C*	*0.73*	*31*
	WBL	*E*	*0.93*	*71*	*D*	*0.86*	*41*
	WBT	*A*	*0.26*	*7*	*B*	*0.68*	*12*
	NBL	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	NBR	*E*	*0.74*	*58*	*D*	*0.29*	*37*
	Overall	***D***	***0.90***	***36***	***C***	***0.70***	***21***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Dundas Street at Trafalgar Road *(Signalized)*	EBL	F	2.00	523	F	1.75	412
	EBT	F	1.32	189	F	1.08	87
	EBR	C	0.28	28	C	0.19	28
	WBL	F	1.37	256	F	1.31	226
	WBT	D	0.83	42	F	1.18	128
	WBR	C	0.38	32	C	0.40	33
	NBL	F	1.00	125	F	1.42	273
	NBT	D	0.78	42	F	1.13	112
	NBR	C	0.13	31	C	0.33	34
	SBL	F	2.01	532	F	1.40	265
	SBT	F	1.08	92	D	0.75	42
	SBR	C	0.40	34	D	0.49	37
	Overall	**F**	**1.35**	**150**	**F**	**1.23**	**123**
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	F	0.94	54	C	0.68	21
	EBT	F	0.94	53	C	0.68	20
	EBR	A	0.06	3	A	0.04	3
	WBL/T	B	0.47	12	F	1.02	59
	WBT/R	B	0.47	12	F	1.02	59
	NBL/T	E	0.80	50	B	0.42	15
	NBT/R	E	0.80	50	B	0.42	15
	SBL/T	F	1.26	144	C	0.52	16
	SBT	A	0.31	9	B	0.49	15
	SBR	A	0.19	4	A	0.17	4
	Overall	**F**	**1.18**	**59**	**D**	**1.02**	**33**
Mitigation: AM & PM channelized WB right turn lane							
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*E*	*0.91*	*48*	*C*	*0.63*	*18*
	EBT	*E*	*0.91*	*47*	*C*	*0.63*	*17*
	EBR	*A*	*0.06*	*3*	*A*	*0.04*	*3*
	WBL/T	*A*	*0.33*	*9*	*B*	*0.61*	*14*
	WBT	*A*	*0.433*	*9*	*B*	*0.61*	*14*
	WBR	*A*	*0.08*	*3*	*A*	*0.29*	*5*
	NBL/T	*E*	*0.74*	*43*	*B*	*0.36*	*13*
	NBT/R	*E*	*0.74*	*43*	*B*	*0.36*	*13*
	SBL/T	*F*	*1.18*	*113*	*B*	*0.47*	*14*
	SBT	*A*	*0.26*	*8*	*B*	*0.45*	*14*
	SBR	*A*	*0.19*	*3*	*A*	*0.16*	*5*
	Overall	***E***	***1.18***	***48***	***B***	***0.63***	***12***
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	C	0.29	27	C	0.15	21
	EBT/R	C	0.25	26	C	0.16	21
	WBL	C	0.64	34	C	0.67	30
	WBT/R	C	0.34	26	C	0.35	22
	NBL	A	0.40	9	A	0.24	8
	NBT/R	A	0.36	7	A	0.26	8
	SBL	A	0.22	7	A	0.13	7
	SBT/R	A	0.25	7	A	0.32	8
	Overall	**B**	**0.46**	**13**	**B**	**0.42**	**13**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.03	32	C	0.06	33
	EBR	C	0.00	31	C	0.00	33
	WBL	D	0.64	40	D	0.71	45
	WBL/T/R	D	0.67	42	D	0.76	49
	WBR	C	0.00	31	C	0.01	33
	NBL	A	0.03	7	A	0.07	8
	NBT	B	0.87	15	F	1.19	107
	SBT/R	B	0.68	12	B	0.61	12
	Overall	**B**	**0.87**	**16**	**E**	**1.15**	**66**
Mitigation: AM & PM signal timing optimization							
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.03*	*33*	*C*	*0.06*	*33*
	EBR	*C*	*0.00*	*32*	*C*	*0.00*	*33*
	WBL	*D*	*0.65*	*42*	*D*	*0.71*	*45*
	WBL/T/R	*D*	*0.68*	*44*	*D*	*0.76*	*49*
	WBR	*C*	*0.00*	*32*	*C*	*0.01*	*33*
	NBL	*A*	*0.03*	*7*	*A*	*0.07*	*8*
	NBT	*B*	*0.86*	*15*	*F*	*1.20*	*108*
	SBT/R	*B*	*0.67*	*11*	*B*	*0.61*	*12*
	Overall	***B***	***0.86***	***15***	***E***	***1.15***	***67***
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	B	0.12	18	C	0.12	31
	EBR	C	0.76	30	D	0.76	47
	NBT	E	1.12	78	F	1.47	230
	SBT	F	1.23	123	C	0.99	34
	Overall	**F**	**1.06**	**96**	**F**	**1.29**	**147**
Mitigation: AM & PM signal timing optimization							
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*B*	*0.12*	*17*	*C*	*0.11*	*28*
	EBR	*C*	*0.74*	*28*	*D*	*0.74*	*43*
	NBT	*F*	*1.15*	*91*	*F*	*1.50*	*244*
	SBT	*F*	*1.26*	*139*	*D*	*1.01*	*39*
	Overall	***F***	***1.07***	***109***	***F***	***1.31***	***157***
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	1.46	234	F	1.24	138
	EBT	F	1.46	168	F	1.24	99
	EBR	A	0.23	6	A	0.14	4
	WBL/T	C	0.76	24	F	1.34	178
	WBT/R	C	0.76	24	F	1.34	178
	NBL/T	F	0.96	80	F	2.21	584
	NBT/R	F	0.96	77	F	2.21	586
	SBL/T	C	0.49	17	E	0.75	39
	SBT	F	1.45	233	E	0.75	37
	SBR	A	0.06	3	A	0.07	4
	Overall	**F**	**1.46**	**107**	**F**	**2.21**	**242**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	D	0.75	47	C	0.67	29
	EBT/R	C	0.13	27	C	0.23	21
	WBL	A	0.00	0	A	0.00	0
	WBT	A	0.00	0	A	0.00	0
	WBR	D	0.17	36	F	1.31	190
	NBL	D	0.55	50	E	0.51	61
	NBT	C	0.91	32	F	1.59	308
	NBR	B	0.39	20	C	0.44	35
	SBL	F	1.04	87	F	1.53	310
	SBT	B	0.66	17	F	1.13	103
	SBR	B	0.24	12	C	0.22	28
	Overall	**C**	**0.93**	**31**	**F**	**1.40**	**189**
Collector 1 at William Halton Parkway *(Signalized)*	EBL	A	0.00	0	A	0.00	0
	EBT/R	A	0.65	4	A	0.36	3
	WBL	C	0.67	25	A	0.21	3
	WBT/R	A	0.23	2	A	0.54	4
	NBL	D	0.00	37	D	0.00	38
	NBT/R	A	0.08	0	A	0.28	0
	SBL	A	0.00	0	A	0.00	0
	SBT/R	A	0.00	0	A	0.00	0
	Overall	**A**	**0.63**	**4**	**A**	**0.52**	**4**
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	A	0.72	0	A	0.39	0
	EBT/R	A	0.38	0	A	0.20	0
	WBT	A	0.22	0	A	0.46	0
	WBR	A	0.10	0	A	0.10	0
	NBR	B	0.15	12	C	0.43	15
	SBR	A	0.01	10	A	0.05	10
	Overall	**B**	**-**	**1**	**A**	**-**	**2**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.44	0	A	0.28	0
	WBT	A	0.17	0	A	0.48	0
	WBR	A	0.03	0	A	0.05	0
	SBR	B	0.23	11	C	0.69	3
	Overall	**A**	**-**	**1**	**D**	**-**	**45**
Loyalist Trail at Trafalgar Road *(Unsignalized)*	EBR	A	0.05	10	B	0.15	11
	NBT	A	0.43	0	A	0.44	0
	SBT	A	0.32	0	A	0.41	0
	SBR	A	0.10	0	A	0.08	0
	Overall	**A**	**-**	**<1**	**A**	**-**	**<1**
Collector 5 at William Halton Parkway *(Unsignalized)*	EBL	A	0.00	0	A	0.00	0
	EBT	A	0.55	5	A	0.39	6
	WBT/R	A	0.23	3	A	0.72	9
	SBL	C	0.35	32	C	0.50	29
	SBR	A	0.00	0	A	0.00	0
	Overall	**A**	**0.52**	**5**	**A**	**0.67**	**10**

Table 34: 2036 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	105	#100	#102
	EBT	-	#197	111
	EBR	60	45	9
	WBL	120	#45	#115
	WBT	-	63	#183
	WBR	205	15	#215
	NBL	85	#75	#85
	NBT	-	#281	#272
	NBR	55	0	0
	SBL	80	#83	#57
	SBT	-	#189	#237
	SBR	60	22	58
Mitigation: AM & PM signal timing optimization, SBR storage of 70 m				
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*105*	*#90*	*#92*
	EBT	*-*	*179*	*111*
	EBR	*60*	*41*	*9*
	WBL	*120*	*#48*	*#94*
	WBT	*-*	*63*	*166*
	WBR	*205*	*15*	*#192*
	NBL	*85*	*#75*	*#81*
	NBT	*-*	*#300*	*#302*
	NBR	*55*	*0*	*0*
	SBL	*80*	*#75*	*#50*
	SBT	*-*	*#200*	*#263*
	SBR	*70*	*23*	*66*
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	100	56	#45
	EBT/R	-	53	37
	WBL	120	37	38
	WBT/R	-	28	42
	NBL	130	#63	#49
	NBT/R	-	#240	200
	SBL	170	34	#41
	SBT/R	-	108	107
Mitigation: AM & PM permitted + protected NBL, signal timing optimization				
Burnhamthorpe Road at Trafalgar Road (Signalized)	*EBL*	*100*	*56*	*#47*
	EBT/R	*-*	*50*	*35*
	WBL	*120*	*37*	*38*
	WBT/R	*-*	*28*	*42*
	NBL	*130*	*34*	*27*
	NBT/R	*-*	*#242*	*#212*
	SBL	*170*	*33*	*38*
	SBT/R	*-*	*152*	*157*
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	-	195	138
	WBL	100	#105	100
	WBT	-	34	124
	NBL	30	0	0
	NBR	-	#95	26

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM signal timing optimization, WBL storage of 120 m				
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	-	194	-
	WBL	120	#113	-
	WBT	-	34	-
	NBL	30	0	-
	NBR	-	#105	-
Dundas Street at Trafalgar Road *(Signalized)*	EBL	125	#142	#122
	EBT	-	#345	#243
	EBR	85	39	26
	WBL	80	#76	#81
	WBT	-	147	#276
	WBR	85	55	59
	NBL	90	#53	#89
	NBT	-	128	#236
	NBR	50	20	48
	SBL	90	#116	#87
	SBT	-	#218	123
	SBR	65	58	72
Mitigation: EBL storage of 150 m, WBL storage of 90 m, SBL storage of 120 m, SBR storage of 80 m				
Dundas Street at Trafalgar Road (Signalized)	*EBL*	*150*	*#142*	*#122*
	EBT	*-*	*#345*	*#243*
	EBR	*85*	*39*	*26*
	WBL	*90*	*#76*	*#81*
	WBT	*-*	*147*	*#276*
	WBR	*85*	*55*	*59*
	NBL	*90*	*#53*	*#89*
	NBT	*-*	*128*	*#236*
	NBR	*50*	*20*	*48*
	SBL	*120*	*#116*	*#87*
	SBT	*-*	*#218*	*123*
	SBR	*80*	*58*	*72*
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	76	33
	EBT	-	77	33
	EBR	-	0	0
	WBL/T	-	16	219
	WBT/R	-	16	222
	NBL/T	-	27	11
	NBT/R	-	27	11
	SBL/T	-	522	16
	SBT	-	7	14
	SBR	-	0	0
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	55	18	10
	EBT/R	-	18	12
	WBL	40	36	41
	WBT/R	-	24	25
	NBL	30	33	18
	NBT/R	-	43	27
	SBL	30	14	11
	SBT/R	-	29	39

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: WBL storage of 50 m, NBL storage of 40 m				
Sixth Line at Burnhamthorpe Road (Signalized)	*EBL*	*55*	*18*	*10*
	EBT/R	*-*	*18*	*12*
	WBL	*50*	*36*	*41*
	WBT/R	*-*	*24*	*25*
	NBL	*40*	*33*	*18*
	NBT/R	*-*	*43*	*27*
	SBL	*30*	*14*	*11*
	SBT/R	*-*	*29*	*39*
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	3	5
	EBR	5	0	0
	WBL	-	52	66
	WBL/T/R	-	55	71
	WBR	60	0	0
	NBL	-	1	2
	NBT	-	206	#441
	SBT/R	-	129	128
Mitigation: AM & PM signal timing optimization				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*3*	*5*
	EBR	*5*	*0*	*0*
	WBL	*-*	*61*	*65*
	WBL/T/R	*-*	*64*	*70*
	WBR	*60*	*0*	*0*
	NBL	*-*	*1*	*2*
	NBT	*-*	*190*	*#437*
	SBT/R	*-*	*122*	*127*
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	13	15
	EBR	875	60	59
	NBT	-	#228	#556
	SBT	-	#260	#314
Mitigation: AM & PM signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	12	14
	EBR	*875*	57	56
	NBT	-	#219	#529
	SBT	-	#250	#301
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	-	661	447
	EBT	-	661	447
	EBR	-	0	0
	WBL/T	-	46	606
	WBT/R	-	46	606
	NBL/T	-	64	949
	NBT/R	-	64	1110
	SBL/T	-	14	24
	SBT	-	555	24
	SBR	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	95	#42	91
	EBT/R	-	16	30
	WBL	30	0	0
	WBT	-	0	0
	WBR	300	17	#298
	NBL	45	17	21
	NBT	-	#143	#349
	NBR	70	40	62
	SBL	105	#83	#104
	SBT	-	99	#241
	SBR	40	27	33
Collector 1 at William Halton Parkway *(Signalized)*	EBL	30	0	0
	EBT/R	-	184	67
	WBL	50	#51	16
	WBT/R	-	40	122
	NBL	30	5	11
	NBT/R	-	0	0
	SBL	30	0	0
	SBT/R	-	0	0
Mitigation: WBL storage of 60 m				
Collector 1 at William Halton Parkway (Signalized)	*EBL*	*30*	*0*	*0*
	EBT/R	*-*	*184*	*67*
	WBL	*60*	*#51*	*16*
	WBT/R	*-*	*40*	*122*
	NBL	*30*	*5*	*11*
	NBT/R	*-*	*0*	*0*
	SBL	*30*	*0*	*0*
	SBT/R	*-*	*0*	*0*
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	4	17
	SBR	-	<1	1
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	7	42
Loyalist Trail at Trafalgar Road *(Unsignalized)*	EBR	-	1	4
	NBT	-	0	0
	SBT	-	0	0
	SBT/R	-	0	0
Collector 5 at William Halton Parkway *(Signalized)*	EBL	30	0	0
	EBT	-	122	67
	WBT/R	-	39	#189
	SBL	40	20	35
	SBR	-	0	0
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of background growth and nearby background development traffic, several study intersections are expected to operate with movements and/or overall v/c ratios greater than or equal to 0.85 in one or both the AM and PM peak periods in the 2036 future background horizon. Extended queues are also noted. Study Area intersections are shown to operate slightly worse than the mitigated 2031 future background analysis.

Mitigation measures including double left-turn lanes, increased storage distances, and signal timing optimization has been considered at these intersections. As a result of the mitigation measures, some intersections are expected to function adequately, however, the following intersections are expected to continue operating with critical or over capacity movements in one or both peak periods:

- William Halton Parkway at Trafalgar Road
- William Halton Parkway at Burnhamthorpe Road
- Dundas Street at Trafalgar Road
- Sixth Line at William Halton Parkway
- Highway 407 WB Off-Ramp at Trafalgar Road
- Ninth Line at William Halton Parkway / Burnhamthorpe Road
- Highway 407 EB Off-Ramp at Trafalgar Road
- Collector 2 at Trafalgar Road

This is expected due to the high traffic volumes projected along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street. Additionally, due to the planned HOV lanes along Trafalgar Road and Dundas Street, capacity is also constrained along these corridors within the Study Area. As a result of the high volumes and reduced capacity, some over-capacity movements are not able to be mitigated using reasonable mitigation measures.

7.2.4.1 2036 Future Background Conditions Analysis – Saturday Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 33 summarizes the operational analysis of the 2036 Saturday existing conditions and Table 36 summarizes the 95th percentile queue lengths. Appendix I contains the 2036 Saturday future background conditions Synchro worksheets.

Table 35: 2036 Future Background Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	D	0.02	36
	EBR	D	0.00	36
	WBL	D	0.69	48
	WBL/T/R	D	0.46	40
	WBR	D	0.01	36
	NBL	A	0.01	6
	NBT	B	0.88	15
	SBT/R	A	0.55	9
	Overall	**B**	**0.89**	**15**

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	D	0.16	42
	EBR	E	0.74	59
	NBT	C	0.99	29
	SBT	B	0.84	14
	Overall	**C**	**0.94**	**24**

Table 36: 2036 Future Background Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2
	EBR	5	0
	WBL	-	54
	WBL/T/R	-	40
	WBR	60	0
	NBL	-	1
	NBT	-	#275
	SBT/R	-	101
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	-	19
	EBR	875	56
	NBT	-	#379
	SBT	-	235
Notes:	# - 95% percentile exceeds capacity		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramps are expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period in the 2036 future background horizon. Ramp movements are shown to operate with a v/c ratio less than 0.75. The northbound and southbound through movements at these intersections are expected to continue to operate at critical or over capacity v/c ratios due to the high volumes projected along Trafalgar Road and are not able to be mitigated using reasonable measures.

7.2.5 2041 Future Background Conditions Operational Analysis

The analysis parameters and mitigation measures used in the 2036 future background conditions have been carried forward as part of the analysis of 2041 future background conditions. It is however noted that the through lanes along both Dundas Street and Trafalgar Road have been reduced to two lanes in each direction to reflect the implementation of BRT lanes along these corridors. As further details regarding the BRT corridors on both Dundas Street and Trafalgar Road are not available, it has been assumed that centre BRT lanes will be present along Dundas Street and Trafalgar Road and as such, protected left-turn lanes have been considered along these corridors. This assumption has been made as it provides the most conservative analysis in the absence of further BRT configuration details. Table 37 summarizes the results of the operational analysis and Table 38 summarizes the 95th percentile queue lengths for the 2041 future background conditions. Synchro and Sidra worksheets have been included in Appendix J.

Table 37: 2041 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.33	224	F	2.22	617
	EBT	D	0.92	52	D	0.62	43
	EBR	C	0.33	31	D	0.12	35
	WBL	F	1.34	248	F	1.24	181
	WBT	D	0.35	38	E	0.98	68
	WBR	D	0.09	35	F	0.98	81
	NBL	F	1.81	440	F	1.55	324
	NBT	F	1.70	369	F	1.73	379
	NBR	C	0.02	33	C	0.02	34
	SBL	F	1.28	210	F	1.23	201
	SBT	F	1.56	306	F	1.85	436
	SBR	D	0.48	42	E	0.74	57
	Overall	**F**	**1.40**	**238**	**F**	**1.55**	**291**
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	F	0.94	89	F	0.98	112
	EBT/R	D	0.49	39	D	0.33	37
	WBL	D	0.58	44	D	0.47	40
	WBT/R	D	0.30	36	D	0.47	39
	NBL	E	0.78	71	E	0.73	68
	NBT/R	F	1.43	230	F	1.39	212
	SBL	E	0.72	61	F	0.96	101
	SBT/R	E	1.04	62	F	1.31	172
	Overall	**F**	**1.17**	**130**	**F**	**1.21**	**161**
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	D	0.93	40	D	0.78	36
	WBL	F	1.08	111	E	0.96	62
	WBT	A	0.25	7	B	0.74	13
	NBL	A	0.00	0	A	0.00	0
	NBR	F	1.00	98	D	0.62	49
	Overall	**D**	**1.08**	**53**	**C**	**0.90**	**31**
Dundas Street at Trafalgar Road *(Signalized)*	EBL	F	1.86	456	F	2.00	522
	EBT	F	1.98	489	F	1.41	232
	EBR	C	0.37	34	C	0.24	29
	WBL	F	0.88	80	F	1.37	250
	WBT	F	1.18	132	F	1.55	294
	WBR	D	0.51	38	C	0.49	35
	NBL	F	0.94	103	F	1.50	306
	NBT	F	1.16	127	F	1.61	322
	NBR	C	0.14	31	C	0.36	34
	SBL	F	1.92	491	F	1.82	447
	SBT	F	1.48	265	F	1.23	155
	SBR	C	0.41	35	D	0.73	45
	Overall	**F**	**1.77**	**270**	**F**	**1.64**	**252**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	F	1.03	77	C	0.61	19
	EBT	F	1.03	76	C	0.61	18
	EBR	A	0.06	3	A	0.04	3
	WBL/T	A	0.34	9	C	0.70	19
	WBT	A	0.34	9	C	0.70	19
	WBR	A	0.09	3	A	0.35	5
	NBL/T	F	0.89	65	B	0.43	14
	NBT/R	F	0.89	64	B	0.43	14
	SBL/T	F	1.34	174	C	0.60	20
	SBT	A	0.35	9	C	0.60	19
	SBR	A	0.20	4	A	0.17	5
	Overall	**F**	**1.34**	**75**	**B**	**0.70**	**15**
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	C	0.28	26	C	0.14	20
	EBT/R	C	0.26	25	B	0.14	20
	WBL	D	0.68	36	C	0.75	33
	WBT/R	C	0.35	26	C	0.35	21
	NBL	B	0.43	10	B	0.28	11
	NBT/R	A	0.41	8	A	0.32	10
	SBL	A	0.27	9	A	0.16	9
	SBT/R	A	0.27	7	B	0.37	10
	Overall	**B**	**0.49**	**14**	**B**	**0.50**	**15**
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	D	0.05	40	C	0.06	31
	EBR	D	0.00	39	C	0.00	31
	WBL	E	0.88	74	D	0.77	47
	WBL/T/R	F	0.92	83	D	0.82	52
	WBR	D	0.00	39	C	0.01	31
	NBL	B	0.04	12	B	0.08	13
	NBT	C	0.95	24	F	1.56	275
	SBT/R	B	0.79	16	B	0.75	17
	Overall	**C**	**0.98**	**25**	**F**	**1.42**	**162**
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	B	0.10	15	C	0.09	26
	EBR	C	0.85	33	D	0.82	47
	NBT	F	1.53	263	F	2.06	499
	SBT	F	1.88	418	F	1.31	163
	Overall	**F**	**1.39**	**318**	**F**	**1.67**	**355**
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	1.58	285	F	1.31	167
	EBT	F	1.58	207	F	1.31	120
	EBR	A	0.26	6	A	0.18	4
	WBL/T	D	0.80	28	F	1.47	234
	WBT/R	D	0.80	27	F	1.47	234
	NBL/T	F	1.06	107	F	2.47	699
	NBT/R	F	1.06	104	F	2.47	701
	SBL/T	C	0.53	19	E	0.80	45
	SBT	F	1.58	290	E	0.80	43
	SBR	A	0.07	3	A	0.07	4
	Overall	**F**	**1.58**	**136**	**F**	**2.47**	**297**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	D	0.69	40	C	0.64	27
	EBT/R	C	0.12	26	B	0.22	19
	WBL	A	0.00	0	A	0.00	0
	WBT	A	0.00	0	A	0.00	0
	WBR	D	0.45	38	F	1.86	433
	NBL	D	0.57	52	E	0.51	61
	NBT	F	1.61	304	F	3.48	1164
	NBR	C	0.51	25	D	0.54	42
	SBL	F	1.17	131	F	1.36	230
	SBT	C	0.91	26	F	1.44	243
	SBR	B	0.25	13	C	0.23	29
	Overall	**F**	**1.20**	**129**	**F**	**2.24**	**588**
Collector 1 at William Halton Parkway *(Signalized)*	EBL	A	0.00	0	A	0.00	0
	EBT/R	B	0.81	10	A	0.42	8
	WBL	F	4.47	1596	F	1.18	124
	WBT/R	A	0.30	4	B	0.79	14
	NBL	C	0.11	30	C	0.28	25
	NBT/R	C	0.02	30	A	0.17	24
	SBL	C	0.40	33	D	0.75	39
	SBT/R	C	0.00	29	C	0.01	23
	Overall	**F**	**3.79**	**204**	**C**	**1.06**	**27**
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	A	0.79	0	A	0.49	0
	EBT/R	A	0.42	0	A	0.25	0
	WBT	A	0.34	0	A	0.60	0
	WBR	A	0.10	0	A	0.10	0
	NBR	C	0.45	17	F	1.18	119
	SBR	B	0.02	12	B	0.07	12
	Overall	**C**	**-**	**1**	**D**	**-**	**20**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.56	0	A	0.34	0
	WBT	A	0.17	0	A	0.54	0
	WBR	A	0.03	0	A	0.05	0
	SBR	B	0.29	12	F	1.04	73
	Overall	**A**	**-**	**1**	**E**	**-**	**12**
Loyalist Trail at Trafalgar Road *(Unsignalized)*	EBR	A	0.16	11	F	0.97	76
	NBT	A	0.78	0	A	0.80	0
	SBT	A	0.53	0	A	0.69	0
	SBR	A	0.26	0	A	0.20	0
	Overall	**A**	**-**	**<1**	**A**	**-**	**5**
Collector 5 at William Halton Parkway *(Unsignalized)*	EBL	A	0.56	6	F	2.56	746
	EBT	A	0.60	5	A	0.39	6
	WBT/R	A	0.24	4	B	0.82	12
	SBL	C	0.42	31	C	0.59	29
	SBR	C	0.02	28	C	0.27	25
	Overall	**A**	**0.57**	**8**	**E**	**2.07**	**66**

Table 38: 2041 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	105	#150	#289
	EBT	-	#213	103
	EBR	60	49	18
	WBL	120	#76	#157
	WBT	-	57	#206
	WBR	205	15	#212
	NBL	85	#169	#158
	NBT	-	#439	#446
	NBR	55	0	0
	SBL	80	#111	#79
	SBT	-	#388	#435
	SBR	70	75	#116
Burnhamthorpe Road at Trafalgar Road (Signalized)	EBL	100	#80	#69
	EBT/R	-	55	37
	WBL	120	38	38
	WBT/R	-	31	50
	NBL	130	#74	#68
	NBT/R	-	#474	#428
	SBL	170	59	#121
	SBT/R	-	#291	#418
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	-	#237	140
	WBL	120	#155	#162
	WBT	-	34	150
	NBL	30	0	*0*
	NBR	-	#154	#79
Dundas Street at Trafalgar Road *(Signalized)*	EBL	150	#162	#142
	EBT	-	#539	#373
	EBR	85	55	35
	WBL	90	#62	#85
	WBT	-	#260	#419
	WBR	85	77	75
	NBL	90	#53	#95
	NBT	-	#253	#398
	NBR	50	22	54
	SBL	120	#123	#116
	SBT	-	#354	#277
	SBR	80	58	119
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	120	24
	EBT	-	124	24
	EBR	-	0	0
	WBL/T	-	8	44
	WBT	-	8	44
	WBR	-	0	0
	NBL/T	-	36	11
	NBT/R	-	37	11
	SBL/T	-	94	20
	SBT	-	1	20
	SBR	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Sixth Line at Burnhamthorpe Road ***(Signalized)***	EBL	55	18	10
	EBT/R	-	19	13
	WBL	50	39	54
	WBT/R	-	26	28
	NBL	40	37	22
	NBT/R	-	52	38
	SBL	30	17	14
	SBT/R	-	34	51
Trafalgar Road at Highway 407 WB Off-Ramp ***(Signalized)***	EBL	-	3	5
	EBR	5	0	0
	WBL	-	#100	87
	WBL/T/R	-	#107	94
	WBR	60	0	0
	NBL	-	1	3
	NBT	-	#279	#646
	SBT/R	-	180	#194
Trafalgar Road at Highway 407 EB Off-Ramp ***(Signalized)***	EBL	-	12	14
	EBR	875	94	78
	NBT	-	#343	#812
	SBT	-	#440	#456
Ninth Line at William Halton Parkway / Burnhamthorpe Road ***(Roundabout)***	EBL/T	-	814	540
	EBT	-	814	540
	EBR	-	0	0
	WBL/T	-	53	809
	WBT/R	-	53	809
	NBL/T	-	117	1314
	NBT/R	-	117	1314
	SBL/T	-	15	28
	SBT	-	675	28
	SBR	-	0	0
Collector 2 at Trafalgar Road ***(Signalized)***	EBL	95	35	88
	EBT/R	-	15	26
	WBL	30	0	0
	WBT	-	0	0
	WBR	300	36	#467
	NBL	45	18	21
	NBT	-	#354	#779
	NBR	70	69	71
	SBL	105	#117	#118
	SBT	-	207	#393
	SBR	40	34	33
Collector 1 at William Halton Parkway ***(Signalized)***	EBL	30	0	0
	EBT/R	-	#249	62
	WBL	60	#181	#91
	WBT/R	-	45	#171
	NBL	30	7	23
	NBT/R	-	5	17
	SBL	30	20	52
	SBT/R	-	0	3

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 2 at William Halton Parkway ***(Unsignalized)***	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	17	185
	SBR	-	<1	2
Local 3 at William Halton Parkway ***(Unsignalized)***	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	9	127
Loyalist Trail at Trafalgar Road ***(Unsignalized)***	EBR	-	5	83
	NBT	-	0	0
	SBT	-	0	0
	SBT/R	-	0	0
Collector 5 at William Halton Parkway ***(Signalized)***	EBL	30	#89	#108
	EBT	-	137	63
	WBT/R	-	39	#225
	SBL	40	24	46
	SBR	-	6	21
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of background growth and nearby background development traffic, several study intersections are expected to operate with movements and/or overall v/c ratios greater than or equal to 0.85 in one or both the AM and PM peak periods in the 2041 future total horizon. Extended queues are also noted. The following intersections are shown to operate with critical or over capacity movements in one or both peak periods:

- William Halton Parkway at Trafalgar Road
- Burnhamthorpe Road at Trafalgar Road
- William Halton Parkway at Burnhamthorpe Road
- Dundas Street at Trafalgar Road
- Sixth Line at William Halton Parkway
- Sixth Line at Burnhamthorpe Road
- Highway 407 WB Off-Ramp at Trafalgar Road
- Highway 407 EB Off-Ramp at Trafalgar Road
- Ninth Line at William Halton Parkway / Burnhamthorpe Road
- Collector 2 at Trafalgar Road
- Collector 1 at William Halton Parkway
- Collector 2 at William Halton Parkway
- Local 3 at William Halton Parkway
- Collector 5 at William Halton Parkway

This is expected due to the high traffic volumes projected along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street. Additionally, the planned conversion of Trafalgar Road and Dundas Street into transit corridors with BRT lanes further limits capacity along these routes within the Study Area. As a result of the high volumes and reduced capacity, critical movements are not able to be mitigated using reasonable

mitigation measures discussed in previous analysis horizons and are shown to be significantly worsened in the 2041 future background analysis horizon. As such, no mitigation measures at individual intersections have been considered.

Correspondence with Halton Region staff, as shown in Appendix K, indicates that the bus-only BRT lanes along Trafalgar Road recommended in the DMTR will undergo further review and refinement through the Region's ongoing Integrated Master Plan (IMP). It is assumed that this is the case for the future Dundas Street BRT as well. As part of this process, region wide modelling is expected to be conducted to assess and address the impacts of the BRT implementation from a corridor perspective. As the high volumes along the Study Area roadways are a reflection of background development site traffic and growth rates provided by both Town and Region staff, these volumes represent both projected local and regional growth as the result of development of adjacent lands and region wide development. The poor operation noted at Study Area intersections cannot be addressed using Synchro analysis software using intersection specific mitigation measures. Instead, macroscopic modelling is required by the Region to identify feasible corridor level solutions. As the IMP is an ongoing study, the results and modelling of this scenario are not yet available, however it is recommended and anticipated that the modelling of these BRT scenarios will address the high traffic volumes in this area and the impact of reducing one through lane in each travel direction along Dundas Street as well as Trafalgar Road.

In order for the Study Area intersections to function adequately, a shift in mode share from single occupancy vehicles to transit is required to reduce traffic volumes along Trafalgar Road and Dundas Street. As such, a high level evaluation of this potential shift in mode share has been undertaken by calculating the necessary reduction in vehicle volume to ensure adequate function of intersections along Trafalgar Road and Dundas Street. In order to do this, northbound and southbound volumes along Trafalgar Road and eastbound and westbound volumes at Dundas Street were reduced until the corresponding through movements operated at a v/c ratio of less than 1.00 at each intersection. The maximum reduction of traffic for each direction in each peak period is presented in Table 39 below.

Table 39: 2041 Future Background Volume Reductions

Corridor	AM				PM			
	NB	SB	EB	WB	NB	SB	EB	WB
Trafalgar Road	744	1171	-	-	2163	748	-	-
Dundas Street	-	-	1146	204	-	-	536	700

To estimate the number of buses required along the Trafalgar Road and Dundas Street BRT corridors to accommodate the reduction in vehicle trips, the reduced vehicle trips along these corridors were first converted into passenger trips. A 3% Transportation Demand Management mode share, which is intended to represent carpooling, and a 72% single-occupancy mode share is identified in the Halton Region TMP. The resulting vehicle occupancy rate based on these mode shares is 1.04. As Halton Region does not yet have information regarding BRT capacities, a bus capacity of 37 passengers based on a 40-foot bus from the Town of Oakville has been assumed for this analysis. With a conservative assumption of 70% bus occupancy, the corresponding number of buses needed to accommodate the reduced vehicle volumes along Trafalgar Road and Dundas Street for the AM and PM peak hour is presented in in Table 40 below.

Table 40: 2041 Future Background Required Bus Trips

Corridor	AM				PM			
	NB	SB	EB	WB	NB	SB	EB	WB
Trafalgar Road	30	48	-	-	88	30	-	-
Dundas Street	-	-	46	9	-	-	22	29

As shown above, the maximum number of one-way buses with a capacity of 37 people is 88. It is however noted that articulated buses will provide additional bus capacity and are recommended for use along Trafalgar Road.

7.2.5.1 2041 Future Background Conditions Operational Analysis – Saturday Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 33 summarizes the operational analysis of the 2041 Saturday existing conditions and Table 36 summarizes the 95th percentile queue lengths. Appendix J contains the 2041 Saturday future background conditions Synchro worksheets.

Table 41: 2041 Future Background Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.02	34
	EBR	C	0.00	34
	WBL	D	0.78	52
	WBL/T/R	D	0.62	42
	WBR	C	0.02	34
	NBL	A	0.01	9
	NBT	F	1.21	114
	SBT/R	B	0.67	13
	Overall	**E**	**1.16**	**69**
Mitigation: Cycle length extension to 120 s, signal timing optimization				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.01*	*30*
	EBR	*C*	*0.00*	*30*
	WBL	*D*	*0.75*	*45*
	WBL/T/R	*D*	*0.61*	*48*
	WBR	*C*	*0.02*	*30*
	NBL	*A*	*0.01*	*9*
	NBT	*F*	*1.25*	*131*
	SBT/R	*B*	*0.70*	*13*
	Overall	***E***	***1.19***	***77***
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	D	0.14	40
	EBR	E	0.90	77
	NBT	F	1.40	202
	SBT	E	1.07	57
	Overall	**F**	**1.29**	**136**
Mitigation: Signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*C*	*0.11*	*25*
	EBR	*D*	*0.75*	*38*
	NBT	*F*	*1.61*	*295*
	SBT	*F*	*1.23*	*123*
	Overall	***F***	***1.37***	***212***

Table 42: 2041 Future Background Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2
	EBR	5	0
	WBL	-	76
	WBL/T/R	-	62
	WBR	60	0
	NBL	-	1
	NBT	-	#464
	SBT/R	-	152
Mitigation: Cycle length extension to 120 s, signal timing optimization			
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*1*
	EBR	*5*	*0*
	WBL	*-*	*69*
	WBL/T/R	*-*	*57*
	WBR	*60*	*0*
	NBL	*-*	*1*
	NBT	*-*	*#432*
	SBT/R	*-*	*149*
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	-	19
	EBR	875	#99
	NBT	-	#606
	SBT	-	#400
Mitigation: Signal timing optimization			
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*-*	*13*
	EBR	*875*	*59*
	NBT	*-*	*#516*
	SBT	*-*	*#360*
Notes:	# - 95% percentile exceeds capacity		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramps are expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period in the 2041 future background horizon. Ramp movements are shown to operate with a v/c ratio less than 0.75 after signal timing optimization. The northbound and southbound through movements at these intersections are expected to continue to operate at critical or over capacity v/c ratios due to the high volumes projected along Trafalgar Road and are not able to be mitigated using reasonable measures.

As discussed in Section 7.2.5, the planned conversion of Trafalgar Road into a transit corridor with BRT lanes further limits vehicle capacity along Trafalgar Road. As part of this process, region wide modelling is expected to be conducted as part of the IMP study to assess and address the impacts of the BRT implementation from a corridor perspective. As the IMP is an ongoing study, the results and modelling of this scenario is not yet available.

Similar to the process discussed in the AM and PM analysis, the necessary reduction in volume along Trafalgar Road has been determined in order for the northbound and southbound movements at each intersection to operate at a v/c ratio of below 1.00. The maximum reduction of traffic for each direction results in a required reduction of 1229 northbound and 466 southbound vehicles along Trafalgar Road for the Saturday peak period.

To estimate the number of buses required along the Trafalgar Road and Dundas Street BRT corridors to accommodate the reduction in vehicle trips, the reduced vehicle trips along these corridors were first converted

into passenger trips. A 3% Transportation Demand Management mode share, which is intended to represent carpooling, and a 72% single-occupancy mode share is identified in the Halton Region TMP. The resulting vehicle occupancy rate based on these mode shares is 1.04. As Halton Region does not yet have information regarding BRT capacities, a bus capacity of 37 passengers based on a 40-foot bus from the Town of Oakville has been assumed for this analysis. With a conservative assumption of 70% bus occupancy, the corresponding maximum number of buses needed to accommodate the reduced vehicle volumes along Trafalgar Road is 50 in the northbound direction and 19 in the southbound direction for the Saturday peak period.

7.2.6 Future Background Intersection Configuration

The resulting recommended intersection configurations for the Study Area intersections based on the Synchro analysis above is summarized below. Figure 102, Figure 103, Figure 104, and Figure 105 show the 2031 future background intersection configuration. Figure 106, Figure 107, Figure 108, and Figure 109 show the 2036 future background intersection configuration. Figure 110, Figure 111, Figure 112, and Figure 113 show the 2041 future background intersection configuration.

Figure 102: 2031 Future Background Intersection Configuration – Section A

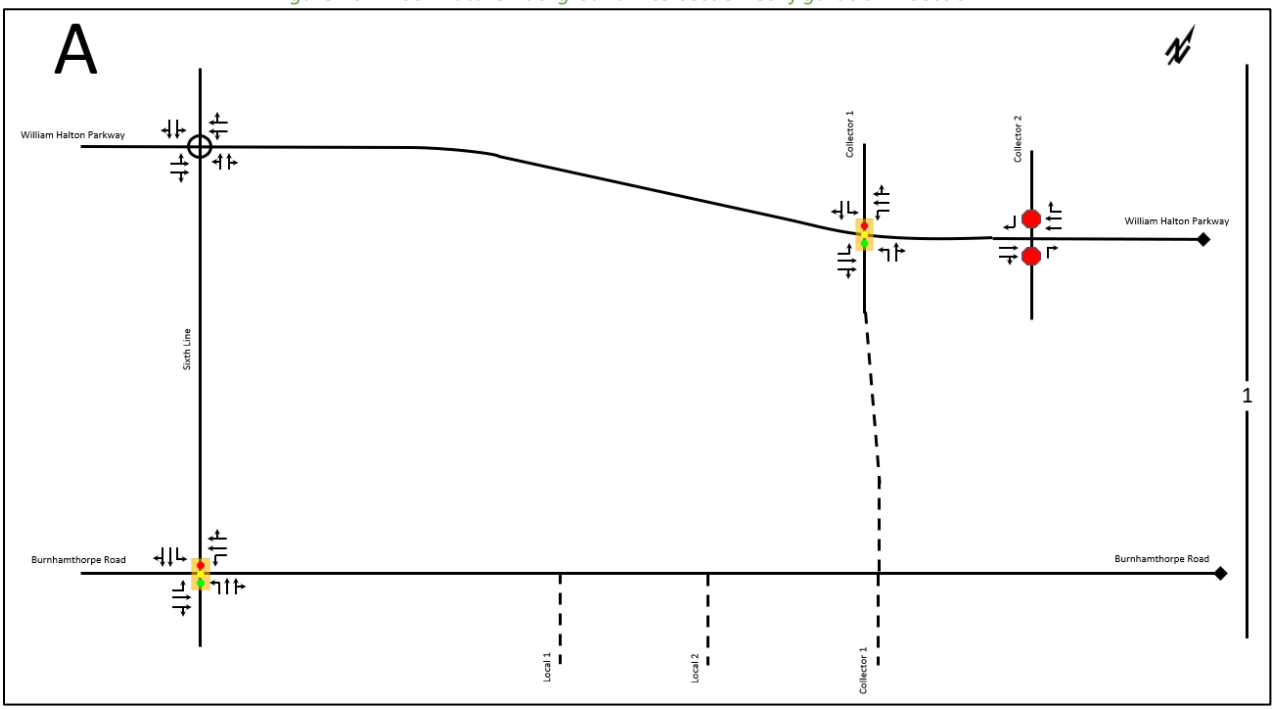


Figure 103: 2031 Future Background Intersection Configuration – Section B

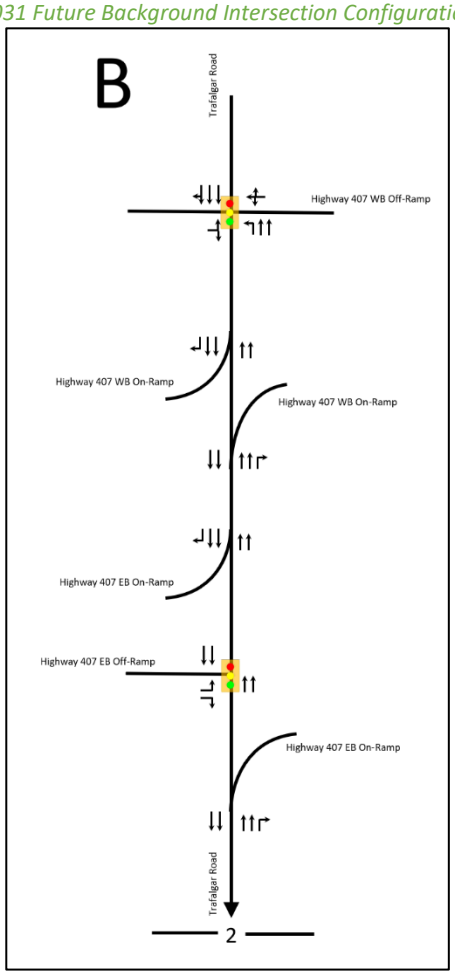


Figure 104: 2031 Future Background Intersection Configuration – Section C

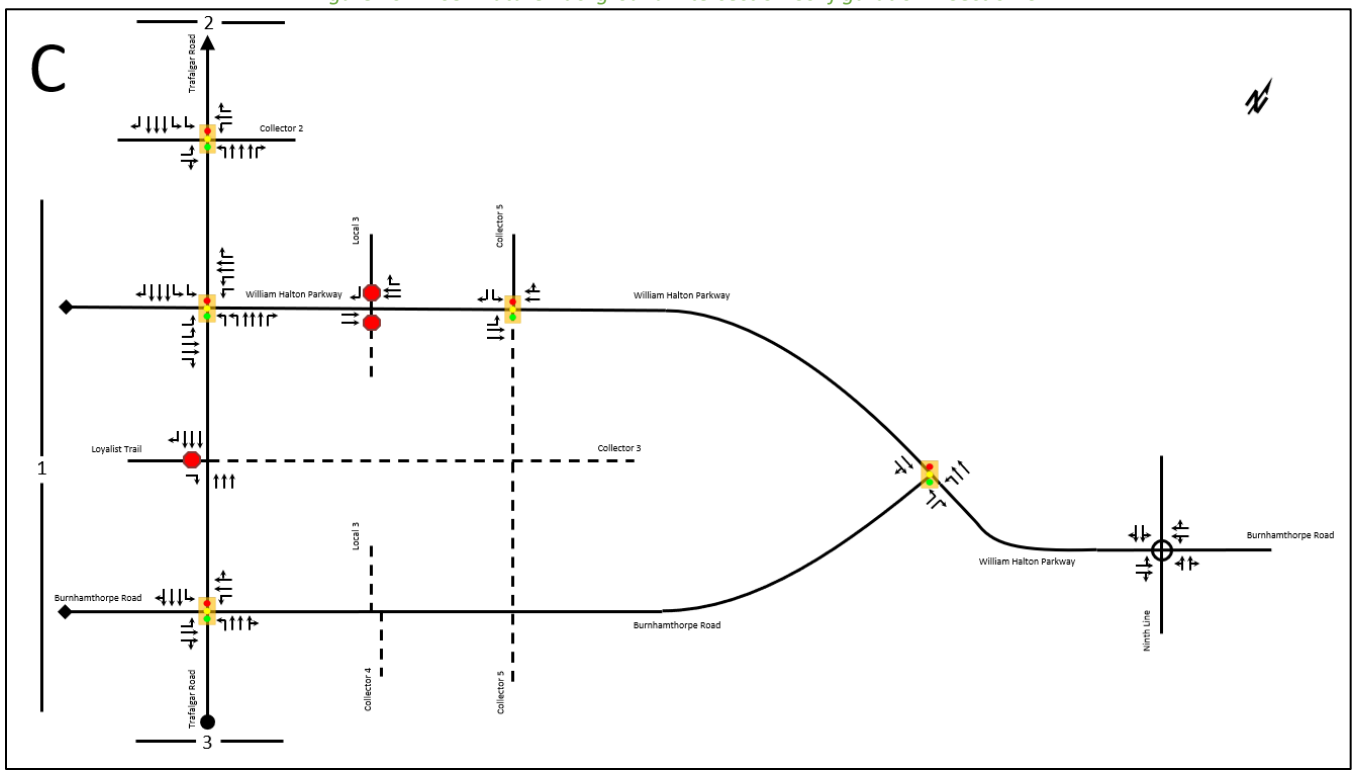


Figure 105: 2031 Future Background Intersection Configuration – Section D

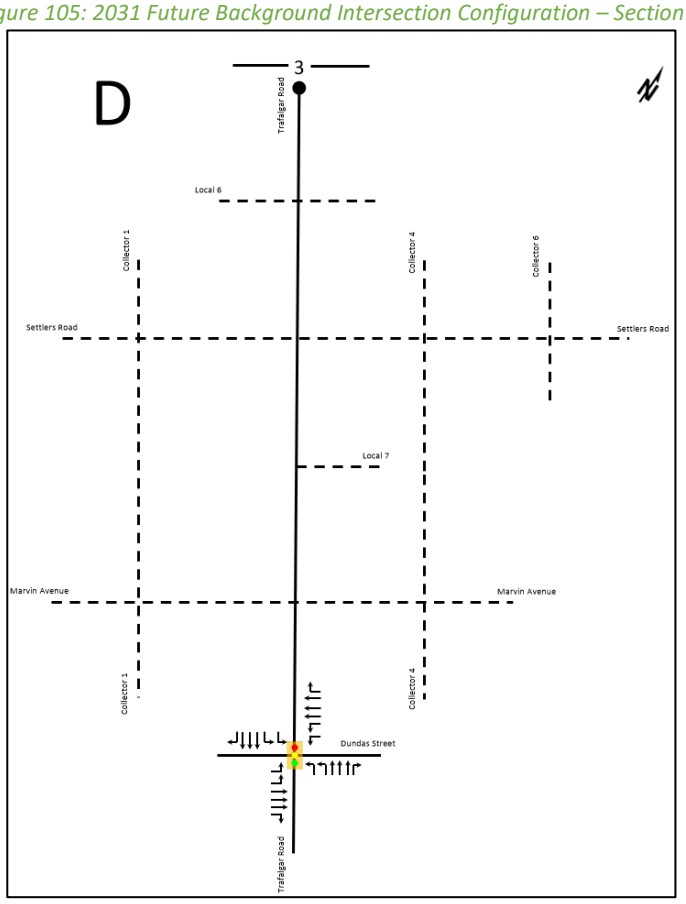


Figure 106: 2036 Future Background Intersection Configuration – Section A

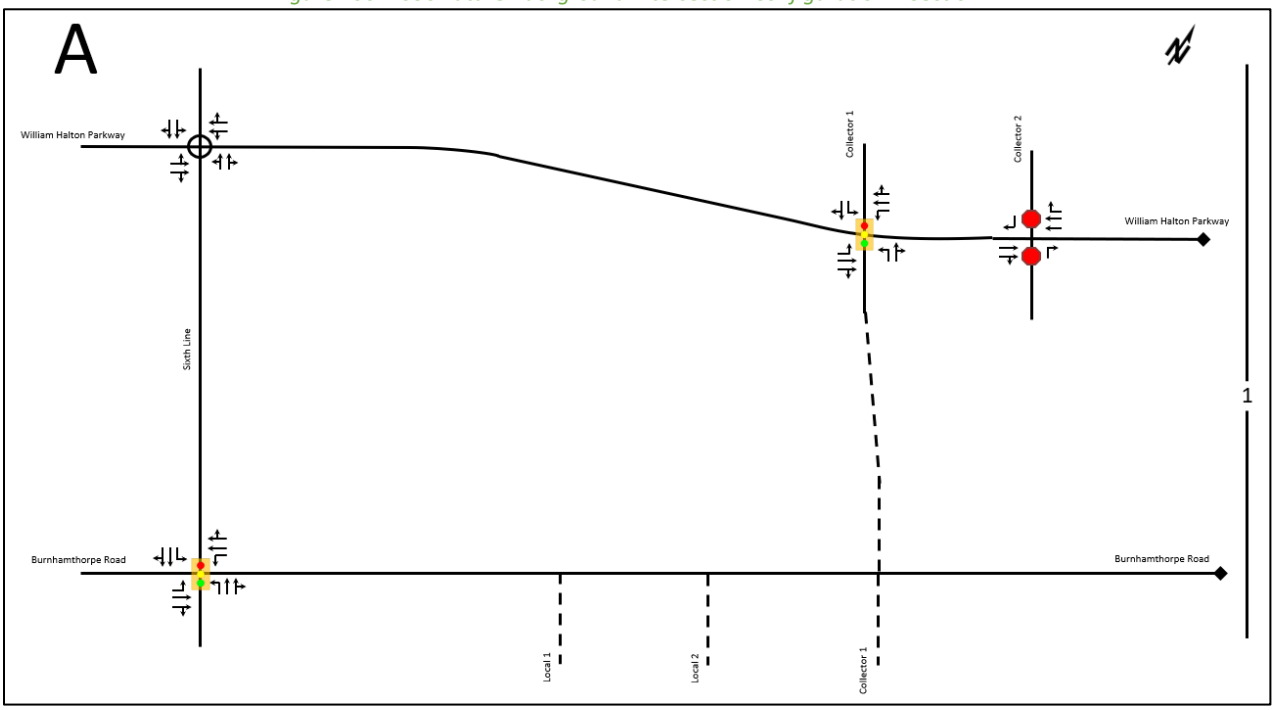


Figure 107: 2036 Future Background Intersection Configuration – Section B

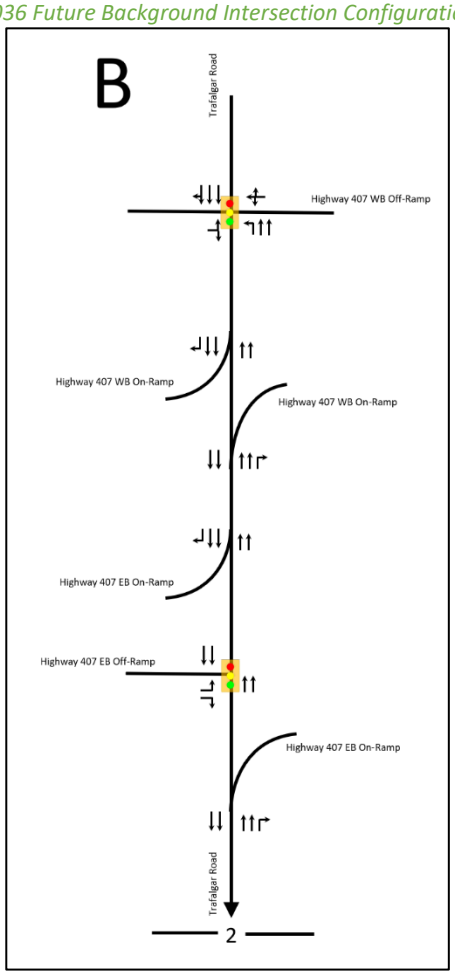


Figure 108: 2036 Future Background Intersection Configuration – Section C

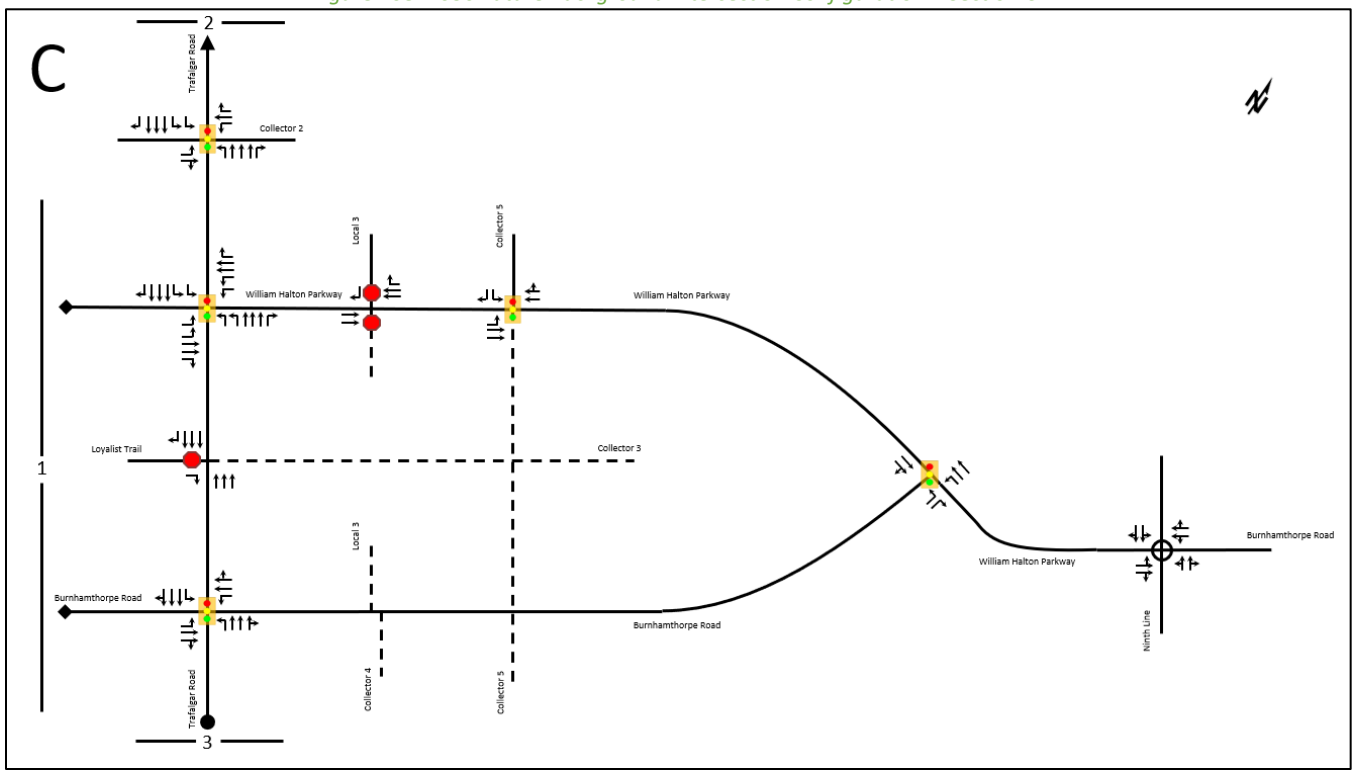


Figure 109: 2036 Future Background Intersection Configuration – Section D

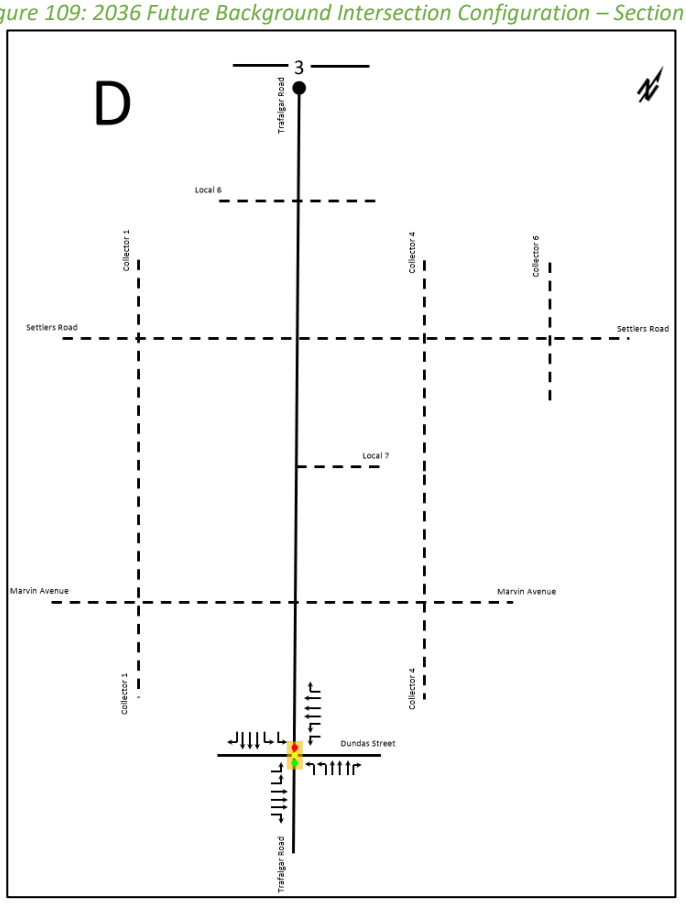


Figure 110: 2041 Future Background Intersection Configuration – Section A

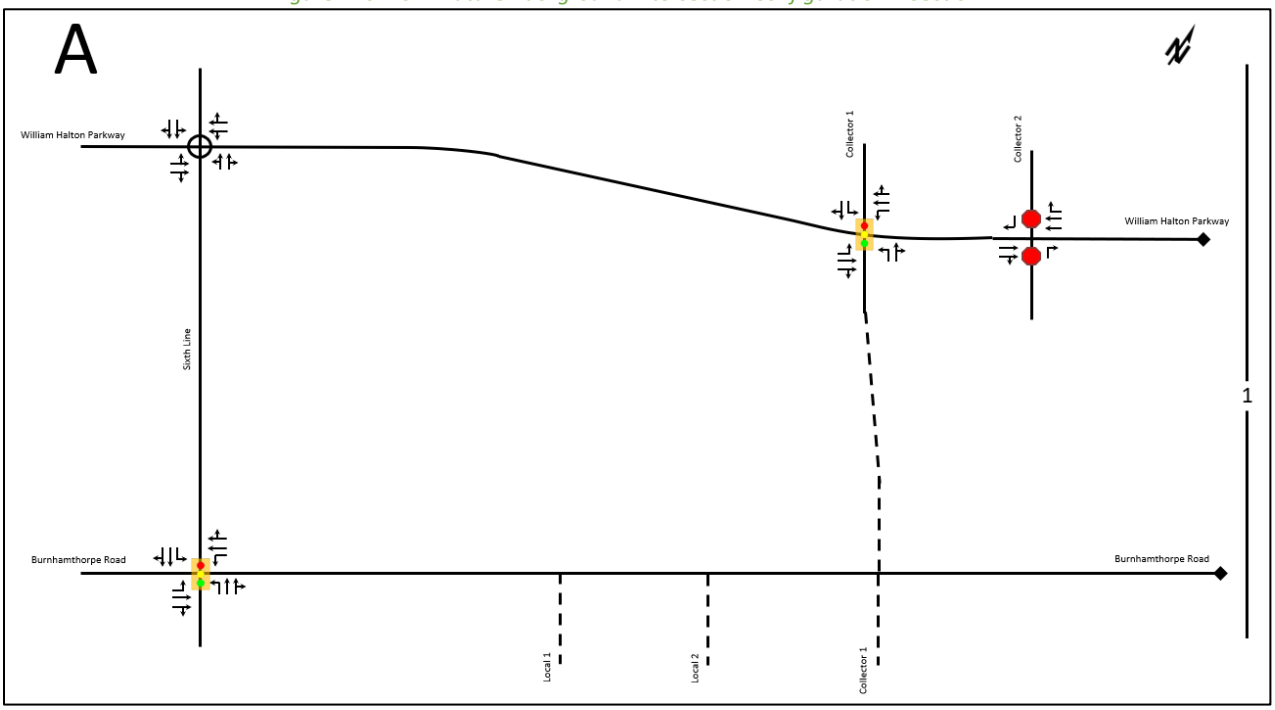


Figure 111: 2041 Future Background Intersection Configuration – Section B

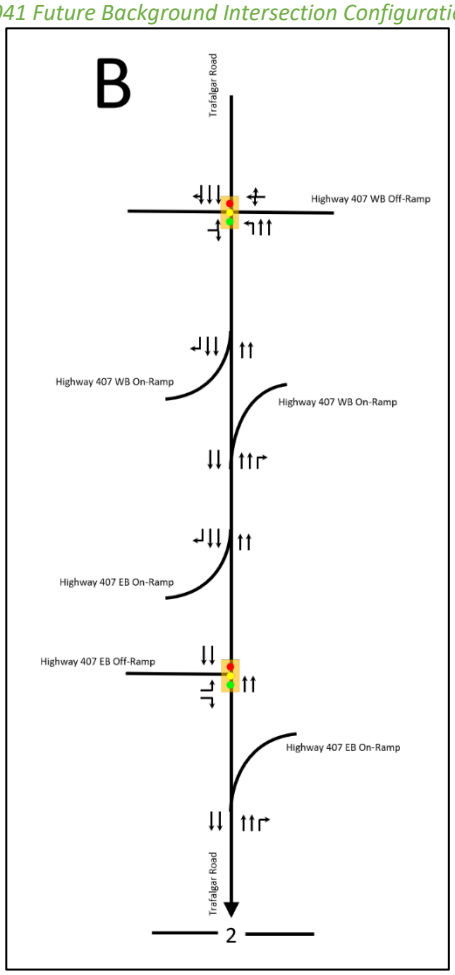


Figure 112: 2041 Future Background Intersection Configuration – Section C

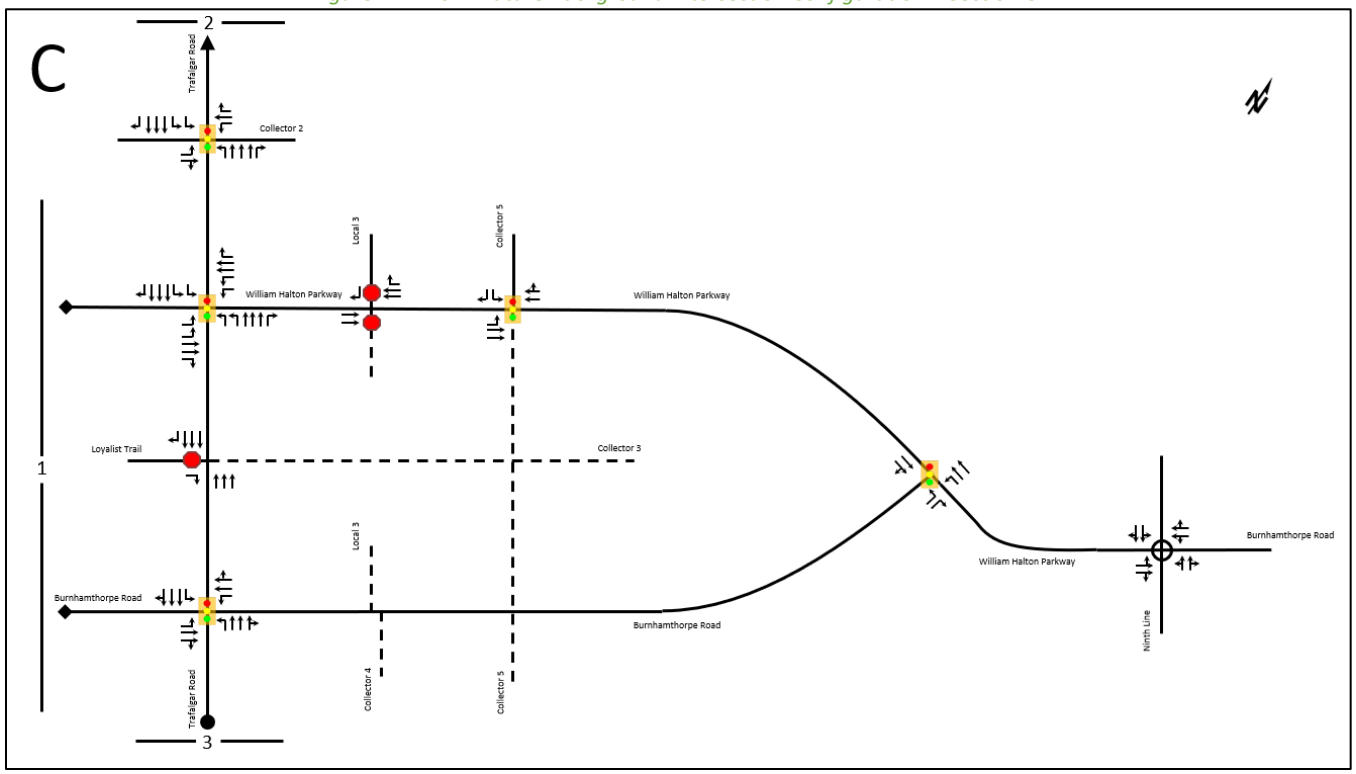
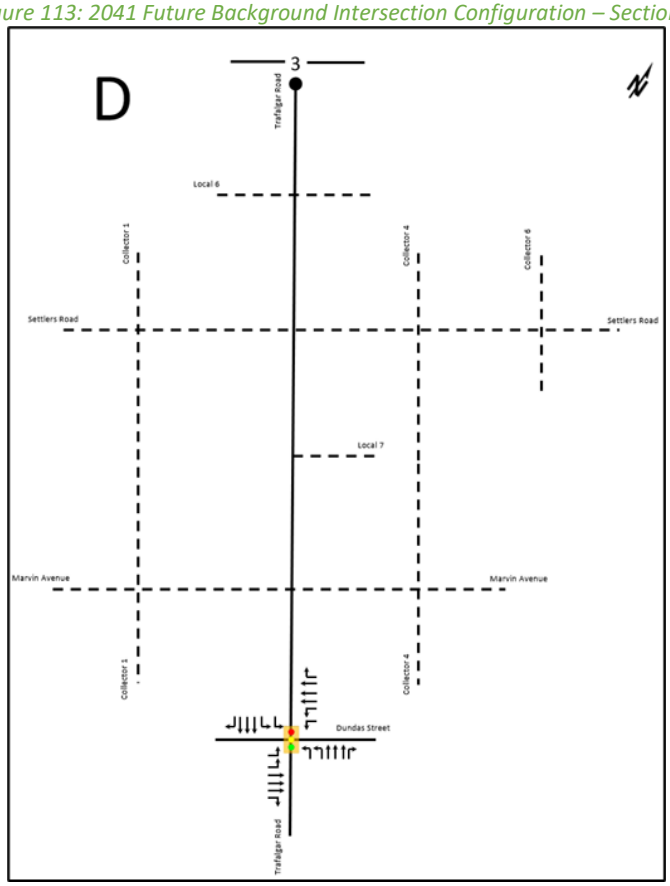


Figure 113: 2041 Future Background Intersection Configuration – Section D



7.3 Future Total Conditions

7.3.1 Future Total Intersection Control

Using the Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the following unsignalized intersections have been reviewed:

- Burnhamthorpe Road at Sixth Line
- William Halton Parkway at Burnhamthorpe Road
- William Halton Parkway at Collector 1
- William Halton Parkway at Collector 2
- William Halton Parkway at Collector 5
- Burnhamthorpe Road at Collector 1
- Collector 3 at Collector 5
- Burnhamthorpe Road at Collector 5
- Trafalgar Road at Local 6
- Trafalgar Road at Settlers Road
- Settlers Road at Collector 1
- Settlers Road at Collector 4
- Settlers Road at Collector 6
- Marvin Avenue at Trafalgar Road
- Marvin Avenue at Collector 1
- Marvin Avenue at Collector 4

A summary of the traffic control signal warrant analysis for future total conditions can be found in Table 28. Traffic control warrant sheets have been included in Appendix G.

Table 43: Future Total Signal Warrant Summary

Intersection	Horizon	Warranted?
Burnhamthorpe Road at Sixth Line	2031 FT	Yes
	2036 FT	
	2041 FT	
William Halton Parkway at Burnhamthorpe Road	2031 FT	Yes
	2036 FT	
	2041 FT	
William Halton Parkway at Collector 1	2031 FT	No
	2036 FT	
	2041 FT	Yes
William Halton Parkway at Collector 2	2031 FT	No
	2036 FT	
	2041 FT	
William Halton Parkway at Collector 5	2031 FT	No
	2036 FT	
	2041 FT	Yes
Burnhamthorpe Road at Collector 1	2031 FT	No
	2036 FT	
	2041 FT	

Collector 3 at Collector 5	2031 FT	No
	2036 FT	
	2041 FT	
Burnhamthorpe Road at Collector 5	2031 FT	No
	2036 FT	
	2041 FT	
Trafalgar Road at Local 6	2031 FT	No
	2036 FT	
	2041 FT	
Settlers Road at Trafalgar Road	2031 FT	Yes
	2036 FT	
	2041 FT	
Settlers Road at Collector 1	2031 FT	No
	2036 FT	
	2041 FT	
Settlers Road at Collector 4	2031 FT	No
	2036 FT	
	2041 FT	
Settlers Road at Collector 6	2031 FT	No
	2036 FT	
	2041 FT	
Marvin Avenue at Trafalgar Road	2031 FT	Yes
	2036 FT	
	2041 FT	
Marvin Avenue at Collector 1	2031 FT	No
	2036 FT	
	2041 FT	
Marvin Avenue at Collector 4	2031 FT	No
	2036 FT	
	2041 FT	

As indicated above, signals are warranted at Burnhamthorpe Road and Sixth Line, William Halton Parkway and Burnhamthorpe Road, Settlers Road and Trafalgar Road, and Marvin Avenue at Trafalgar Road in all future total horizons. Signals are also warranted at William Halton Parkway at Collector 1 and William Halton Parkway at Collector 5 in the 2041 future total horizon.

Signal warrants at all other intersections within the Study Area are not met in any future analysis. It is however noted that the intersection of Trafalgar Road and Local 6 has been signalized to allow for turning movements into and out of Local 6.

Intersection methods of control for all other existing intersections will be consistent with those considered in the future background conditions analysis.

Additionally, all-way stop control was evaluated at the following internal site intersections using the Ontario Traffic Manual Book 5 for all future total analysis horizons:

- Collector 3 at Collector 5
- Settlers Road at Collector 1
- Settlers Road at Collector 4

- Settlers Road at Collector 6
- Marvin Avenue at Collector 1
- Marvin Avenue at Collector 4

At all the internal intersections, the total vehicle volume on all intersection approaches exceeds 350 for the highest hour recorded with the volume split satisfying the 70/30 volume split requirement. As such, all-way stop control is warranted at all internal unsignalized site intersections in all future total analysis horizons. As such, these intersections will be analyzed as unsignalized intersections with stop-control on all legs. The all-way stop-control warrant sheets can be seen in Appendix L.

At applicable signalized intersections, Amber Clearance, All Red Clearance, Walk, and Flash Don't Walk times were calculated using the methodology provided in OTM Book 12-Traffic Signals. A walk time of 7 seconds was assumed, and a pedestrian walking speed of 1.2 m/s was used to calculate Flash Don't Walk times. The minimum initial values for the Study Area intersections were taken from OTM Book 12.

7.3.2 Future Total Intersection Design

The need for auxiliary right-turn lanes along arterial roads have been assessed using the criteria presented in the Halton Region Access Management Guidelines. These guidelines indicate that a right-turn lane may be warranted at accesses that have sufficient volume of decelerating vehicles, have right turn volume at signalized intersections of 10% of the through traffic volume, or have constrained sight distance approaching the access. At unsignalized intersections on arterial roads, a vehicle threshold of 60 vehicles during the peak period has been used to determine the need for an auxiliary right-turn lane. As such, right-turn lanes have been added to movements satisfying these conditions within all future background horizons.

All applicable intersections have been modelled with intersection configurations and signal timing plans that are consistent with those used in the future background conditions operational analysis. New intersection configurations have been proposed with consideration given to Town of Oakville and Halton Region standard cross-sections.

The resulting intersection configurations analyzed in the initial 2031 future total horizon are summarized below in Figure 114, Figure 115, Figure 116, and Figure 117.

Figure 114: 2031 Future Total Base Intersection Configuration – Section A

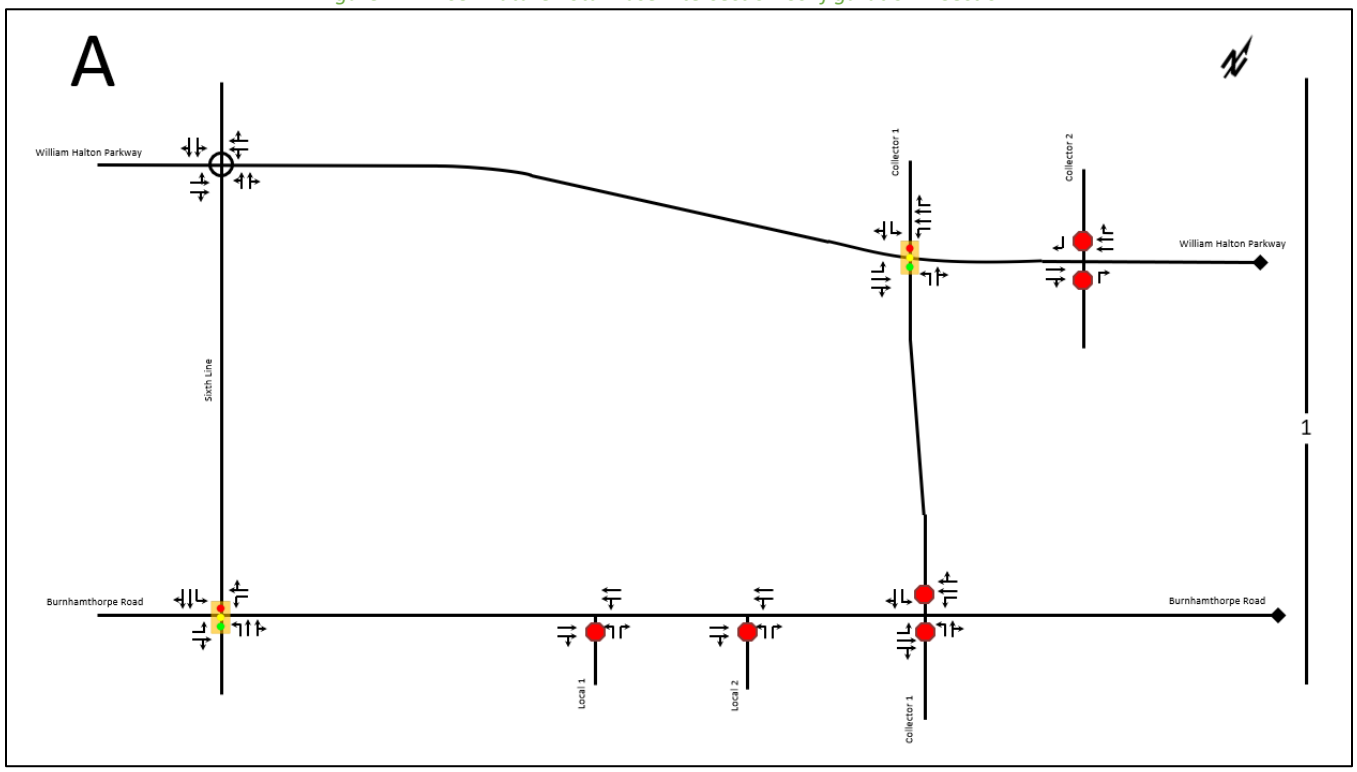


Figure 115: 2031 Future Total Base Intersection Configuration – Section B

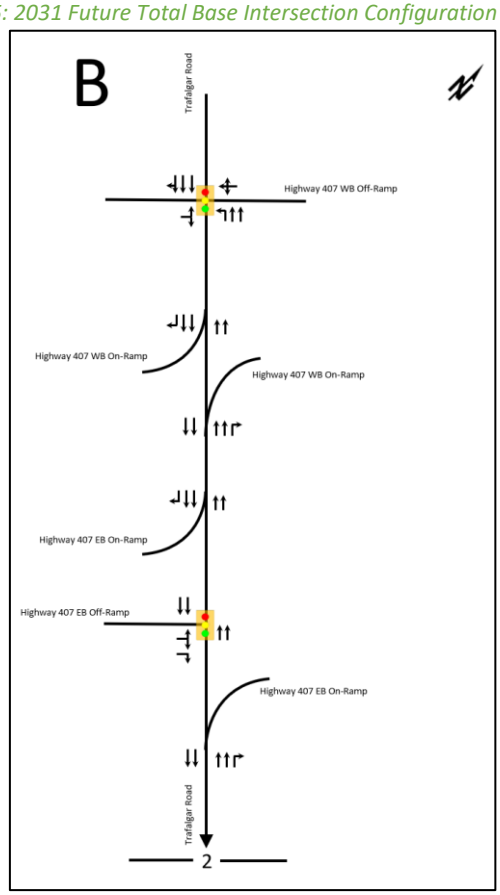


Figure 116: 2031 Future Total Base Intersection Configuration – Section C

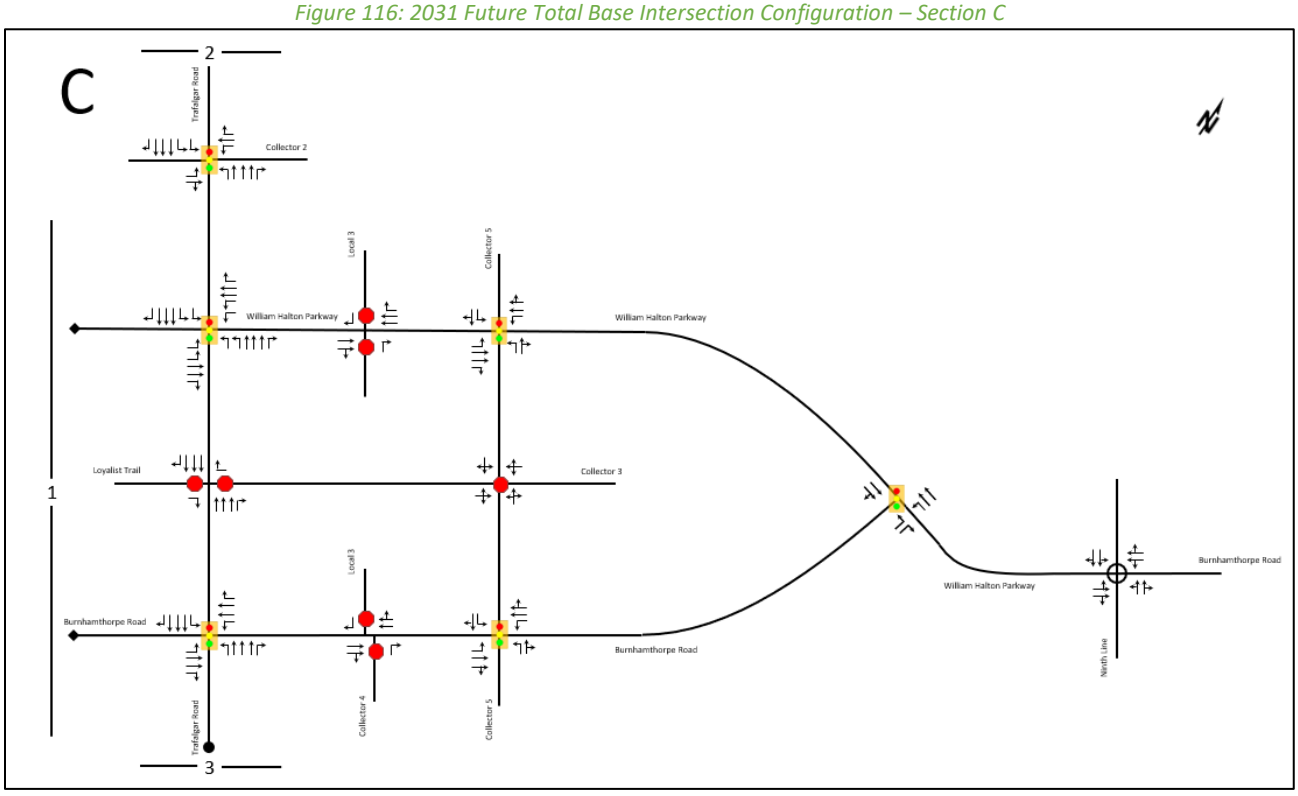
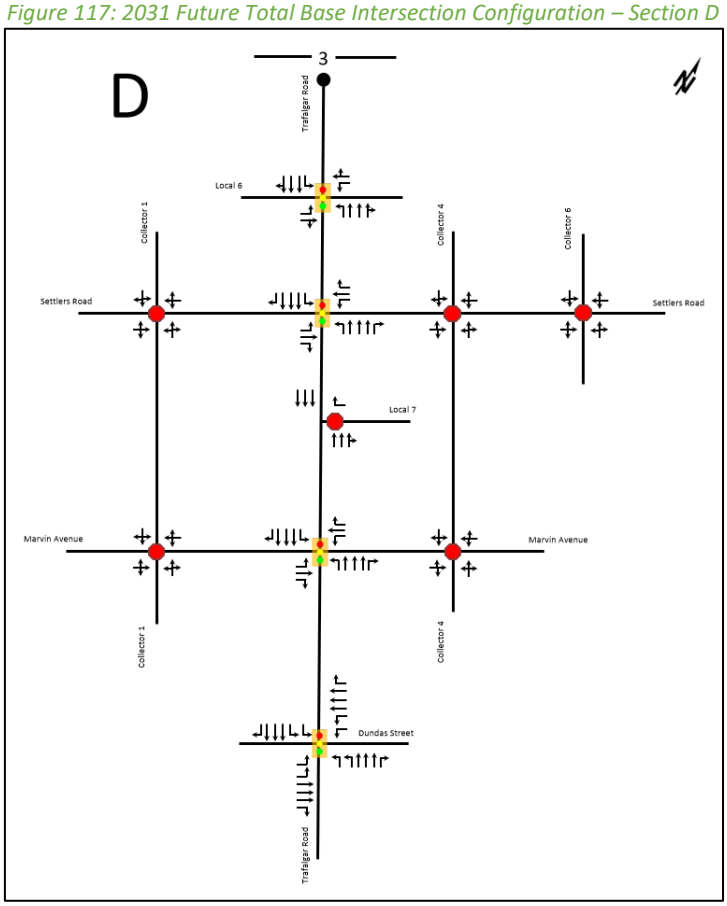


Figure 117: 2031 Future Total Base Intersection Configuration – Section D



7.3.3 2031 Future Total Conditions Operational Analysis

The site generated traffic has been added to the 2031 future background to determine the 2031 future total traffic conditions with the addition of the proposed development. Table 44 summarizes the results of the operational analysis for 2031 future total conditions and Table 45 summarizes the 95th percentile queue lengths. Synchro and Sidra worksheets have been included in Appendix M.

Table 44: 2031 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.22	181	F	1.35	235
	EBT	E	0.93	57	D	0.84	53
	EBR	C	0.30	33	D	0.11	35
	WBL	F	1.34	248	F	1.38	246
	WBT	D	0.57	42	E	1.01	78
	WBR	D	0.12	35	F	1.02	96
	NBL	F	1.25	197	F	1.08	132
	NBT	F	1.44	246	F	1.25	164
	NBR	C	0.04	30	C	0.04	29
	SBL	F	1.15	162	F	1.39	270
	SBT	F	1.11	105	F	1.29	185
	SBR	D	0.35	37	D	0.48	41
	Overall	**F**	**1.24**	**143**	**F**	**1.20**	**141**
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	F	1.13	132	F	0.95	92
	EBT/R	D	0.51	35	D	0.51	35
	WBL	F	1.42	245	F	1.80	423
	WBT/R	C	0.41	34	C	0.44	35
	NBL	F	4.00	1421	F	2.20	618
	NBT/R	F	1.18	107	E	1.04	60
	SBL	D	0.66	36	F	1.20	169
	SBT/R	B	0.72	19	C	0.79	21
	Overall	**F**	**2.75**	**125**	**E**	**1.99**	**80**
Mitigation: AM & PM permitted + protected EBL, WBL, NBL, SBL, EBR storage of 30 m, WBR storage of 30 m, NBR storage of 50 m, SBR storage of 60 m, signal timing optimization							
Burnhamthorpe Road at Trafalgar Road (Signalized)	*EBL*	*D*	*0.68*	*42*	*D*	*0.54*	*38*
	EBT	*D*	*0.70*	*52*	*D*	*0.68*	*52*
	EBR	*D*	*0.09*	*44*	*D*	*0.11*	*45*
	WBL	*E*	*0.85*	*57*	*E*	*0.91*	*60*
	WBT	*D*	*0.55*	*48*	*D*	*0.53*	*46*
	WBR	*D*	*0.11*	*44*	*D*	*0.10*	*42*
	NBL	*C*	*0.59*	*31*	*C*	*0.60*	*29*
	NBT	*F*	*1.10*	*89*	*F*	*1.32*	*188*
	NBR	*C*	*0.29*	*22*	*C*	*0.23*	*28*
	SBL	*C*	*0.60*	*30*	*C*	*0.56*	*28*
	SBT	*F*	*1.17*	*122*	*D*	*0.93*	*42*
	SBR	*C*	*0.06*	*26*	*C*	*0.33*	*24*
	Overall	***F***	***0.97***	***81***	***F***	***1.06***	***91***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	D	0.98	49	D	0.91	46
	WBL	F	1.87	441	F	1.96	475
	WBT	A	0.33	8	B	0.72	13
	NBL	A	0.00	0	A	0.00	0
	NBR	F	2.66	803	F	1.58	321
	Overall	**F**	**2.11**	**318**	**F**	**1.91**	**176**
Mitigation: AM & PM double WBL storage of 130 m, signal timing optimization							
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	*F*	*1.30*	*180*	*F*	*1.08*	*89*
	WBL	*E*	*0.94*	*65*	*D*	*0.90*	*41*
	WBT	*B*	*0.37*	*12*	*B*	*0.74*	*14*
	NBL	*A*	*0.00*	*0*	*A*	*0.00*	*0*
	NBR	*F*	*1.87*	*443*	*F*	*1.25*	*177*
	Overall	***F***	***1.40***	***203***	***E***	***1.07***	***69***
Dundas Street at Trafalgar Road *(Signalized)*	EBL	F	2.28	650	F	2.11	573
	EBT	F	1.26	163	E	1.04	73
	EBR	C	0.26	28	C	0.18	28
	WBL	F	1.33	238	F	1.26	205
	WBT	D	0.80	41	F	1.13	107
	WBR	E	1.00	79	F	1.10	109
	NBL	F	0.96	111	F	1.35	245
	NBT	E	0.97	59	F	1.29	181
	NBR	C	0.12	31	C	0.33	34
	SBL	F	4.06	1449	F	2.82	891
	SBT	F	1.28	177	D	0.91	51
	SBR	D	0.59	38	D	0.59	39
	Overall	**F**	**1.58**	**257**	**F**	**1.42**	**186**
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	F	0.97	62	D	0.78	29
	EBT	F	0.97	61	D	0.78	29
	EBR	A	0.06	3	A	0.04	3
	WBL/T	C	0.60	16	F	1.13	94
	WBT/R	C	0.60	16	F	1.13	94
	NBL/T	F	0.98	84	C	0.52	19
	NBT/R	F	0.98	82	C	0.52	19
	SBL/T	F	1.34	180	C	0.62	19
	SBT	B	0.42	11	C	0.62	19
	SBR	A	0.19	4	A	0.04	4
	Overall	**F**	**1.34**	**73**	**E**	**1.13**	**50**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: AM & PM channelized WB right turn lane							
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*F*	*0.97*	*62*	*D*	*0.79*	*31*
	EBT	*F*	*0.97*	*61*	*D*	*0.79*	*31*
	EBR	*A*	*0.06*	*3*	*A*	*0.04*	*3*
	WBL/T	*B*	*0.45*	*12*	*C*	*0.70*	*19*
	WBT	*B*	*0.45*	*12*	*C*	*0.70*	*19*
	WBR	*A*	*0.11*	*3*	*A*	*0.33*	*5*
	NBL/T	*F*	*0.98*	*84*	*C*	*0.52*	*19*
	NBT/R	*F*	*0.98*	*82*	*C*	*0.52*	*19*
	SBL/T	*F*	*1.34*	*180*	*C*	*0.68*	*24*
	SBT	*B*	*0.42*	*11*	*C*	*0.68*	*23*
	SBR	*A*	*0.19*	*4*	*A*	*0.16*	*5*
	Overall	***F***	***1.34***	***72***	***C***	***0.79***	***19***
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	C	0.31	27	C	0.14	21
	EBT/R	C	0.25	26	C	0.17	21
	WBL	C	0.63	34	C	0.69	31
	WBT/R	C	0.38	27	C	0.36	22
	NBL	A	0.41	10	A	0.26	9
	NBT/R	A	0.41	8	A	0.31	8
	SBL	A	0.27	8	A	0.19	8
	SBT/R	A	0.28	7	A	0.37	9
	Overall	**B**	**0.47**	**13**	**B**	**0.46**	**13**
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.03	34	C	0.06	32
	EBR	C	0.00	34	C	0.00	31
	WBL	D	0.78	53	D	0.77	47
	WBL/T/R	E	0.81	57	D	0.82	52
	WBR	C	0.00	34	C	0.01	31
	NBL	A	0.03	10	B	0.08	11
	NBT	C	0.96	27	F	1.30	159
	SBT/R	B	0.74	15	B	0.69	16
	Overall	**C**	**0.97**	**24**	**F**	**1.23**	**94**
Mitigation: AM & PM signal timing optimization							
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.03*	*26*	*C*	*0.05*	*22*
	EBR	*C*	*0.00*	*26*	*C*	*0.00*	*22*
	WBL	*D*	*0.72*	*38*	*C*	*0.72*	*32*
	WBL/T/R	*D*	*0.75*	*40*	*D*	*0.75*	*35*
	WBR	*C*	*0.00*	*26*	*C*	*0.01*	*22*
	NBL	*B*	*0.03*	*10*	*B*	*0.06*	*11*
	NBT	*D*	*1.03*	*45*	*F*	*1.45*	*221*
	SBT/R	*B*	*0.81*	*17*	*B*	*0.81*	*17*
	Overall	***C***	***1.02***	***31***	***F***	***1.32***	***126***
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	B	0.09	16	C	0.07	27
	EBR	C	0.84	34	E	0.89	56
	NBT	F	1.49	243	F	1.80	386
	SBT	F	1.57	279	F	1.29	157
	Overall	**F**	**1.25**	**240**	**F**	**1.48**	**277**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: EB shared left/right turn lane, AM & PM signal timing optimization							
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL/R*	*C*	*0.69*	*34*	*D*	*0.69*	*41*
	EBR	*D*	*0.75*	*38*	*D*	*0.75*	*47*
	NBT	*F*	*1.16*	*94*	*F*	*1.57*	*276*
	SBT	*F*	*1.22*	*121*	*E*	*1.12*	*79*
	Overall	***F***	***1.09***	***101***	***F***	***1.37***	***185***
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	2.13	528	F	1.64	307
	EBT	F	2.13	417	F	1.64	230
	EBR	A	0.30	6	A	0.23	5
	WBL/T	F	1.10	88	F	1.73	346
	WBT/R	F	1.10	87	F	1.73	346
	NBL/T	F	1.12	124	F	2.62	771
	NBT/R	F	1.12	120	F	2.62	775
	SBL/T	F	1.29	181	E	0.79	47
	SBT	F	1.29	179	E	0.79	45
	SBR	A	0.06	4	A	0.07	4
	Overall	**F**	**2.13**	**220**	**F**	**2.62**	**363**
Collector 2 at Trafalgar Road *(Signalized)*	EBL	D	0.73	45	C	0.67	29
	EBT/R	C	0.13	27	C	0.23	21
	WBL	A	0.00	0	A	0.00	0
	WBT	A	0.00	0	A	0.00	0
	WBR	D	0.21	37	F	1.34	204
	NBL	D	0.55	51	E	0.51	61
	NBT	F	1.15	101	F	1.81	406
	NBR	C	0.44	21	D	0.47	36
	SBL	F	1.12	115	F	1.71	390
	SBT	C	0.81	20	F	1.35	200
	SBR	B	0.25	12	C	0.22	28
	Overall	**E**	**1.07**	**61**	**F**	**1.52**	**262**
Collector 1 at William Halton Parkway *(Signalized)*	EBL	A	0.03	3	A	0.02	5
	EBT/R	A	0.71	7	A	0.47	7
	WBL	F	2.27	610	B	0.54	14
	WBT	A	0.29	3	A	0.67	10
	WBR	A	0.11	3	A	0.02	5
	NBL	C	0.13	32	C	0.20	27
	NBT/R	C	0.20	32	C	0.08	26
	SBL	C	0.15	32	C	0.59	32
	SBT/R	C	0.03	31	C	0.11	26
	Overall	**E**	**2.00**	**55**	**B**	**0.65**	**11**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: AM permitted + protected WBL, signal timing optimization							
Collector 1 at William Halton Parkway (Signalized)	*EBL*	*A*	*0.04*	*8*	*A*	*0.03*	*5*
	EBT/R	*C*	*0.86*	*20*	*A*	*0.47*	*7*
	WBL	*E*	*0.88*	*59*	*B*	*0.54*	*15*
	WBT	*A*	*0.27*	*3*	*B*	*0.67*	*10*
	WBR	*A*	*0.11*	*3*	*A*	*0.02*	*5*
	NBL	*D*	*0.14*	*42*	*C*	*0.20*	*27*
	NBT/R	*D*	*0.19*	*43*	*C*	*0.08*	*26*
	SBL	*D*	*0.16*	*43*	*C*	*0.59*	*32*
	SBT/R	*D*	*0.03*	*42*	*C*	*0.11*	*26*
	Overall	***B***	***0.82***	***19***	***B***	***0.65***	***11***
Collector 2 at William Halton Parkway *(Unsignalized)*	EBL	A	0.73	0	A	0.51	0
	EBT/R	A	0.38	0	A	0.26	0
	WBT	A	0.35	0	A	0.50	0
	WBR	A	0.10	0	A	0.10	0
	NBR	B	0.19	11	C	0.51	17
	SBR	B	0.02	11	B	0.06	10
	Overall	**B**	**-**	**1**	**B**	**-**	**2**
Collector 1 at Burnhamthorpe Road *(Unsignalized)*	EBL	A	0.02	9	A	0.00	9
	EBT	A	0.25	0	A	0.22	0
	EBT/R	A	0.13	0	A	0.12	0
	WBL	A	0.09	9	A	0.10	9
	WBT	A	0.16	0	A	0.26	0
	WBT/R	A	0.16	0	A	0.14	0
	NBL	E	0.19	46	F	0.29	106
	NBT/R	F	0.97	103	E	0.53	35
	SBL	F	0.53	178	F	1.85	532
	SBT/R	E	0.39	46	F	0.80	98
	Overall	**A**	**-**	**18**	**A**	**-**	**49**
Mitigation: AM signalization with 120 s cycle length, PM signalization with 90 s cycle length, signal timing optimization							
Collector 1 at Burnhamthorpe Road (Signalized)	*EBL*	*A*	*0.03*	*6*	*A*	*0.01*	*5*
	EBT/R	*A*	*0.29*	*5*	*A*	*0.26*	*6*
	WBL	*A*	*0.17*	*6*	*A*	*0.20*	*6*
	WBT/R	*A*	*0.24*	*6*	*A*	*0.31*	*6*
	NBL	*C*	*0.09*	*24*	*C*	*0.06*	*24*
	NBT/R	*C*	*0.48*	*27*	*C*	*0.20*	*25*
	SBL	*C*	*0.10*	*25*	*C*	*0.53*	*28*
	SBT/R	*C*	*0.16*	*25*	*C*	*0.28*	*25*
	Overall	***A***	***0.33***	***10***	***B***	***0.36***	***10***
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.24	0	A	0.20	0
	EBT/R	A	0.12	0	A	0.10	0
	WBT/L	A	0.01	1	A	0.03	1
	WBT	A	0.15	0	A	0.24	0
	NBL	C	0.01	17	C	0.01	19
	NBR	B	0.05	11	B	0.03	10
	Overall	**A**	**-**	**1**	**A**	**-**	**1**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.25	0	A	0.21	0
	EBT/R	A	0.12	0	A	0.10	0
	WBT/L	A	0.01	1	A	0.03	1
	WBT	A	0.15	0	A	0.25	0
	NBL	A	0.00	0	A	0.00	0
	NBR	B	0.05	11	B	0.03	10
	Overall	**A**	-	**<1**	**A**	-	**1**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.61	0	A	0.48	0
	EBT/R	A	0.31	0	A	0.26	0
	WBT	A	0.26	0	A	0.52	0
	WBR	A	0.03	0	A	0.07	0
	NBR	B	0.04	10	A	0.02	10
	SBR	B	0.29	12	E	0.81	30
	Overall	**A**	-	**1**	**E**	-	**4**
Local 3 / Collector 4 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.30	0	A	0.29	0
	EBT/R	A	0.16	0	A	0.16	0
	WBT	A	0.28	0	A	0.33	0
	WBT/R	A	0.14	0	A	0.17	0
	NBR	B	0.19	11	B	0.15	11
	SBR	B	0.04	11	B	0.04	12
	Overall	**A**	-	**1**	**A**	-	**1**
Loyalist Trail / Collector 3 at Trafalgar Road *(Unsignalized)*	EBR	B	0.06	10	B	0.19	11
	WBR	B	0.20	12	B	0.14	12
	NBT	A	0.51	0	A	0.48	0
	NBR	A	0.02	0	A	0.07	0
	SBT	A	0.38	0	A	0.49	0
	SBR	A	0.12	0	A	0.09	0
	Overall	**A**	-	**<1**	**B**	-	**1**
Collector 3 at Collector 5 *(Unsignalized)*	EBL/T/R	A	0.22	9	A	0.18	9
	WBL/T/R	A	0.02	8	A	0.05	8
	NBL/T/R	A	0.23	9	A	0.31	10
	SBL/T/R	A	0.18	8	A	0.28	9
	Overall	**A**	-	**9**	**A**	-	**9**
Collector 5 at William Halton Parkway *(Signalized)*	EBL	A	0.03	6	B	0.31	15
	EBT	B	0.65	10	A	0.49	9
	EBR	A	0.04	6	A	0.09	6
	WBL	A	0.21	10	A	0.35	8
	WBT/R	A	0.32	7	B	0.80	13
	NBL	D	0.68	38	C	0.45	27
	NBT/R	C	0.19	29	C	0.07	24
	SBL	C	0.33	30	C	0.60	30
	SBT/R	C	0.12	30	C	0.13	24
	Overall	**B**	**0.65**	**13**	**B**	**0.75**	**13**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 5 at Burnhamthorpe Road *(Unsignalized)*	EBL	A	0.04	9	B	0.14	10
	EBT	A	0.34	0	A	0.29	0
	EBT/R	A	0.18	0	A	0.15	0
	WBL	B	0.12	10	B	0.24	10
	WBT	A	0.25	0	A	0.32	0
	WBT/R	A	0.13	0	A	0.17	0
	NBL	F	Err	Err	F	Err	Err
	NBT/R	F	2.29	651	F	Err	Err
	SBL	F	Err	Err	F	Err	Err
	SBT/R	F	1.67	421	F	Err	Err
	Overall	**B**	**-**	**Err**	**A**	**-**	**Err**
Mitigation: AM & PM signalization with 90 s cycle length, signal timing optimization							
Collector 5 at Burnhamthorpe Road (Signalized)	*EBL*	*A*	*0.08*	*5*	*A*	*0.26*	*7*
	EBT/R	*A*	*0.39*	*7*	*A*	*0.31*	*6*
	WBL	*A*	*0.19*	*7*	*A*	*0.35*	*8*
	WBT/R	*A*	*0.28*	*6*	*A*	*0.34*	*6*
	NBL	*C*	*0.09*	*23*	*C*	*0.08*	*26*
	NBT/R	*C*	*0.55*	*28*	*C*	*0.50*	*29*
	SBL	*C*	*0.13*	*24*	*C*	*0.09*	*27*
	SBT/R	*C*	*0.37*	*25*	*C*	*0.44*	*31*
	Overall	***B***	***0.43***	***11***	***B***	***0.38***	***10***
Local 6 at Trafalgar Road *(Signalized)*	EBL	C	0.36	27	D	0.35	38
	EBT/R	C	0.10	25	D	0.14	36
	WBL	C	0.41	28	D	0.40	39
	WBT/R	C	0.37	27	D	0.08	36
	NBL	B	0.27	13	C	0.38	22
	NBT/R	B	0.78	12	B	0.81	16
	SBL	D	0.70	44	C	0.69	29
	SBT/R	A	0.67	10	A	0.61	7
	Overall	**B**	**0.70**	**13**	**B**	**0.74**	**13**
Settlers Road at Trafalgar Road *(Signalized)*	EBL	D	0.74	53	D	0.51	42
	EBT	D	0.36	39	D	0.44	41
	EBR	D	0.39	39	D	0.10	38
	WBL	F	1.07	106	D	0.72	43
	WBT	C	0.28	30	C	0.23	31
	WBR	C	0.04	28	C	0.02	29
	NBL	C	0.55	22	E	0.91	64
	NBT/R	E	1.05	61	E	1.05	58
	SBL	C	0.61	29	D	0.85	54
	SBT/R	C	0.87	29	C	0.88	29
	Overall	**D**	**1.06**	**49**	**D**	**1.00**	**45**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: AM & PM signal timing optimization, EBR storage of 40 m, WBL storage of 130 m, WBR storage of 30 m, NBR storage of 40 m, SBL storage of 70 m, SBR storage of 30 m							
Settlers Road at Trafalgar Road (Signalized)	*EBL*	*E*	*0.76*	*60*	*D*	*0.54*	*51*
	EBT	*D*	*0.37*	*43*	*D*	*0.47*	*48*
	EBR	*D*	*0.39*	*44*	*D*	*0.11*	*45*
	WBL	*F*	*1.15*	*140*	*E*	*0.83*	*63*
	WBT	*C*	*0.29*	*34*	*D*	*0.26*	*38*
	WBR	*C*	*0.04*	*32*	*D*	*0.02*	*35*
	NBL	*C*	*0.57*	*26*	*E*	*0.68*	*56*
	NBT	*D*	*1.01*	*51*	*D*	*1.04*	*42*
	NBR	*B*	*0.25*	*17*	*C*	*0.28*	*21*
	SBL	*C*	*0.60*	*32*	*D*	*0.67*	*37*
	SBT	*C*	*0.87*	*30*	*D*	*0.94*	*40*
	SBR	*B*	*0.10*	*15*	*B*	*0.10*	*18*
	Overall	***D***	***1.06***	***46***	***D***	***0.98***	***41***
Collector 1 at Settlers Road *(Unsignalized)*	EBL/T/R	B	0.32	12	B	0.28	11
	WBL/T/R	B	0.52	15	B	0.43	12
	NBL/T/R	B	0.50	14	B	0.32	11
	SBL/T/R	B	0.24	11	B	0.27	11
	Overall	**B**	-	**13**	**B**	-	**11**
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	F	0.93	52	E	0.85	36
	WBL/T/R	D	0.75	30	C	0.44	15
	NBL/T/R	C	0.54	20	C	0.46	16
	SBL/T/R	D	0.68	25	C	0.50	16
	Overall	**D**	-	**35**	**C**	-	**24**
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	C	0.68	21	B	0.40	12
	WBL/T/R	B	0.48	15	B	0.34	11
	NBL/T/R	B	0.26	12	A	0.23	10
	SBL/T/R	C	0.51	15	B	0.36	11
	Overall	**B**	-	**17**	**B**	-	**11**
Local 7 at Trafalgar Road (Unsignalized)	WBR	B	0.06	11	B	0.04	12
	NBT	A	0.61	0	A	0.67	0
	NBT/R	A	0.33	0	A	0.40	0
	SBT	A	0.50	0	A	0.45	0
	Overall	**B**	-	**<1**	**B**	-	**<1**
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	D	0.21	39	D	0.12	39
	EBT	D	0.30	40	D	0.42	41
	EBR	D	0.46	42	D	0.11	39
	WBL	C	0.65	33	C	0.54	34
	WBT	C	0.23	27	C	0.22	31
	WBR	C	0.04	25	C	0.05	29
	NBL	D	0.88	55	E	0.89	58
	NBT/R	F	1.14	96	F	1.19	115
	SBL	C	0.60	28	C	0.53	24
	SBT/R	F	1.23	138	D	0.95	36
	Overall	**F**	**1.01**	**101**	**E**	**1.03**	**76**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
*Mitigation: AM & PM signal timing optimization, EBR storage of 50 m, WBR storage of 30 m, NBR storage of 30 m, SBL storage of 40 m, **SBR** storage of 30 m*							
Marvin Avenue at Trafalgar Road (Signalized)	*EBL*	*D*	*0.19*	*39*	*D*	*0.13*	*47*
	EBT	*D*	*0.28*	*40*	*D*	*0.45*	*49*
	EBR	*D*	*0.59*	*45*	*D*	*0.11*	*47*
	WBL	*D*	*0.83*	*54*	*D*	*0.61*	*45*
	WBT	*C*	*0.27*	*31*	*D*	*0.25*	*39*
	WBR	*C*	*0.04*	*29*	*D*	*0.05*	*37*
	NBL	*E*	*0.90*	*59*	*D*	*0.65*	*37*
	NBT	*F*	*1.14*	*94*	*F*	*1.16*	*102*
	NBR	*B*	*0.03*	*13*	*B*	*0.12*	*12*
	SBL	*C*	*0.61*	*27*	*D*	*0.58*	*40*
	SBT	*F*	*1.22*	*133*	*E*	*1.11*	*79*
	SBR	*B*	*0.01*	*16*	*B*	*0.00*	*18*
	Overall	***F***	***1.10***	***99***	***E***	***1.02***	***82***
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	A	0.19	10	A	0.23	10
	WBL/T/R	B	0.59	15	B	0.36	10
	NBL/T/R	A	0.13	10	A	0.10	9
	SBL/T/R	B	0.49	14	B	0.33	11
	Overall	**B**	**-**	**14**	**A**	**-**	**10**
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	B	0.42	14	C	0.59	19
	WBL/T/R	C	0.57	18	B	0.43	15
	NBL/T/R	B	0.40	14	C	0.70	23
	SBL/T/R	C	0.71	22	B	0.48	15
	Overall	**B**	**-**	**18**	**C**	**-**	**19**

Table 45: 2031 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	105	#117	#140
	EBT	-	#205	149
	EBR	60	45	19
	WBL	120	#84	#141
	WBT	-	94	#205
	WBR	205	16	#213
	NBL	85	#108	#94
	NBT	-	#375	#326
	NBR	55	0	5
	SBL	80	#86	#77
	SBT	-	#245	#307
	SBR	60	54	75

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: EBL storage of 150 m, WBL storage of 150 m, WBR storage of 220 m, NBL storage of 120 m, SBL storage of 100 m, SBR storage of 80 m				
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*150*	*#117*	*#140*
	EBT	*-*	*#205*	*149*
	EBR	*60*	*45*	*19*
	WBL	*150*	*#84*	*#141*
	WBT	*-*	*94*	*#205*
	WBR	*220*	*16*	*#213*
	NBL	*120*	*#108*	*#94*
	NBT	*-*	*#375*	*#326*
	NBR	*55*	*0*	*5*
	SBL	*100*	*#86*	*#77*
	SBT	*-*	*#245*	*#307*
	SBR	*80*	*54*	*75*
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	100	#114	#88
	EBT/R	-	68	68
	WBL	120	#137	#179
	WBT/R	-	51	58
	NBL	130	#142	#76
	NBT/R	-	#340	#276
	SBL	170	37	#86
	SBT/R	-	144	166
Mitigation: AM & PM permitted + protected EBL, WBL, NBL, SBL, EBR storage of 30 m, WBR storage of 30 m, NBR storage of 50 m, SBR storage of 60 m, signal timing optimization				
Burnhamthorpe Road at Trafalgar Road (Signalized)	*EBL*	*100*	*61*	*47*
	EBT	*-*	*58*	*53*
	EBR	*30*	*17*	*19*
	WBL	*120*	*#74*	*#97*
	WBT	*-*	*46*	*52*
	WBR	*30*	*18*	*17*
	NBL	*130*	*64*	*35*
	NBT	*-*	*#311*	*#321*
	NBR	*50*	*48*	*34*
	SBL	*170*	*36*	*51*
	SBT	*-*	*#251*	*#234*
	SBR	*60*	*11*	*55*
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	-	#241	#183
	WBL	100	#319	#443
	WBT	-	44	144
	NBL	30	0	0
	NBR	-	#456	#261
Mitigation: AM & PM double WBL storage of 130 m, signal timing optimization				
William Halton Parkway at Burnhamthorpe Road (Signalized)	*EBT/R*	*-*	*#294*	*#216*
	WBL	*130*	*#122*	*#123*
	WBT	*-*	*57*	*149*
	NBL	*30*	*0*	*0*
	NBR	*-*	*#398*	*#216*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Dundas Street at Trafalgar Road *(Signalized)*	EBL	125	#163	#150
	EBT	-	#323	#229
	EBR	85	36	24
	WBL	80	#73	#77
	WBT	-	140	#259
	WBR	85	#222	#254
	NBL	90	#50	#84
	NBT	-	#181	#288
	NBR	50	19	48
	SBL	90	#238	#184
	SBT	-	#283	#166
	SBR	65	90	92
Mitigation: EBL storage of 170 m, WBR storage of 260 m, SBL storage of 250 m, SBR storage of 100 m				
Dundas Street at Trafalgar Road (Signalized)	*EBL*	*170*	*#163*	*#150*
	EBT	*-*	*#323*	*#229*
	EBR	*85*	*36*	*24*
	WBL	*80*	*#73*	*#77*
	WBT	*-*	*140*	*#259*
	WBR	*260*	*#222*	*#254*
	NBL	*90*	*#50*	*#84*
	NBT	*-*	*#181*	*#288*
	NBR	*50*	*19*	*48*
	SBL	*250*	*#238*	*#184*
	SBT	*-*	*#283*	*#166*
	SBR	*100*	*90*	*92*
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	86	42
	EBT	-	88	42
	EBR	-	0	0
	WBL/T	-	25	392
	WBT/R	-	25	401
	NBL/T	-	51	15
	NBT/R	-	53	15
	SBL/T	-	612	23
	SBT	-	12	23
	SBR	-	0	0
Mitigation: AM & PM channelized WB right turn lane				
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*-*	*86*	*42*
	EBT	*-*	*88*	*42*
	EBR	*-*	*0*	*0*
	WBL/T	*-*	*14*	*43*
	WBT	*-*	*14*	*43*
	WBR	*-*	*0*	*0*
	NBL/T	*-*	*51*	*14*
	NBT/R	*-*	*53*	*14*
	SBL/T	*-*	*612*	*25*
	SBT	*-*	*12*	*25*
	SBR	*-*	*0*	*0*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	55	18	10
	EBT/R	-	18	14
	WBL	40	34	42
	WBT/R	-	25	25
	NBL	30	33	18
	NBT/R	-	49	34
	SBL	30	16	14
	SBT/R	-	32	46
Mitigation: WBL storage of 50 m, NBL storage of 40 m				
Sixth Line at Burnhamthorpe Road (Signalized)	*EBL*	*55*	*18*	*10*
	EBT/R	*-*	*18*	*14*
	WBL	*50*	*34*	*42*
	WBT/R	*-*	*25*	*25*
	NBL	*40*	*33*	*18*
	NBT/R	*-*	*49*	*34*
	SBL	*30*	*16*	*14*
	SBT/R	*-*	*32*	*46*
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	3	5
	EBR	5	0	0
	WBL	-	71	85
	WBL/T/R	-	75	92
	WBR	60	0	0
	NBL	-	1	2
	NBT	-	#299	#514
	SBT/R	-	164	166
Mitigation: AM & PM signal timing optimization				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*2*	*3*
	EBR	*5*	*0*	*0*
	WBL	*-*	*55*	*62*
	WBL/T/R	*-*	*59*	*65*
	WBR	*60*	*0*	*0*
	NBL	*-*	*1*	*2*
	NBT	*-*	*#270*	*#394*
	SBT/R	*-*	*#177*	*#161*
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	12	13
	EBR	875	89	109
	NBT	-	#352	#724
	SBT	-	#379	#464
Mitigation: EB shared left/right turn lane, AM & PM signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL/R*	*-*	*57*	*54*
	EBR	*875*	*61*	*57*
	NBT	*-*	*#309*	*#609*
	SBT	*-*	*#335*	*#381*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	-	1597	1078
	EBT/R	-	1597	1078
	WBL/T	-	249	1234
	WBT/R	-	256	1269
	NBL/T	-	135	1097
	NBT/R	-	158	1340
	SBL/T	-	277	25
	SBT/R	-	0	25
Collector 2 at Trafalgar Road *(Signalized)*	EBL	95	#39	91
	EBT/R	-	16	30
	WBL	30	0	0
	WBT	-	0	0
	WBR	300	23	#307
	NBL	45	17	21
	NBT	-	#217	#411
	NBR	70	52	66
	SBL	105	#95	#119
	SBT	-	143	#313
	SBR	40	30	33
Mitigation: WBR storage of 310, SBL storage of 130 m				
Collector 2 at Trafalgar Road (Signalized)	*EBL*	*95*	*#39*	*91*
	EBT/R	*-*	*16*	*30*
	WBL	*30*	*0*	*0*
	WBT/R	*-*	*0*	*0*
	WBR	*310*	*23*	*#307*
	NBL	*45*	*17*	*21*
	NBT	*-*	*#217*	*#411*
	NBR	*70*	*52*	*66*
	SBL	*130*	*#95*	*#119*
	SBT	*-*	*143*	*#313*
	SBR	*40*	*30*	*33*
Collector 1 at William Halton Parkway (Signalized)	EBL	30	4	2
	EBT/R	-	#213	77
	WBL	50	#111	#48
	WBT	-	48	134
	WBR	30	8	4
	NBL	30	7	15
	NBT/R	-	12	11
	SBL	40	8	36
	SBT/R	-	4	12

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM permitted + protected WBL, signal timing optimization				
Collector 1 at William Halton Parkway (Signalized)	*EBL*	*30*	*5*	*-*
	EBT/R	*-*	*#308*	*-*
	WBL	*110*	*#101*	*-*
	WBT	*-*	*52*	*-*
	WBR	*30*	*7*	*-*
	NBL	*30*	*10*	*-*
	NBT/R	*-*	*16*	*-*
	SBL	*40*	*11*	*-*
	SBT/R	*-*	*5*	*-*
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	6	22
	SBR	-	<1	1
Collector 1 at Burnhamthorpe Road *(Unsignalized)*	EBL	30	<1	<1
	EBT	-	0	0
	EBT/R	-	0	0
	WBL	30	2	3
	WBT	-	0	0
	WBT/R	-	0	0
	NBL	30	5	8
	NBT/R	-	63	22
	SBL	30	14	87
	SBT/R	-	13	37
Mitigation: AM signalization with 120 s cycle length, PM signalization with 90 s cycle length, signal timing optimization				
Collector 1 at Burnhamthorpe Road (Unsignalized)	*EBL*	*30*	*4*	*1*
	EBT/R	*-*	*44*	*35*
	WBL	*30*	*15*	*18*
	WBT/R	*-*	*31*	*43*
	NBL	*30*	*7*	*5*
	NBT/R	*-*	*32*	*17*
	SBL	*30*	*7*	*29*
	SBT/R	*-*	*13*	*21*
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	<1	<1
	NBR	-	1	1
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	0	0
	NBR	-	1	1

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBR	30	0	0
	NBR	-	2	1
	SBR	-	11	75
Local 3 / Collector 4 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	5	4
	SBR	-	2	2
Loyalist Trail / Collector 3 at Trafalgar Road *(Unsignalized)*	EBR	-	2	5
	WBR	-	7	5
	NBT	-	0	0
	NBR	30	0	0
	SBT	-	0	0
	SBR	30	0	0
Collector 3 at Collector 5 *(Unsignalized)*	EBL/T/R	-	1	1
	WBL/T/R	-	<1	<1
	NBL/T/R	-	1	1
	SBL/T/R	-	1	1
Collector 5 at William Halton Parkway *(Unsignalized)*	EBL	30	4	13
	EBT	-	134	84
	EBR	30	6	9
	WBL	30	10	24
	WBT/R	-	51	#203
	NBL	30	49	29
	NBT/R	-	19	9
	SBL	40	24	38
	SBT/R	-	14	13
Mitigation: NBL storage of 60 m				
Collector 5 at William Halton Parkway (Unsignalized)	*EBL*	*30*	*4*	*13*
	EBT	*-*	*134*	*84*
	EBR	*30*	*6*	*9*
	WBL	*50*	*10*	*24*
	WBT/R	*-*	*51*	*#203*
	NBL	*60*	*49*	*29*
	NBT/R	*-*	*19*	*9*
	SBL	*40*	*24*	*38*
	SBT/R	*-*	*14*	*13*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 5 at Burnhamthorpe Road *(Unsignalized)*	EBL	30	1	4
	EBT	-	0	0
	EBT/R	-	0	0
	WBL	30	3	5
	WBT	-	0	0
	WBT/R	-	0	0
	NBL	30	Err	Err
	NBT/R	-	217	Err
	SBL	30	Err	Err
	SBT/R	-	94	Err
Mitigation: AM & PM signalization with 90 s cycle length, signal timing optimization				
Collector 5 at Burnhamthorpe Road (Signalized)	*EBL*	30	19	26
	EBT/R	-	55	45
	WBL	30	13	29
	WBT/R	-	40	51
	NBL	30	7	7
	NBT/R	-	43	37
	SBL	30	11	10
	SBT/R	-	39	42
Local 6 at Trafalgar Road *(Signalized)*	EBL	30	21	19
	EBT/R	-	9	12
	WBL	30	25	22
	WBT/R	-	25	12
	NBL	30	11	#19
	NBT/R	-	#195	#235
	SBL	30	#36	#50
	SBT/R	-	132	142
Settlers Road at Trafalgar Road *(Signalized)*	EBL	60	57	33
	EBT/R	-	40	39
	WBL	85	38	16
	WBT/R	-	#116	57
	NBL	90	40	31
	NBT/R	-	9	2
	SBL	60	#25	#89
	SBT/R	-	#287	#308
Mitigation: AM & PM signal timing optimization, EBR storage of 40 m, WBL storage of 130 m, WBR storage of 30 m, NBR storage of 40 m, SBL storage of 70 m, SBR storage of 30 m				
Settlers Road at Trafalgar Road (Signalized)	*EBL*	*60*	*56*	*33*
	EBT	*-*	*40*	*40*
	EBR	*40*	*38*	*16*
	WBL	*130*	*#120*	*57*
	WBT	*-*	*40*	*31*
	WBR	*30*	*9*	*2*
	NBL	*90*	*#29*	*m#42*
	NBT	*-*	*#303*	*m#218*
	NBR	*40*	*40*	*m24*
	SBL	*70*	*#36*	*#67*
	SBT	*-*	*#240*	*#246*
	SBR	*30*	*15*	*15*

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 1 at Settlers Road *(Unsignalized)*	SBT	-	1	1
	SBR	-	3	2
	NBL/T/R	-	3	1
	SBL/T/R	-	1	1
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	-	11	9
	WBL/T/R	-	6	2
	NBL/T/R	-	3	2
	SBL/T/R	-	5	3
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	-	5	2
	WBL/T/R	-	3	1
	NBL/T/R	-	1	2
	SBL/T/R	-	3	2
Local 7 at Trafalgar Road (Unsignalized)	WBR	-	2	1
	NBT	-	0	0
	NBT/R	-	0	0
	SBT	-	0	0
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	30	15	10
	EBT	-	27	35
	EBR	30	38	16
	WBL	90	61	42
	WBT	-	33	29
	WBR	30	2	5
	NBL	110	#101	#97
	NBT/R	-	#323	#380
	SBL	30	#35	#27
	SBT/R	-	#318	#247
*Mitigation: AM & PM signal timing optimization, EBR storage of 50 m, WBR storage of 30 m, NBR storage of 30 m, SBL storage of 40 m, **SBR** storage of 30 m*				
Marvin Avenue at Trafalgar Road (Signalized)	*EBL*	*30*	*15*	*10*
	EBT	*-*	*27*	*35*
	EBR	*50*	*48*	*16*
	WBL	*90*	*67*	*42*
	WBT	*-*	*35*	*29*
	WBR	*30*	*2*	*10*
	NBL	*120*	*#101*	*#110*
	NBT	*-*	*#356*	*#428*
	NBR	*30*	*0*	*18*
	SBL	*40*	*#36*	*m19*
	SBT	*-*	*#353*	*#285*
	SBR	*30*	*0*	*m0*
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	1	1
	WBL/T/R	-	3	2
	NBL/T/R	-	<1	<1
	SBL/T/R	-	2	1
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	2	4
	WBL/T/R	-	4	2
	NBL/T/R	-	2	6
	SBL/T/R	-	6	3
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of site generated traffic, several study intersections are expected to operate with critical and over-capacity movements in the 2031 future total horizon. Mitigation measures including double turning lanes, increased storage distances, and signal timing optimization have been considered at these intersections. As a result of the mitigation measures, some intersections are expected to function adequately, however, the following intersections are expected to continue operating with critical or over capacity movements in one or both peak periods:

- William Halton Parkway at Trafalgar Road
- Burnhamthorpe Road at Trafalgar Road
- William Halton Parkway at Burnhamthorpe Road
- Dundas Street at Trafalgar Road
- Sixth Line at William Halton Parkway
- Highway 407 WB Off-Ramp at Trafalgar Road
- Highway 407 EB Off-Ramp at Trafalgar Road
- Ninth Line at William Halton Parkway
- Collector 2 at Trafalgar Road
- Collector 1 at William Halton Parkway
- Settlers Road at Trafalgar Road
- Marvin Avenue at Trafalgar Road

The poor operation of some Study Area intersections is expected due to the high traffic volumes projected along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street. Additionally, due to the planned HOV lanes along Trafalgar Road and Dundas Street, capacity is also constrained along these corridors within the Study Area. As a result of the high volumes and reduced capacity, some critical movements are not able to be mitigated using reasonable mitigation measures.

It is noted that all access intersections to the subject development lands operate well with no noted critical or over-capacity movements. The exceptions to this are the intersections of Settlers Road at Trafalgar Road and Marvin Avenue at Trafalgar Road. At these two intersections, all movements operate well with critical and over-capacity movements noted only on the northbound and southbound through movements. This is a result of high volumes along Trafalgar Road.

7.3.3.1 2031 Future Total Conditions Operational Analysis – Saturday Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 46 summarizes the operational analysis of the 2031 Saturday future total conditions and Table 47 summarizes the 95th percentile queue lengths. Appendix M contains the 2031 Saturday future total conditions Synchro worksheets.

Table 46: 2031 Future Total Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.02	34
	EBR	C	0.00	34
	WBL	D	0.77	51
	WBL/T/R	D	0.59	42
	WBR	C	0.01	34
	NBL	A	0.01	8
	NBT	C	0.98	29
	SBT/R	B	0.61	12
	Overall	**C**	**0.98**	**24**
Mitigation: Signal cycle length extension to 120 s, signal timing optimization				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.02*	*31*
	EBR	*C*	*0.00*	*31*
	WBL	*D*	*0.75*	*46*
	WBL/T/R	*D*	*0.60*	*39*
	WBR	*C*	*0.01*	*31*
	NBL	*A*	*0.01*	*8*
	NBT	*C*	*1.00*	*35*
	SBT/R	*B*	*0.63*	*12*
	Overall	***C***	***0.99***	***26***
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	D	0.12	40
	EBR	F	1.11	135
	NBT	F	1.14	88
	SBT	D	1.00	36
	Overall	**E**	**1.13**	**68**
Mitigation: EB shared left/right turn lane, AM & PM signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL/R*	*D*	*0.69*	*51*
	EBR	*E*	*0.75*	*57*
	NBT	*E*	*1.11*	*73*
	SBT	*C*	*0.97*	*27*
	Overall	***D***	***1.04***	***52***

Table 47: 2031 Future Total Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2
	EBR	5	0
	WBL	-	75
	WBL/T/R	-	60
	WBR	60	0
	NBL	-	1
	NBT	-	#338
	SBT/R	-	131

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Mitigation: Signal cycle length extension to 120 s, signal timing optimization			
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*2*
	EBR	*5*	*0*
	WBL	*-*	*69*
	WBL/T/R	*-*	*58*
	WBR	*60*	*0*
	NBL	*-*	*1*
	NBT	*-*	*#320*
	SBT/R	*-*	*128*
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL	-	18
	EBR	875	#138
	NBT	-	#440
	SBT	-	#351
Mitigation: EB shared left/right turn lane, AM & PM signal timing optimization			
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*-*	*57*
	EBR	*875*	*62*
	NBT	*-*	*#455*
	SBT	*-*	*#367*
Notes:	# - 95% percentile exceeds capacity		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramp is expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period in the 2031 future total horizon. Mitigation measures have been considered to ensure the off-ramps do not exceed a v/c ratio of 0.75. However, the northbound and southbound through movements at these intersections are expected to continue to operate at critical or over capacity v/c ratios due to the high volumes projected along Trafalgar Road and are not able to be mitigated using reasonable measures.

7.3.4 2036 Future Total Conditions Operational Analysis

The analysis parameters and mitigation measures used in the 2031 future total conditions have been carried forward as part of the analysis of 2036 future total conditions. Table 48 summarizes the results of the operational analysis and Table 49 summarizes the 95th percentile queue lengths for the 2036 future total conditions. Synchro and Sidra worksheets have been included in Appendix N.

Table 48: 2036 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.24	189	F	1.36	240
	EBT	E	0.96	61	E	0.88	55
	EBR	C	0.31	34	D	0.12	35
	WBL	F	1.35	252	F	1.38	249
	WBT	D	0.60	43	F	1.03	84
	WBR	D	0.12	35	F	1.08	114
	NBL	F	1.26	200	F	1.09	137
	NBT	F	1.55	298	F	1.33	198
	NBR	C	0.04	30	C	0.04	29
	SBL	F	1.20	182	F	1.44	290
	SBT	F	1.17	130	F	1.41	237
	SBR	D	0.32	36	D	0.46	40
	Overall	**F**	**1.30**	**166**	**F**	**1.27**	**169**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Burnhamthorpe Road at Trafalgar Road ***(Signalized)***	EBL	D	0.69	41	D	0.55	37
	EBT	D	0.71	52	D	0.69	52
	EBR	D	0.10	43	D	0.16	45
	WBL	E	0.87	59	E	0.95	68
	WBT	D	0.55	47	D	0.54	46
	WBR	D	0.12	43	D	0.10	41
	NBL	C	0.61	31	C	0.61	31
	NBT	F	1.23	141	F	1.43	234
	NBR	C	0.33	24	C	0.25	28
	SBL	C	0.60	31	C	0.56	28
	SBT	F	1.29	175	E	1.04	68
	SBR	C	0.06	27	C	0.34	25
	Overall	**F**	**1.04**	**116**	**F**	**1.13**	**115**
William Halton Parkway at Burnhamthorpe Road ***(Signalized)***	EBT/R	F	1.34	198	F	1.17	128
	WBL	E	0.95	67	F	1.64	327
	WBT	B	0.38	12	B	0.75	14
	NBL	A	0.00	0	A	0.00	0
	NBR	F	2.00	501	F	1.41	246
	Overall	**F**	**1.46**	**227**	**F**	**1.61**	**151**
Dundas Street at Trafalgar Road ***(Signalized)***	EBL	F	2.52	754	F	2.44	722
	EBT	F	1.32	189	F	1.08	87
	EBR	C	0.28	28	C	0.19	28
	WBL	F	1.37	256	F	1.31	226
	WBT	D	0.83	42	F	1.18	128
	WBR	F	1.02	83	F	1.12	116
	NBL	F	1.00	125	F	1.42	273
	NBT	F	1.06	84	F	1.49	268
	NBR	C	0.13	31	C	0.35	34
	SBL	F	4.50	1645	F	2.97	959
	SBT	F	1.49	269	F	1.05	82
	SBR	D	0.78	47	D	0.77	48
	Overall	**F**	**1.74**	**312**	**F**	**1.56**	**228**
Sixth Line at William Halton Parkway ***(Roundabout)***	EBL/T	F	1.01	71	E	0.86	40
	EBT	F	1.01	70	E	0.86	39
	EBR	A	0.06	3	A	0.04	3
	WBL/T	B	0.48	13	C	0.68	17
	WBT	B	0.48	13	C	0.68	17
	WBR	A	0.11	3	A	0.34	5
	NBL/T	F	1.03	97	C	0.46	18
	NBT/R	F	1.03	96	C	0.46	17
	SBL/T	F	1.43	216	D	0.74	28
	SBT	B	0.48	13	D	0.74	27
	SBR	A	0.19	5	A	0.17	5
	Overall	**F**	**1.43**	**83**	**C**	**0.86**	**21**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Mitigation: AM & PM channelized NB right turn lane							
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*F*	*1.01*	*71*	*E*	*0.86*	*40*
	EBT	*F*	*1.01*	*69*	*E*	*0.86*	*39*
	EBR	*A*	*0.06*	*3*	*A*	*0.04*	*3*
	WBL/T	*B*	*0.49*	*13*	*C*	*0.74*	*21*
	WBT	*B*	*0.49*	*13*	*C*	*0.74*	*21*
	WBR	*A*	*0.11*	*3*	*A*	*0.34*	*6*
	NBL/T	*D*	*0.67*	*36*	*C*	*0.40*	*16*
	NBT	*D*	*0.67*	*34*	*C*	*0.40*	*15*
	NBR	*A*	*0.12*	*4*	*A*	*0.09*	*4*
	SBL/T	*F*	*1.43*	*216*	*D*	*0.74*	*28*
	SBT	*B*	*0.48*	*13*	*D*	*0.74*	*27*
	SBR	*A*	*0.19*	*5*	*A*	*0.17*	*5*
	Overall	***F***	***1.43***	***73***	***C***	***0.86***	***21***
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	C	0.30	26	C	0.14	21
	EBT/R	C	0.26	26	C	0.18	21
	WBL	C	0.65	34	C	0.71	32
	WBT/R	C	0.40	27	C	0.36	22
	NBL	B	0.45	11	B	0.29	10
	NBT/R	A	0.46	8	A	0.35	9
	SBL	A	0.32	10	A	0.21	9
	SBT/R	A	0.30	7	A	0.40	9
	Overall	**B**	**0.51**	**14**	**B**	**0.49**	**14**
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	C	0.03	26	C	0.05	22
	EBR	C	0.00	26	C	0.00	22
	WBL	D	0.72	38	C	0.72	32
	WBL/T/R	D	0.75	41	D	0.75	35
	WBR	C	0.00	26	C	0.01	22
	NBL	B	0.03	11	B	0.06	12
	NBT	F	1.13	81	F	1.53	257
	SBT/R	B	0.86	18	C	0.88	21
	Overall	**D**	**1.09**	**49**	**F**	**1.38**	**145**
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL/R	C	0.70	35	D	0.70	42
	EBR	D	0.75	38	D	0.75	47
	NBT	F	1.25	135	F	1.64	308
	SBT	F	1.27	144	F	1.21	114
	Overall	**F**	**1.12**	**130**	**F**	**1.42**	**216**
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	F	2.19	555	F	1.72	344
	EBT	F	2.19	440	F	1.72	261
	EBR	A	0.31	7	A	0.23	5
	WBL/T	F	1.14	102	F	1.78	370
	WBT/R	F	1.14	102	F	1.78	370
	NBL/T	F	1.16	139	F	2.69	798
	NBT/R	F	1.16	135	F	2.69	802
	SBL/T	F	1.35	204	F	0.83	52
	SBT	F	1.35	202	E	0.83	50
	SBR	A	0.06	4	A	0.07	4
	Overall	**F**	**2.19**	**237**	**F**	**2.69**	**388**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	D	0.75	47	C	0.67	29
	EBT/R	C	0.13	27	C	0.23	21
	WBL	A	0.00	0	A	0.00	0
	WBT	A	0.00	0	A	0.00	0
	WBR	D	0.19	36	F	1.34	204
	NBL	D	0.55	49	E	0.51	61
	NBT	F	1.36	191	F	1.91	451
	NBR	C	0.49	24	D	0.48	36
	SBL	D	0.91	53	F	1.71	390
	SBT	C	0.84	22	F	1.46	248
	SBR	B	0.25	12	C	0.22	28
	Overall	**F**	**1.13**	**91**	**F**	**1.56**	**295**
Collector 1 at William Halton Parkway *(Signalized)*	EBL	A	0.04	8	A	0.02	5
	EBT/R	C	0.88	22	A	0.49	7
	WBL	E	0.88	59	B	0.58	16
	WBT	A	0.29	3	A	0.69	10
	WBR	A	0.11	3	A	0.02	5
	NBL	D	0.14	42	C	0.20	27
	NBT/R	D	0.19	43	C	0.10	26
	SBL	D	0.16	43	C	0.59	32
	SBT/R	D	0.03	42	C	0.11	26
	Overall	**B**	**0.82**	**20**	**B**	**0.66**	**11**
Collector 2 at William Halton Parkway *(Unsignalized)*	EBL	A	0.75	0	A	0.53	0
	EBT/R	A	0.40	0	A	0.27	0
	WBT	A	0.36	0	A	0.51	0
	WBR	A	0.10	0	A	0.10	0
	NBR	B	0.26	15	C	0.51	17
	SBR	B	0.02	11	B	0.06	10
	Overall	**C**	**-**	**1**	**B**	**-**	**2**
Collector 1 at Burnhamthorpe Road *(Signalized)*	EBL	A	0.03	5	A	0.01	5
	EBT/R	A	0.30	6	A	0.26	6
	WBL	A	0.18	6	A	0.20	6
	WBT/R	A	0.25	6	A	0.32	6
	NBL	C	0.09	24	C	0.06	24
	NBT/R	C	0.48	27	C	0.20	25
	SBL	C	0.10	25	C	0.53	28
	SBT/R	C	0.16	25	C	0.28	25
	Overall	**A**	**0.34**	**9**	**B**	**0.37**	**10**
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.25	0	A	0.21	0
	EBT/R	A	0.14	0	A	0.11	0
	WBT/L	A	0.01	1	A	0.03	1
	WBT	A	0.17	0	A	0.26	0
	NBL	C	0.01	18	C	0.01	19
	NBR	B	0.05	11	B	0.03	10
	Overall	**A**	**-**	**1**	**A**	**-**	**1**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.26	0	A	0.22	0
	EBT/R	A	0.13	0	A	0.11	0
	WBT/L	A	0.02	1	A	0.03	1
	WBT	A	0.17	0	A	0.27	0
	NBL	A	0.00	0	A	0.00	0
	NBR	B	0.05	11	B	0.03	10
	Overall	**A**	-	**<1**	**A**	-	**1**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.63	0	A	0.50	0
	EBT/R	A	0.32	0	A	0.27	0
	WBT	A	0.27	0	A	0.53	0
	WBR	A	0.03	0	A	0.07	0
	NBR	B	0.04	10	A	0.02	10
	SBR	B	0.29	12	E	0.85	36
	Overall	**A**	-	**1**	**E**	-	**7**
Local 3 / Collector 4 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.32	0	A	0.30	0
	EBT/R	A	0.17	0	A	0.17	0
	WBT	A	0.29	0	A	0.34	0
	WBT/R	A	0.15	0	A	0.18	0
	NBR	B	0.19	11	B	0.15	10
	SBR	B	0.04	10	B	0.03	10
	Overall	**A**	-	**1**	**A**	-	**1**
Loyalist Trail / Collector 3 at Trafalgar Road *(Unsignalized)*	EBR	B	0.06	10	B	0.19	11
	WBR	B	0.19	13	B	0.10	11
	NBT	A	0.55	0	A	0.51	0
	NBR	A	0.02	0	A	0.07	0
	SBT	A	0.40	0	A	0.52	0
	SBR	A	0.12	0	A	0.09	0
	Overall	**A**	-	**1**	**B**	-	**1**
Collector 3 at Collector 5 *(Unsignalized)*	EBL/T/R	A	0.22	9	A	0.18	9
	WBL/T/R	A	0.02	8	A	0.05	8
	NBL/T/R	A	0.23	9	A	0.31	10
	SBL/T/R	A	0.18	8	A	0.28	9
	Overall	**A**	-	**9**	**A**	-	**9**
Collector 5 at William Halton Parkway *(Signalized)*	EBL	A	0.03	6	C	0.31	15
	EBT	B	0.67	11	B	0.51	9
	EBR	A	0.04	6	A	0.11	6
	WBL	B	0.24	11	B	0.37	8
	WBT/R	A	0.34	8	B	0.83	14
	NBL	D	0.68	38	C	0.45	27
	NBT/R	C	0.20	29	C	0.07	24
	SBL	C	0.32	30	C	0.60	30
	SBT/R	C	0.12	28	C	0.14	24
	Overall	**B**	**0.67**	**13**	**B**	**0.77**	**14**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 5 at Burnhamthorpe Road *(Signalized)*	EBL	A	0.09	7	A	0.29	7
	EBT/R	A	0.44	9	A	0.34	6
	WBL	A	0.29	9	B	0.48	10
	WBT/R	A	0.31	8	A	0.37	6
	NBL	C	0.11	22	C	0.09	26
	NBT/R	C	0.71	32	C	0.58	31
	SBL	C	0.16	23	C	0.10	26
	SBT/R	C	0.33	24	C	0.46	29
	Overall	**B**	**0.52**	**13**	**B**	**0.50**	**11**
Local 6 at Trafalgar Road *(Signalized)*	EBL	D	0.46	43	D	0.37	44
	EBT/R	D	0.10	39	D	0.16	41
	WBL	D	0.53	44	D	0.43	44
	WBT/R	D	0.47	43	D	0.09	41
	NBL	C	0.38	20	C	0.42	26
	NBT/R	B	0.85	13	C	0.92	22
	SBL	F	0.99	118	D	0.77	46
	SBT/R	A	0.70	9	A	0.74	8
	Overall	**B**	**0.91**	**15**	**B**	**0.85**	**18**
Settlers Road at Trafalgar Road *(Signalized)*	EBL	E	0.76	60	D	0.54	51
	EBT	D	0.37	43	D	0.47	49
	EBR	D	0.40	44	D	0.11	45
	WBL	F	1.15	140	E	0.83	63
	WBT	C	0.29	34	D	0.26	38
	WBR	C	0.04	32	D	0.02	35
	NBL	C	0.57	27	E	0.68	58
	NBT	F	1.11	85	E	1.10	71
	NBR	B	0.25	17	C	0.28	21
	SBL	C	0.60	32	D	0.67	37
	SBT	C	0.92	34	E	1.04	62
	SBR	B	0.10	15	B	0.10	18
	Overall	**E**	**1.12**	**61**	**E**	**1.02**	**61**
Collector 1 at Settlers Road *(Unsignalized)*	EBL/T/R	B	0.32	12	B	0.28	11
	WBL/T/R	B	0.52	15	B	0.43	12
	NBL/T/R	B	0.50	14	B	0.32	11
	SBL/T/R	B	0.24	11	B	0.27	11
	Overall	**B**	**-**	**13**	**B**	**-**	**11**
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	F	0.93	52	E	0.85	36
	WBL/T/R	D	0.75	30	C	0.44	15
	NBL/T/R	C	0.54	20	C	0.46	16
	SBL/T/R	D	0.68	25	C	0.50	16
	Overall	**D**	**-**	**35**	**C**	**-**	**24**
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	C	0.68	21	B	0.40	12
	WBL/T/R	B	0.48	15	B	0.34	11
	NBL/T/R	B	0.26	12	A	0.23	10
	SBL/T/R	C	0.51	15	B	0.36	11
	Overall	**B**	**-**	**17**	**B**	**-**	**11**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Local 7 at Trafalgar Road (Unsignalized)	WBR	B	0.07	12	B	0.05	13
	NBT	A	0.66	0	A	0.71	0
	NBT/R	A	0.36	0	A	0.42	0
	SBT	A	0.53	0	A	0.50	0
	Overall	**B**	-	**<1**	**B**	-	**<1**
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	D	0.19	39	D	0.13	46
	EBT	D	0.27	39	D	0.45	49
	EBR	D	0.59	45	D	0.12	46
	WBL	D	0.83	53	D	0.61	45
	WBT	C	0.27	31	D	0.25	39
	WBR	C	0.04	29	D	0.05	37
	NBL	E	0.90	59	D	0.65	37
	NBT	F	1.24	136	F	1.22	129
	NBR	B	0.03	13	B	0.12	12
	SBL	C	0.61	28	D	0.58	40
	SBT	F	1.28	159	F	1.21	125
	SBR	B	0.01	16	B	0.00	18
	Overall	**F**	**1.14**	**126**	**F**	**1.06**	**112**
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	A	0.19	10	A	0.23	10
	WBL/T/R	B	0.59	15	B	0.36	10
	NBL/T/R	A	0.13	10	A	0.10	9
	SBL/T/R	B	0.49	14	B	0.33	11
	Overall	**B**	-	**14**	**A**	-	**10**
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	B	0.42	14	C	0.59	19
	WBL/T/R	C	0.57	18	B	0.43	15
	NBL/T/R	B	0.40	14	C	0.70	23
	SBL/T/R	C	0.71	22	B	0.48	15
	Overall	**B**	-	**18**	**C**	-	**19**

Table 49: 2036 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	150	#119	#141
	EBT	-	#215	#157
	EBR	60	48	20
	WBL	150	#84	#141
	WBT	-	99	#212
	WBR	220	17	#231
	NBL	120	#109	#96
	NBT	-	#417	#356
	NBR	55	0	5
	SBL	100	#90	#80
	SBT	-	#266	#346
	SBR	80	47	70

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: WBR storage of 240 m				
William Halton Parkway at Trafalgar Road (Signalized)	*EBL*	*150*	*#119*	*#141*
	EBT	*-*	*#215*	*#157*
	EBR	*60*	*48*	*20*
	WBL	*160*	*#84*	*#141*
	WBT	*-*	*99*	*#212*
	WBR	*240*	*17*	*#231*
	NBL	*120*	*#109*	*#96*
	NBT	*-*	*#417*	*#356*
	NBR	*55*	*0*	*5*
	SBL	*100*	*#90*	*#80*
	SBT	*-*	*#266*	*#346*
	SBR	*80*	*47*	*70*
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	100	61	47
	EBT	-	61	56
	EBR	30	17	22
	WBL	120	#78	#106
	WBT	-	47	54
	WBR	30	18	18
	NBL	130	#74	36
	NBT	-	#353	#347
	NBR	50	55	37
	SBL	170	36	52
	SBT	-	#271	#272
	SBR	60	11	58
Mitigation: NBR storage of 70 m				
Burnhamthorpe Road at Trafalgar Road (Signalized)	*EBL*	*100*	*61*	*47*
	EBT	*-*	*61*	*56*
	EBR	*30*	*17*	*22*
	WBL	*120*	*#78*	*#106*
	WBT	*-*	*47*	*54*
	WBR	*30*	*18*	*18*
	NBL	*130*	*#74*	*36*
	NBT	*-*	*#353*	*#347*
	NBR	*70*	*55*	*37*
	SBL	*170*	*36*	*52*
	SBT	*-*	*#271*	*#272*
	SBR	*70*	*11*	*58*
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	-	#306	#228
	WBL	130	#124	#423
	WBT	-	60	158
	NBL	30	0	0
	NBR	-	#428	#232

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Dundas Street at Trafalgar Road *(Signalized)*	EBL	170	#181	#176
	EBT	-	#345	#243
	EBR	85	39	26
	WBL	80	#76	#81
	WBT	-	147	#276
	WBR	260	#230	#259
	NBL	90	#53	#89
	NBT	-	#211	#350
	NBR	50	20	51
	SBL	250	#263	#194
	SBT	-	#348	#210
	SBR	100	#138	#131
Mitigation: EBL storage of 190 m, WBL storage of 90 m, SBL storage of 270 m, SBR storage of 140 m				
Dundas Street at Trafalgar Road (Signalized)	*EBL*	*190*	*#181*	*#176*
	EBT	*-*	*#345*	*#243*
	EBR	*85*	*39*	*26*
	WBL	*90*	*#76*	*#81*
	WBT	*-*	*147*	*#276*
	WBR	*260*	*#230*	*#259*
	NBL	*90*	*#53*	*#89*
	NBT	*-*	*#211*	*#350*
	NBR	*50*	*20*	*51*
	SBL	*270*	*#263*	*#194*
	SBT	*-*	*#348*	*#210*
	SBR	*140*	*#138*	*#131*
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	106	54
	EBT	-	109	54
	EBR	-	0	0
	WBL/T	-	16	42
	WBT	-	16	42
	WBR	-	0	0
	NBL/T	-	82	12
	NBT/R	-	82	12
	SBL/T	-	720	32
	SBT	-	16	32
	SBR	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM & PM channelized NB right turn lane				
Sixth Line at William Halton Parkway (Roundabout)	*EBL/T*	*-*	*105*	*54*
	EBT	*-*	*108*	*54*
	EBR	*-*	*0*	*0*
	WBL/T	*-*	*16*	*58*
	WBT	*-*	*16*	*58*
	WBR	*-*	*0*	*0*
	NBL/T	*-*	*19*	*9*
	NBT	*-*	*19*	*9*
	NBR	*-*	*0*	*0*
	SBL/T	*-*	*720*	*31*
	SBT	*-*	*16*	*31*
	SBR	*-*	*0*	*0*
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	55	18	10
	EBT/R	-	19	14
	WBL	50	36	45
	WBT/R	-	28	26
	NBL	40	38	20
	NBT/R	-	60	40
	SBL	30	19	16
	SBT/R	-	38	52
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2	4
	EBR	5	0	0
	WBL	-	56	63
	WBL/T/R	-	60	69
	WBR	60	0	0
	NBL	-	1	2
	NBT	-	#307	#424
	SBT/R	-	#191	#184
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL/R	-	59	58
	EBR	875	62	61
	NBT	-	#345	#646
	SBT	-	#355	#423
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	-	1675	1184
	EBT	-	1675	1184
	EBR	-	0	0
	WBL/T	-	297	1352
	WBT/R	-	305	1352
	NBL/T	-	165	1412
	NBT/R	-	193	1412
	SBL/T	-	303	29
	SBT	-	326	29
	SBR	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	95	#43	91
	EBT/R	-	16	30
	WBL	30	0	0
	WBT	-	0	0
	WBR	310	12	#307
	NBL	45	17	21
	NBT	-	#239	#440
	NBR	70	56	68
	SBL	130	#78	#119
	SBT	-	#146	#347
	SBR	40	28	33
Collector 1 at William Halton Parkway *(Signalized)*	EBL	30	5	2
	EBT/R	-	#302	82
	WBL	110	#101	#51
	WBT	-	48	141
	WBR	30	7	4
	NBL	30	10	15
	NBT/R	-	16	12
	SBL	40	11	36
	SBT/R	-	5	12
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	10	22
	SBR	-	<1	2
Collector 1 at Burnhamthorpe Road *(Unsignalized)*	EBL	30	4	1
	EBT/R	-	43	36
	WBL	30	15	18
	WBT/R	-	32	45
	NBL	30	7	5
	NBT/R	-	32	17
	SBL	30	7	29
	SBT/R	-	13	21
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	<1	<1
	NBR	-	1	1
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	0	0
	NBR	-	1	1

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Local 3 at William Halton Parkway ***(Unsignalized)***	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBR	30	0	0
	NBR	-	2	1
	SBR	-	11	88
Local 3 / Collector 4 at Burnhamthorpe Road ***(Unsignalized)***	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	5	4
	SBR	-	2	1
Loyalist Trail / Collector 3 at Trafalgar Road ***(Unsignalized)***	EBR	-	2	5
	WBR	-	6	4
	NBT	-	0	0
	NBR	30	0	0
	SBT	-	0	0
	SBR	30	0	0
Collector 3 at Collector 5 ***(Unsignalized)***	EBL/T/R	-	2	2
	WBL/T/R	-	<1	<1
	NBL/T/R	-	2	2
	SBL/T/R	-	1	2
Collector 5 at William Halton Parkway ***(Unsignalized)***	EBL	30	4	13
	EBT	-	142	89
	EBR	30	6	13
	WBL	50	10	25
	WBT/R	-	54	#215
	NBL	60	49	29
	NBT/R	-	20	9
	SBL	40	24	38
	SBT/R	-	14	13
Collector 5 at Burnhamthorpe Road ***(Signalized)***	EBL	30	8	21
	EBT/R	-	62	48
	WBL	30	18	43
	WBT/R	-	41	54
	NBL	30	10	8
	NBT/R	-	58	42
	SBL	30	8	7
	SBT/R	-	29	35
Local 6 at Trafalgar Road ***(Signalized)***	EBL	30	31	21
	EBT/R	-	12	13
	WBL	30	36	25
	WBT/R	-	36	13
	NBL	30	#17	#20
	NBT/R	-	#304	#332
	SBL	30	#34	#58
	SBT/R	-	180	220

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Mitigation: EBL storage of 40 m, WBL storage of 40 m, SBL storage of 60 m				
Local 6 at Trafalgar Road (Signalized)	*EBL*	*40*	*31*	*21*
	EBT/R	*-*	*12*	*13*
	WBL	*40*	*36*	*25*
	WBT/R	*-*	*36*	*13*
	NBL	*30*	*#17*	*#20*
	NBT/R	*-*	*#304*	*#332*
	SBL	*60*	*#34*	*#58*
	SBT/R	*-*	*180*	*220*
Settlers Road at Trafalgar Road *(Signalized)*	EBL	60	57	33
	EBT	-	40	39
	EBR	40	39	16
	WBL	130	#120	57
	WBT	-	40	31
	WBR	30	9	2
	NBL	90	#29	m39
	NBT	-	#346	m#224
	NBR	40	40	m22
	SBL	70	#36	#67
	SBT	-	#263	#287
	SBR	30	15	15
Collector 1 at Settlers Road *(Unsignalized)*	SBT	-	1	1
	SBR	-	2	2
	NBL/T/R	-	3	1
	SBL/T/R	-	1	1
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	-	6	5
	WBL/T/R	-	3	2
	NBL/T/R	-	2	2
	SBL/T/R	-	2	2
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	-	4	2
	WBL/T/R	-	2	1
	NBL/T/R	-	1	1
	SBL/T/R	-	2	2
Local 7 at Trafalgar Road (Unsignalized)	WBR	-	2	1
	NBT	-	0	0
	NBT/R	-	0	0
	SBT	-	0	0
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	30	15	10
	EBT	-	27	35
	EBR	50	48	16
	WBL	90	67	42
	WBT	-	35	29
	WBR	30	2	10
	NBL	120	#101	#110
	NBT	-	#399	#459
	NBR	30	0	18
	SBL	40	#35	m17
	SBT	-	#375	m#286
	SBR	30	0	m0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	1	1
	WBL/T/R	-	3	2
	NBL/T/R	-	<1	<1
	SBL/T/R	-	2	1
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	2	3
	WBL/T/R	-	3	2
	NBL/T/R	-	2	4
	SBL/T/R	-	4	2
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of site generated traffic, several study intersections are expected to operate with critical and over-capacity movements in the 2036 future total horizon. Mitigation measures including double turning lanes, increased storage distances, and signal timing optimization has been considered at these intersections. As a result of the mitigation measures, some intersections are expected to function adequately, however, the following intersections are expected to continue operating under critical or over capacity movements in one or both peak periods:

- William Halton Parkway at Trafalgar Road
- Burnhamthorpe Road at Trafalgar Road
- William Halton Parkway at Burnhamthorpe Road
- Dundas Street at Trafalgar Road
- Sixth Line at William Halton Parkway
- Highway 407 WB Off-Ramp at Trafalgar Road
- Highway 407 EB Off-Ramp at Trafalgar Road
- Ninth Line at William Halton Parkway
- Collector 2 at Trafalgar Road
- Collector 1 at William Halton Parkway
- Local 6 at Trafalgar Road
- Settlers Road at Trafalgar Road
- Marvin Avenue at Trafalgar Road

The poor operation of some Study Area intersections is expected due to the high traffic volumes projected along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street. Additionally, due to the planned HOV lanes along Trafalgar Road and Dundas Street, capacity is also constrained along these corridors within the Study Area. As a result of the high volumes and reduced capacity, some critical movements are not able to be mitigated using reasonable mitigation measures.

It is noted that all access intersections to the subject development lands operate well with no noted critical or over-capacity movements. The exceptions to this are the intersections of Settlers Road at Trafalgar Road, Marvin Avenue at Trafalgar Road, and Local 6 at Trafalgar Road. At these three intersections, all movements operate well with critical and over-capacity movements noted only on the northbound and southbound through movements. This is a result of high volumes along Trafalgar Road.

7.3.4.1 2036 Future Total Conditions Operational Analysis – Saturday Sensitivity Scenario

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 50 summarizes the operational analysis of the 2036 Saturday future total conditions and Table 51 summarizes the 95th percentile queue lengths. Appendix N contains the 2036 Saturday future total conditions Synchro worksheets.

Table 50: 2036 Future Total Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	EBL	C	0.02	32
	EBR	C	0.00	32
	WBL	D	0.75	47
	WBL/T/R	D	0.62	39
	WBR	C	0.01	32
	NBL	A	0.01	9
	NBT	D	1.05	50
	SBT/R	B	0.69	13
	Overall	**C**	**1.03**	**34**
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL/R	D	0.70	53
	EBR	E	0.75	58
	NBT	F	1.16	76
	SBT	D	1.04	46
	Overall	**E**	**1.08**	**69**

Table 51: 2036 Future Total Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	EBL	-	2
	EBR	5	0
	WBL	-	70
	WBL/T/R	-	59
	WBR	60	0
	NBL	-	1
	NBT	-	#350
	SBT/R	-	149
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	-	61
	EBR	875	63
	NBT	-	#480
	SBT	-	#406
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramp is expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period in the 2036 future total horizon. Ramp movements are shown to operate with a v/c ratio of 0.75 or less. The northbound and southbound through movements at these intersections are expected to continue to operate at critical or over capacity v/c ratios due to the high volumes projected along Trafalgar Road and are not able to be mitigated using reasonable measures.

7.3.5 2041 Future Total Conditions Operational Analysis

The analysis parameters and mitigation measures used in the 2036 future total conditions have been carried forward as part of the analysis of 2041 future total conditions. It is however noted that the through lanes along both Dundas Street and Trafalgar Road have been reduced to two lanes in each direction to reflect the implementation of BRT lanes along these corridors. As further details regarding the BRT corridors on both Dundas Street and Trafalgar Road are not available, it has been assumed that centre BRT lanes will be present along Dundas Street and Trafalgar Road and as such, protected left turn lanes have been considered along these corridors. This assumption has been made as it provides the most conservative analysis in the absence of further BRT configuration details. Table 52 summarizes the results of the operational analysis and Table 53 summarizes the 95th percentile queue lengths for the 2036 future total conditions. Synchro and Sidra worksheets have been included in Appendix O.

Table 52: 2041 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
William Halton Parkway at Trafalgar Road *(Signalized)*	EBL	F	1.73	402	F	2.92	932
	EBT	F	1.04	82	D	0.84	52
	EBR	C	0.37	34	D	0.22	37
	WBL	F	1.72	408	F	1.88	467
	WBT	D	0.56	42	F	1.14	122
	WBR	D	0.12	35	F	1.14	136
	NBL	F	2.12	579	F	1.76	415
	NBT	F	1.94	474	F	1.74	379
	NBR	C	0.04	30	C	0.04	29
	SBL	F	1.58	340	F	1.90	490
	SBT	F	1.73	377	F	1.97	487
	SBR	D	0.64	45	D	0.73	51
	Overall	**F**	**1.66**	**321**	**F**	**1.80**	**382**
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	F	1.11	136	F	1.00	103
	EBT	D	0.72	51	D	0.70	52
	EBR	D	0.13	43	D	0.30	46
	WBL	F	1.41	256	F	1.57	321
	WBT	D	0.56	47	D	0.68	51
	WBR	D	0.43	46	D	0.46	48
	NBL	D	0.74	54	D	0.47	45
	NBT	F	1.94	459	F	1.92	453
	NBR	C	0.36	26	C	0.24	26
	SBL	D	0.55	46	D	0.74	52
	SBT	F	1.51	270	F	1.71	357
	SBR	C	0.08	23	C	0.47	28
	Overall	**F**	**1.52**	**274**	**F**	**1.52**	**292**
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	F	1.44	242	F	1.18	132
	WBL	F	1.04	90	F	1.79	394
	WBT	B	0.38	12	B	0.82	16
	NBL	A	0.00	0	A	0.00	0
	NBR	F	2.18	582	F	1.75	393
	Overall	**F**	**1.59**	**273**	**F**	**1.82**	**197**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Dundas Street at Trafalgar Road ***(Signalized)***	EBL	F	2.93	941	F	2.69	833
	EBT	F	1.75	379	F	1.41	232
	EBR	C	0.33	29	C	0.24	29
	WBL	F	1.43	279	F	1.37	250
	WBT	F	1.08	91	F	1.55	294
	WBR	F	1.12	115	F	1.21	150
	NBL	F	1.06	140	F	1.50	306
	NBT	F	1.51	279	F	2.06	525
	NBR	C	0.14	31	C	0.36	34
	SBL	F	4.65	1713	F	3.39	1148
	SBT	F	2.00	498	F	1.61	322
	SBR	D	0.83	52	F	1.00	85
	Overall	**F**	**2.18**	**451**	**F**	**2.01**	**391**
Sixth Line at William Halton Parkway ***(Roundabout)***	EBL/T	F	1.10	99	D	0.78	33
	EBT	F	1.10	98	D	0.78	32
	EBR	A	0.06	3	A	0.04	3
	WBL/T	B	0.45	13	D	0.81	28
	WBT	B	0.45	12	D	0.81	27
	WBR	A	0.12	4	A	0.39	7
	NBL/T	E	0.72	39	B	0.41	15
	NBT	E	0.72	38	B	0.41	15
	NBR	A	0.13	4	A	0.09	4
	SBL/T	F	1.51	249	E	0.84	40
	SBT	B	0.51	13	E	0.84	39
	SBR	A	0.20	5	A	0.17	5
	Overall	**F**	**1.51**	**90**	**C**	**0.84**	**23**
Sixth Line at Burnhamthorpe Road ***(Signalized)***	EBL	C	0.29	26	B	0.14	20
	EBT/R	C	0.27	25	B	0.17	20
	WBL	D	0.69	36	C	0.77	34
	WBT/R	C	0.40	26	C	0.37	21
	NBL	B	0.49	12	B	0.36	14
	NBT/R	A	0.51	9	B	0.42	12
	SBL	B	0.40	13	B	0.28	12
	SBT/R	A	0.32	8	B	0.45	12
	Overall	**B**	**0.56**	**14**	**B**	**0.57**	**16**
Trafalgar Road at Highway 407 WB Off-Ramp ***(Signalized)***	EBL	C	0.03	24	C	0.05	21
	EBR	C	0.00	24	C	0.00	20
	WBL	D	0.78	40	C	0.77	34
	WBL/T/R	D	0.82	44	D	0.81	37
	WBR	C	0.00	24	C	0.01	20
	NBL	C	0.03	21	B	0.06	18
	NBT	F	1.33	170	F	1.98	461
	SBT/R	E	1.09	70	E	1.06	58
	Overall	**F**	**1.23**	**111**	**F**	**1.66**	**269**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 EB Off-Ramp ***(Signalized)***	EBL/R	D	0.76	36	D	0.72	42
	EBR	D	0.82	41	D	0.80	49
	NBT	F	1.51	251	F	2.14	534
	SBT	F	1.70	337	F	1.47	233
	Overall	**F**	**1.39**	**271**	**F**	**1.76**	**391**
Ninth Line at William Halton Parkway / Burnhamthorpe Road ***(Roundabout)***	EBL/T	F	2.31	609	F	1.81	382
	EBT	F	2.31	487	F	1.81	293
	EBR	A	0.34	7	A	0.26	6
	WBL/T	F	1.17	112	F	1.93	436
	WBT/R	F	1.17	112	F	1.93	436
	NBL/T	F	1.24	169	F	2.88	882
	NBT/R	F	1.24	166	F	2.88	885
	SBL/T	F	1.42	232	F	0.87	59
	SBT	F	1.41	231	F	0.87	57
	SBR	A	0.07	4	A	0.08	4
	Overall	**F**	**2.31**	**265**	**F**	**2.88**	**440**
Collector 2 at Trafalgar Road ***(Signalized)***	EBL	D	0.68	39	C	0.67	29
	EBT/R	C	0.12	26	C	0.23	21
	WBL	A	0.00	0	A	0.00	0
	WBT	A	0.00	0	A	0.00	0
	WBR	D	0.50	39	F	2.02	504
	NBL	D	0.58	54	E	0.51	61
	NBT	F	2.20	570	F	3.41	1128
	NBR	C	0.54	26	D	0.52	37
	SBL	F	1.17	131	F	2.09	556
	SBT	E	1.10	76	F	1.71	360
	SBR	B	0.25	13	C	0.22	28
	Overall	**F**	**1.56**	**251**	**F**	**2.49**	**645**
Collector 1 at William Halton Parkway ***(Signalized)***	EBL	A	0.04	9	A	0.04	5
	EBT/R	E	1.03	61	B	0.55	7
	WBL	F	2.00	500	F	2.13	543
	WBT	A	0.28	5	C	0.87	10
	WBR	A	0.21	4	B	0.15	5
	NBL	D	0.17	40	C	0.27	27
	NBT/R	D	0.16	40	C	0.37	26
	SBL	D	0.53	45	F	1.16	32
	SBT/R	D	0.03	39	C	0.10	26
	Overall	**F**	**1.81**	**101**	**F**	**1.77**	**85**
Collector 2 at William Halton Parkway ***(Unsignalized)***	EBL	A	0.82	0	A	0.63	0
	EBT/R	A	0.44	0	A	0.32	0
	WBT	A	0.48	0	A	0.66	0
	WBR	A	0.10	0	A	0.10	0
	NBR	D	0.64	26	F	1.37	200
	SBR	B	0.02	13	B	0.10	14
	Overall	**D**	**-**	**2**	**E**	**-**	**32**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 1 at Burnhamthorpe Road *(Signalized)*	EBL	A	0.04	5	A	0.01	7
	EBT/R	A	0.35	7	A	0.33	9
	WBL	A	0.21	7	A	0.25	9
	WBT/R	A	0.28	7	A	0.42	10
	NBL	C	0.10	23	C	0.05	21
	NBT/R	C	0.56	27	C	0.76	32
	SBL	C	0.10	23	D	0.81	53
	SBT/R	C	0.58	27	C	0.45	24
	Overall	**B**	**0.41**	**12**	**B**	**0.54**	**17**
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.27	0	A	0.24	0
	EBT/R	A	0.14	0	A	0.12	0
	WBT/L	A	0.01	1	A	0.03	1
	WBT	A	0.18	0	A	0.30	0
	NBL	C	0.01	20	C	0.01	19
	NBR	B	0.05	11	B	0.03	11
	Overall	**A**	**-**	**1**	**A**	**-**	**<1**
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.29	0	A	0.25	0
	EBT/R	A	0.14	0	A	0.13	0
	WBT/L	A	0.02	1	A	0.03	1
	WBT	A	0.18	0	A	0.32	0
	NBL	A	0.00	0	A	0.00	0
	NBR	B	0.05	12	B	0.03	11
	Overall	**A**	**-**	**<1**	**A**	**-**	**1**
Local 3 at William Halton Parkway *(Unsignalized)*	EBT	A	0.79	0	A	0.59	0
	EBT/R	A	0.40	0	A	0.31	0
	WBT	A	0.17	0	A	0.60	0
	WBR	A	0.03	0	A	0.07	0
	NBR	B	0.04	10	B	0.03	10
	SBR	B	0.36	13	F	1.32	183
	Overall	**C**	**-**	**1**	**F**	**-**	**27**
Local 3 / Collector 4 at Burnhamthorpe Road *(Unsignalized)*	EBT	A	0.35	0	A	0.35	0
	EBT/R	A	0.18	0	A	0.19	0
	WBT	A	0.32	0	A	0.39	0
	WBT/R	A	0.16	0	A	0.20	0
	NBR	B	0.19	11	B	0.16	11
	SBR	B	0.04	10	B	0.03	10
	Overall	**A**	**-**	**1**	**A**	**-**	**1**
Loyalist Trail / Collector 3 at Trafalgar Road *(Unsignalized)*	EBR	B	0.24	14	F	1.61	365
	WBR	E	0.59	34	D	0.34	25
	NBT	A	0.96	0	A	0.90	0
	NBR	A	0.02	0	A	0.07	0
	SBT	A	0.65	0	A	0.87	0
	SBR	A	0.28	0	A	0.20	0
	Overall	**F**	**-**	**1**	**B**	**-**	**20**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 3 at Collector 5 ***(Unsignalized)***	EBL/T/R	A	0.22	9	A	0.18	9
	WBL/T/R	A	0.02	8	A	0.05	8
	NBL/T/R	A	0.23	9	A	0.31	10
	SBL/T/R	A	0.17	8	A	0.28	9
	Overall	**A**	-	**9**	**A**	-	**9**
Collector 5 at William Halton Parkway ***(Signalized)***	EBL	C	0.80	23	F	2.88	887
	EBT	B	0.72	12	B	0.51	10
	EBR	A	0.04	6	A	0.11	7
	WBL	B	0.29	13	A	0.38	9
	WBT/R	A	0.34	8	C	0.95	25
	NBL	D	0.68	38	C	0.44	26
	NBT/R	C	0.21	28	C	0.07	22
	SBL	C	0.42	30	C	0.69	33
	SBT/R	C	0.14	27	C	0.38	25
	Overall	**C**	**0.77**	**15**	**E**	**2.23**	**79**
Collector 5 at Burnhamthorpe Road ***(Signalized)***	EBL	A	0.10	7	A	0.34	9
	EBT/R	A	0.48	9	A	0.39	7
	WBL	B	0.33	11	B	0.56	13
	WBT/R	A	0.36	8	A	0.42	7
	NBL	C	0.11	22	C	0.09	26
	NBT/R	C	0.73	33	C	0.58	31
	SBL	C	0.15	23	C	0.10	26
	SBT/R	C	0.32	24	C	0.46	29
	Overall	**B**	**0.55**	**13**	**B**	**0.56**	**11**
Local 6 at Trafalgar Road ***(Signalized)***	EBL	D	0.47	43	D	0.38	45
	EBT/R	D	0.05	39	D	0.05	41
	WBL	D	0.53	44	D	0.44	45
	WBT/R	D	0.08	39	D	0.09	42
	NBL	E	0.62	76	D	0.44	54
	NBT/R	F	1.39	199	F	1.31	160
	SBL	E	0.76	79	F	1.26	218
	SBT/R	D	1.05	50	F	1.28	145
	Overall	**F**	**1.19**	**128**	**F**	**1.18**	**149**
Settlers Road at Trafalgar Road ***(Signalized)***	EBL	E	0.76	60	D	0.54	51
	EBT	D	0.37	43	D	0.47	49
	EBR	D	0.40	44	D	0.10	45
	WBL	F	1.15	140	E	0.83	63
	WBT	C	0.29	34	D	0.26	38
	WBR	C	0.04	32	D	0.02	35
	NBL	E	0.57	56	D	0.62	54
	NBT	F	1.76	378	F	1.81	394
	NBR	C	0.27	20	C	0.31	27
	SBL	D	0.56	54	D	0.54	48
	SBT	F	1.36	198	F	1.87	430
	SBR	B	0.11	17	C	0.11	21
	Overall	**F**	**1.46**	**240**	**F**	**1.36**	**333**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Collector 1 at Settlers Road *(Unsignalized)*	EBL/T/R	B	0.32	12	B	0.28	11
	WBL/T/R	B	0.52	15	B	0.43	12
	NBL/T/R	B	0.50	14	B	0.32	11
	SBL/T/R	B	0.24	11	B	0.27	11
	Overall	**B**	-	**13**	**B**	-	**11**
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	F	0.93	52	E	0.85	36
	WBL/T/R	D	0.75	30	C	0.44	15
	NBL/T/R	C	0.54	20	C	0.46	16
	SBL/T/R	D	0.68	25	C	0.50	16
	Overall	**D**	-	**35**	**C**	-	**24**
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	C	0.68	21	B	0.40	12
	WBL/T/R	B	0.48	15	B	0.34	11
	NBL/T/R	B	0.26	12	A	0.23	10
	SBL/T/R	C	0.51	15	B	0.36	11
	Overall	**B**	-	**17**	**B**	-	**11**
Local 7 at Trafalgar Road (Unsignalized)	WBR	C	0.10	16	C	0.07	15
	NBT	A	1.26	0	A	1.31	0
	NBT/R	A	0.65	0	A	0.72	0
	SBT	A	0.85	0	A	0.91	0
	Overall	**A**	-	**<1**	**A**	-	**<1**
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	D	0.22	40	D	0.13	47
	EBT	D	0.30	40	D	0.41	49
	EBR	D	0.36	41	D	0.14	47
	WBL	E	0.88	60	D	0.66	48
	WBT	C	0.29	32	D	0.26	39
	WBR	C	0.04	29	D	0.05	38
	NBL	E	0.89	69	D	0.64	46
	NBT	F	1.75	365	F	1.82	397
	NBR	B	0.03	12	B	0.12	14
	SBL	F	0.96	116	D	0.55	44
	SBT	F	1.87	426	F	2.04	501
	SBR	B	0.01	17	B	0.00	20
	Overall	**F**	**1.51**	**331**	**F**	**1.51**	**385**
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	A	0.19	10	A	0.23	10
	WBL/T/R	B	0.59	15	B	0.36	10
	NBL/T/R	A	0.13	10	A	0.10	9
	SBL/T/R	B	0.49	14	B	0.33	11
	Overall	**B**	-	**14**	**A**	-	**10**
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	B	0.42	14	C	0.59	19
	WBL/T/R	C	0.57	18	B	0.43	15
	NBL/T/R	B	0.40	14	C	0.70	23
	SBL/T/R	C	0.71	22	B	0.48	15
	Overall	**B**	-	**18**	**C**	-	**19**

Table 53: 2041 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Trafalgar Road (Signalized)	EBL	150	#179	#337
	EBT	-	#245	148
	EBR	60	57	33
	WBL	150	#111	#204
	WBT	-	93	#247
	WBR	220	17	#248
	NBL	120	#201	#172
	NBT	-	#569	#512
	NBR	55	0	5
	SBL	100	#126	#108
	SBT	-	#469	#534
	SBR	80	108	126
Burnhamthorpe Road at Trafalgar Road *(Signalized)*	EBL	100	#99	#79
	EBT	-	65	58
	EBR	30	19	31
	WBL	120	#123	#169
	WBT	-	49	56
	WBR	30	43	43
	NBL	130	#110	53
	NBT	-	#563	#526
	NBR	70	53	34
	SBL	170	#73	#117
	SBT	-	#400	#501
	SBR	70	13	76
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT/R	-	#336	#230
	WBL	150	#144	#472
	WBT	-	59	192
	NBL	30	0	0
	NBR	-	#470	#301
Dundas Street at Trafalgar Road *(Signalized)*	EBL	190	#212	#195
	EBT	-	#516	#373
	EBR	85	49	35
	WBL	80	#80	#85
	WBT	-	#245	#419
	WBR	250	#259	#287
	NBL	90	#56	#95
	NBT	-	#364	#542
	NBR	50	22	54
	SBL	260	#272	#222
	SBT	-	#518	#398
	SBR	150	#153	#205

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Sixth Line at William Halton Parkway *(Roundabout)*	EBL/T	-	164	36
	EBT	-	172	36
	EBR	-	0	0
	WBL/T	-	14	62
	WBT	-	14	62
	WBR	-	0	0
	NBL/T	-	22	10
	NBT	-	22	10
	NBR	-	0	0
	SBL/T	-	871	44
	SBT	-	19	44
	SBR	-	0	0
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	55	18	35
	EBT/R	-	21	15
	WBL	50	40	58
	WBT/R	-	30	30
	NBL	40	43	26
	NBT/R	-	71	55
	SBL	30	23	21
	SBT/R	-	43	68
Trafalgar Road at Highway 407 WB Off-Ramp *(Signalized)*	EBL	-	2	4
	EBR	5	0	0
	WBL	-	74	80
	WBL/T/R	-	79	87
	WBR	60	0	0
	NBL	-	1	3
	NBT	-	#398	#600
	SBT/R	-	#285	#251
Trafalgar Road at Highway 407 EB Off-Ramp *(Signalized)*	EBL/R	-	79	68
	EBR	875	85	74
	NBT	-	#462	#909
	SBT	-	#542	#565
Ninth Line at William Halton Parkway / Burnhamthorpe Road *(Roundabout)*	EBL/T	-	1834	1289
	EBT	-	1834	1289
	EBR	-	0	0
	WBL/T	-	328	1580
	WBT/R	-	382	1580
	NBL/T	-	365	1585
	NBT/R	-	365	1585
	SBL/T	-	356	34
	SBT	-	382	34
	SBR	-	0	0

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Collector 2 at Trafalgar Road *(Signalized)*	EBL	95	35	91
	EBT/R	-	15	30
	WBL	30	0	0
	WBT	-	0	0
	WBR	310	40	#503
	NBL	45	18	21
	NBT	-	#505	#886
	NBR	70	75	75
	SBL	120	#126	#147
	SBT	-	#283	#427
	SBR	40	35	33
Collector 1 at William Halton Parkway *(Signalized)*	EBL	30	6	2
	EBT/R	-	#373	77
	WBL	110	#271	#147
	WBT	-	52	#195
	WBR	30	9	14
	NBL	30	15	28
	NBT/R	-	18	41
	SBL	40	35	#128
	SBT/R	-	6	15
Collector 2 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	33	259
	SBR	-	13	3
Collector 1 at Burnhamthorpe Road *(Unsignalized)*	EBL	30	4	2
	EBT/R	-	52	43
	WBL	30	16	19
	WBT/R	-	36	57
	NBL	30	7	5
	NBT/R	-	42	72
	SBL	30	7	#41
	SBT/R	-	45	43
Local 1 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	<1	<1
	NBR	-	1	1
Local 2 at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBT/R	-	0	0
	WBT/L	-	<1	1
	WBT	-	0	0
	NBL	30	0	0
	NBR	-	1	1

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Local 3 at William Halton Parkway ***(Unsignalized)***	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBR	30	0	0
	NBR	-	2	10
	SBR	-	15	194
Local 3 / Collector 4 at Burnhamthorpe Road ***(Unsignalized)***	EBT	-	0	0
	EBT/R	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	NBR	-	5	4
	SBR	-	2	1
Loyalist Trail / Collector 3 at Trafalgar Road ***(Unsignalized)***	EBR	-	7	193
	WBR	-	30	16
	NBT	-	0	0
	NBR	30	0	0
	SBT	-	0	0
	SBR	30	0	0
Collector 3 at Collector 5 ***(Unsignalized)***	EBL/T/R	-	2	2
	WBL/T/R	-	<1	<1
	NBL/T/R	-	2	2
	SBL/T/R	-	1	2
Collector 5 at William Halton Parkway ***(Unsignalized)***	EBL	30	#113	#120
	EBT	-	158	85
	EBR	30	6	13
	WBL	50	12	24
	WBT/R	-	53	#251
	NBL	80	49	30
	NBT/R	-	21	9
	SBL	40	31	50
	SBT/R	-	16	32
Collector 5 at Burnhamthorpe Road ***(Signalized)***	EBL	30	8	23
	EBT/R	-	68	58
	WBL	30	19	#53
	WBT/R	-	47	64
	NBL	30	10	8
	NBT/R	-	61	42
	SBL	30	8	7
	SBT/R	-	29	35
Local 6 at Trafalgar Road ***(Signalized)***	EBL	30	31	21
	EBT/R	-	9	9
	WBL	30	36	25
	WBT/R	-	14	13
	NBL	30	15	17
	NBT/R	-	#602	#572
	SBL	30	#37	#87
	SBT/R	-	#431	#585

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Settlers Road at Trafalgar Road *(Signalized)*	EBL	60	57	33
	EBT	-	40	39
	EBR	40	39	16
	WBL	85	#120	57
	WBT	-	40	31
	WBR	30	9	2
	NBL	90	#56	m32
	NBT	-	#588	m#221
	NBR	40	40	m12
	SBL	70	#63	#91
	SBT	-	#435	#560
	SBR	30	15	15
Collector 1 at Settlers Road *(Unsignalized)*	SBT	-	2	1
	SBR	-	4	3
	NBL/T/R	-	4	7
	SBL/T/R	-	4	3
Collector 4 at Settlers Road *(Unsignalized)*	EBL/T/R	-	6	5
	WBL/T/R	-	3	2
	NBL/T/R	-	2	2
	SBL/T/R	-	2	2
Collector 6 at Settlers Road *(Unsignalized)*	EBL/T/R	-	4	2
	WBL/T/R	-	2	1
	NBL/T/R	-	1	1
	SBL/T/R	-	2	2
Local 7 at Trafalgar Road (Unsignalized)	WBR	-	3	1
	NBT	-	0	0
	NBT/R	-	0	0
	SBT	-	0	0
Marvin Avenue at Trafalgar Road *(Signalized)*	EBL	30	15	10
	EBT	-	25	35
	EBR	50	31	17
	WBL	90	64	43
	WBT	-	30	29
	WBR	30	<1	7
	NBL	120	#118	#134
	NBT	-	#654	#714
	NBR	30	0	18
	SBL	30	#67	m16
	SBT	-	#585	m#266
	SBR	30	0	m0
Collector 1 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	1	1
	WBL/T/R	-	4	2
	NBL/T/R	-	1	3
	SBL/T/R	-	7	3
Collector 4 at Marvin Avenue *(Unsignalized)*	EBL/T/R	-	2	3
	WBL/T/R	-	3	2
	NBL/T/R	-	2	4
	SBL/T/R	-	4	2

Intersection	Mvmnt	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal			

With the addition of site generated traffic, the following study intersections are expected to operate with movements and/or overall v/c ratios greater than or equal to 0.85 in one or both the AM and PM peak periods in the 2041 future total horizon:

- William Halton Parkway at Trafalgar Road
- Burnhamthorpe Road at Trafalgar Road
- William Halton Parkway at Burnhamthorpe Road
- Dundas Street at Trafalgar Road
- Sixth Line at William Halton Parkway
- Highway 407 WB Off-Ramp at Trafalgar Road
- Highway 407 EB Off-Ramp at Trafalgar Road
- Ninth Line at William Halton Parkway
- Collector 2 at Trafalgar Road
- Collector 1 at William Halton Parkway
- Collector 2 at William Halton Parkway
- Loyalist Trail / Collector 3 at Trafalgar Road
- Collector 5 at William Halton Parkway
- Local 6 at Trafalgar Road
- Settlers Road at Trafalgar Road
- Marvin Avenue at Trafalgar Road

This is expected due to the high traffic volumes projected along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street. Additionally, the planned conversion of Trafalgar Road and Dundas Street into transit corridors with BRT lanes further limits capacity along these routes within the Study Area. As a result of the high volumes and reduced capacity, critical movements are not able to be mitigated using reasonable mitigation measures discussed in previous analysis horizons and are shown to be significantly worsened in the 2041 future total analysis horizon. As such, no mitigation measures at individual intersections have been considered.

As discussed in Section 7.2.5, bus-only BRT lanes along Trafalgar Road are recommended in the DMTR and will undergo further review and refinement through the Region's ongoing Integrated Master Plan (IMP). It is assumed that this is the case for the future Dundas Street BRT as well. As part of this process, region wide modelling is expected to be conducted to assess and address the impacts of the BRT implementation from a corridor perspective. As the high volumes along the Study Area roadways are a reflection of background development site traffic and growth rates provided by both Town and Regions staff, these volumes represent both projected local and regional growth as the result of development of adjacent lands and region wide development. The poor operation noted at Study Area intersections cannot be addressed using Synchro analysis software using intersection specific mitigation measures. Instead, macroscopic modelling is required by the Region to identify feasible corridor level solutions. As the IMP is an ongoing study, the results and modelling of this scenario are not yet available, however it is recommended and anticipated that the modelling of these BRT scenarios will address

the high traffic volumes in this area and the impact of reducing one through lane in each travel direction along Dundas Street as well as Trafalgar Road.

In order for the Study Area intersections to function adequately, a shift in mode share from single occupancy vehicles to transit is required to reduce traffic volumes along Trafalgar Road and Dundas Street. As such, a high-level evaluation of this potential shift in mode share has been undertaken by calculating the necessary reduction in vehicle volume to ensure adequate function of intersections along Trafalgar Road and Dundas Street. In order to do this, northbound and southbound volumes along Trafalgar Road and eastbound and westbound volumes at Dundas Street were reduced until the corresponding through movements operated at a v/c ratio of less than 1.00 at each intersection. The maximum reduction of traffic for each direction in each peak period is presented in Table 54 below.

Table 54: 2041 Future Total Volume Reductions

Corridor	AM				PM			
	NB	SB	EB	WB	NB	SB	EB	WB
Trafalgar Road	1406	1174	-	-	2484	1307	-	-
Dundas Street	-	-	986	104	-	-	536	700

To estimate the number of buses required along the Trafalgar Road and Dundas Street BRT corridors to accommodate the reduction in vehicle trips, the reduced vehicle trips along these corridors were first converted into passenger trips. A 3% Transportation Demand Management mode share, which is intended to represent carpooling, and a 72% single-occupancy mode share is identified in the Halton Region TMP. The resulting vehicle occupancy rate based on these mode shares is 1.04. As Halton Region does not yet have information regarding BRT capacities, a bus capacity of 37 passengers based on a 40-foot bus from the Town of Oakville has been assumed for this analysis. With a conservative assumption of 70% bus occupancy, the corresponding number of buses needed to accommodate the reduced vehicle volumes along Trafalgar Road and Dundas Street for the AM and PM peak hour is presented in in Table 55 below.

Table 55: 2041 Future Total Required Bus Trips

Corridor	AM				PM			
	NB	SB	EB	WB	NB	SB	EB	WB
Trafalgar Road	54	47	-	-	100	57	-	-
Dundas Street	-	-	40	4	-	-	22	28

As shown above, the maximum number of one-way buses with a capacity of 37 people at 70% capacity is 54 in the AM and 100 in the PM on Trafalgar Road, and 40 in the AM and 28 in the PM on Dundas Street. It is further noted that articulated buses will provide additional bus capacity and are recommended for use along Trafalgar Road and Dundas Street.

7.3.5.1 2041 Future Total Conditions Operational Analysis – Saturday Analysis

As discussed in Section 5.1.5, a Saturday peak period scenario has been considered for the Highway 407 ramp intersections at Trafalgar Road. Table 56 summarizes the operational analysis of the 2041 Saturday future total conditions and Table 57 summarizes the 95th percentile queue lengths. Appendix O contains the 2041 Saturday future total conditions Synchro worksheets.

Table 56: 2041 Future Total Conditions Saturday Operational Analysis

Intersection	Mvmnt	SAT Peak Hour		
		LOS	V/C	Del. (s)
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	EBL	C	0.02	30
	EBR	C	0.00	30
	WBL	D	0.82	50
	WBL/T/R	D	0.71	42
	WBR	C	0.02	30
	NBL	B	0.01	15
	NBT	F	1.41	206
	SBT/R	B	0.83	19
	Overall	**F**	**1.30**	**115**
Mitigation: Signal timing optimization				
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*C*	*0.01*	*23*
	EBR	*C*	*0.00*	*23*
	WBL	*D*	*0.78*	*38*
	WBL/T/R	*C*	*0.68*	*33*
	WBR	*C*	*0.02*	*23*
	NBL	*B*	*0.01*	*14*
	NBT	*F*	*1.51*	*250*
	SBT/R	*C*	*0.92*	*23*
	Overall	***F***	***1.37***	***138***
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL/R	E	0.77	57
	EBR	E	0.83	65
	NBT	F	1.56	272
	SBT	F	1.26	137
	Overall	**F**	**1.40**	**203**
Mitigation: Signal timing optimization				
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL/R*	*D*	*0.70*	*40*
	EBR	*D*	*0.75*	*45*
	NBT	*F*	*1.68*	*326*
	SBT	*F*	*1.36*	*180*
	Overall	***F***	***1.45***	***248***

Table 57: 2041 Future Total Conditions Saturday Queue Lengths

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	EBL	-	1
	EBR	5	0
	WBL	-	92
	WBL/T/R	-	82
	WBR	60	0
	NBL	-	1
	NBT	-	#546
	SBT/R	-	#235

Intersection	Mvmnt	Storage Dist. (m)	SAT Q (95th)
Mitigation: Signal timing optimization			
Trafalgar Road at Highway 407 WB Off-Ramp (Signalized)	*EBL*	*-*	*1*
	EBR	*5*	*0*
	WBL	*-*	*74*
	WBL/T/R	*-*	*65*
	WBR	*60*	*0*
	NBL	*-*	*1*
	NBT	*-*	*#452*
	SBT/R	*-*	*#212*
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	EBL	-	75
	EBR	875	#83
	NBT	-	#706
	SBT	-	#522
Mitigation: Signal timing optimization			
Trafalgar Road at Highway 407 EB Off-Ramp (Signalized)	*EBL*	*-*	*59*
	EBR	*875*	*62*
	NBT	*-*	*#632*
	SBT	*-*	*#477*
Notes:	# - 95% percentile exceeds capacity		

The signalized intersections of Trafalgar Road at the Highway 407 WB and EB off-ramps are expected to operate at an overall v/c ratio greater than or equal to 0.85 in the Saturday peak period in the 2041 future total horizon. The ramp movement at the EB off-ramp is shown to operate with a v/c ratio of 0.75 or less. The ramp movement at the WB off-ramp could not be reduced to 0.75 or lower with signal timing optimization as high volumes along Trafalgar Road do not allow more time to be given to the westbound movement. The northbound and southbound through movements at these intersections are expected to continue to operate at critical or over capacity v/c ratios due to the high volumes projected along Trafalgar Road and are not able to be mitigated using reasonable measures.

As discussed in Section 7.3.5, the planned conversion of Trafalgar Road into a transit corridor with BRT lanes further limits vehicle capacity along Trafalgar Road. As part of this process, region wide modelling is expected to be conducted as part of the IMP study to assess and address the impacts of the BRT implementation from a corridor perspective. As the IMP is an ongoing study, the results and the modelling of this scenario are not yet available.

Similar to the process discussed in the AM and PM analysis, the necessary reduction in volume along Trafalgar Road has been determined in order for the northbound and southbound movements at each intersection to operate at a v/c ratio of below 1.00. The maximum reduction of traffic for each direction results in 1429 northbound and 1079 southbound vehicles along Trafalgar Road for the Saturday peak period.

To estimate the number of buses required along the Trafalgar Road and Dundas Street BRT corridors to accommodate the reduction in vehicle trips, the reduced vehicle trips along these corridors were first converted into passenger trips. A 3% Transportation Demand Management mode share, which is intended to represent carpooling, and a 72% single-occupancy mode share is identified in the Halton Region TMP. The resulting vehicle occupancy rate based on these mode shares is 1.04. As Halton Region does not yet have information regarding BRT capacities, a bus capacity of 37 passengers based on a 40-foot bus from the Town of Oakville has been assumed for this analysis. With a conservative assumption of 70% bus occupancy, the corresponding maximum

number of buses needed to accommodate the reduced vehicle volumes along Trafalgar Road is 57 in the northbound direction and 43 in the southbound direction for the Saturday peak period.

7.3.6 Future Total Intersection Configuration

The resulting recommended intersection configuration for the Study Area intersections based on the Synchro analysis above is summarized below. Figure 118, Figure 119, Figure 120, and Figure 121 show the 2031 future total intersection configuration. Figure 122, Figure 123, Figure 124, and Figure 125 show the 2036 future total intersection configuration. Figure 126, Figure 127, Figure 128, and Figure 129 show the 2041 future total intersection configuration.

Figure 118: 2031 Future Total Intersection Configuration – Section A

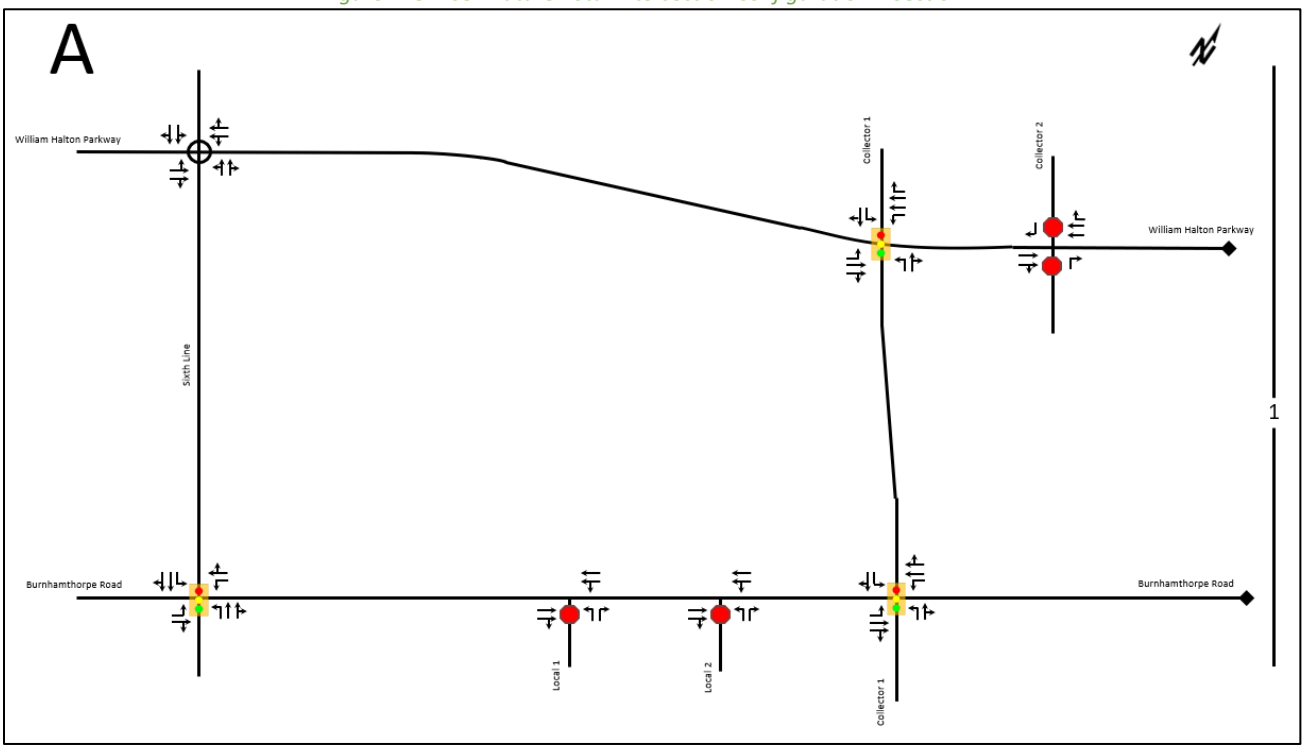


Figure 119: 2031 Future Total Configuration – Section B

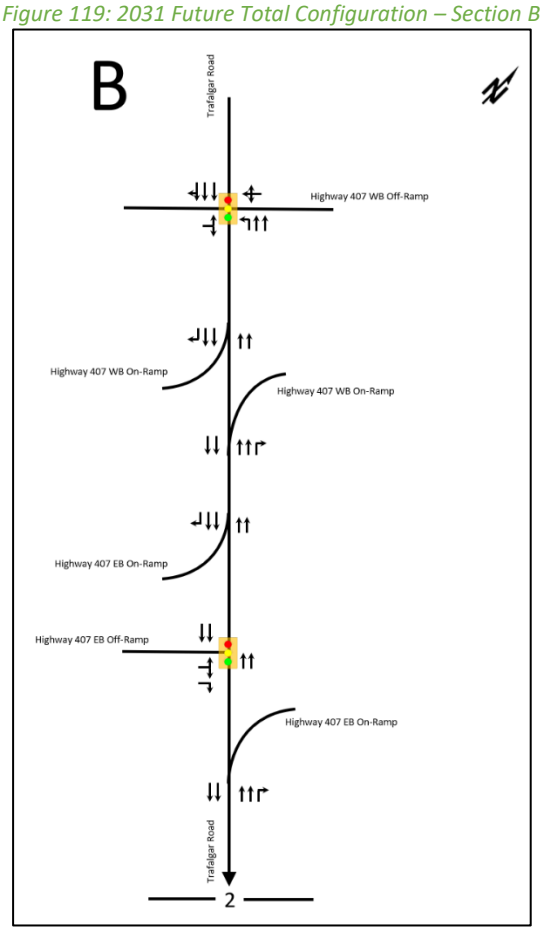


Figure 120: 2031 Future Total Intersection Configuration – Section C

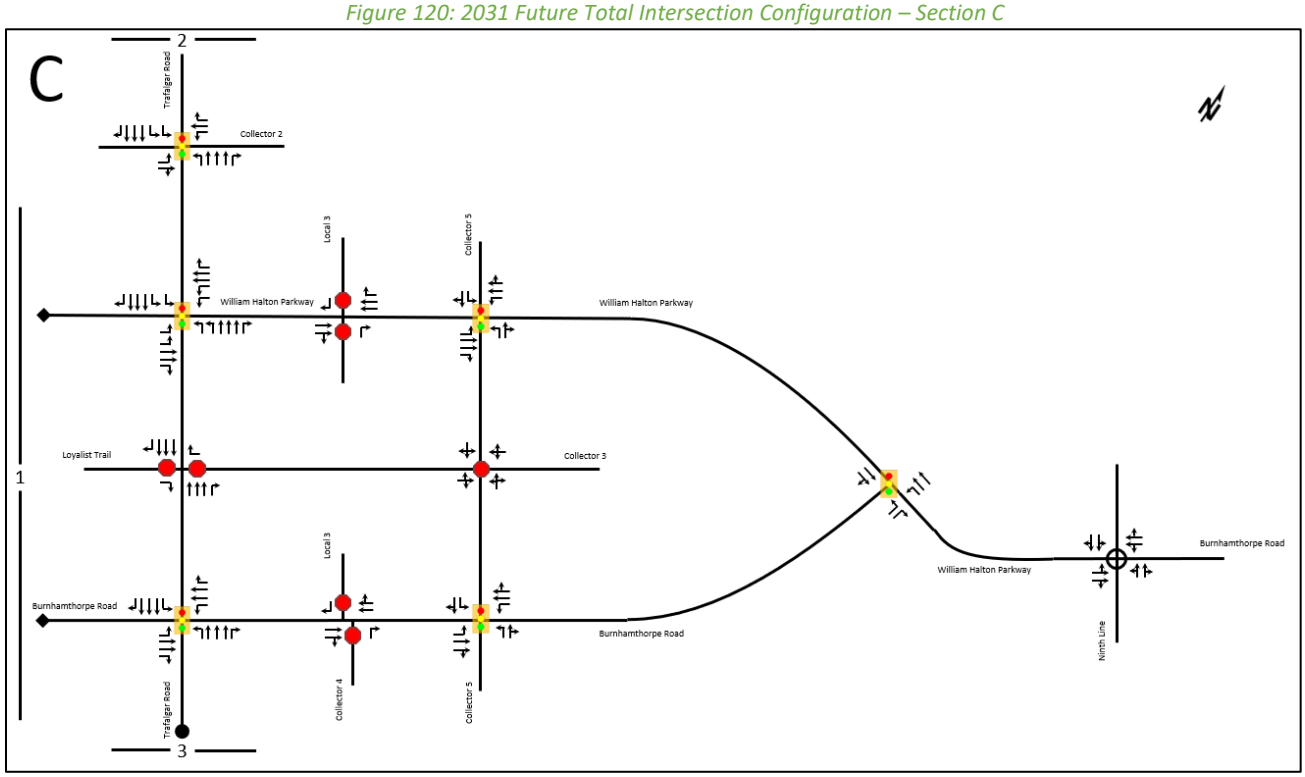


Figure 121: 2031 Future Total Intersection Configuration – Section D

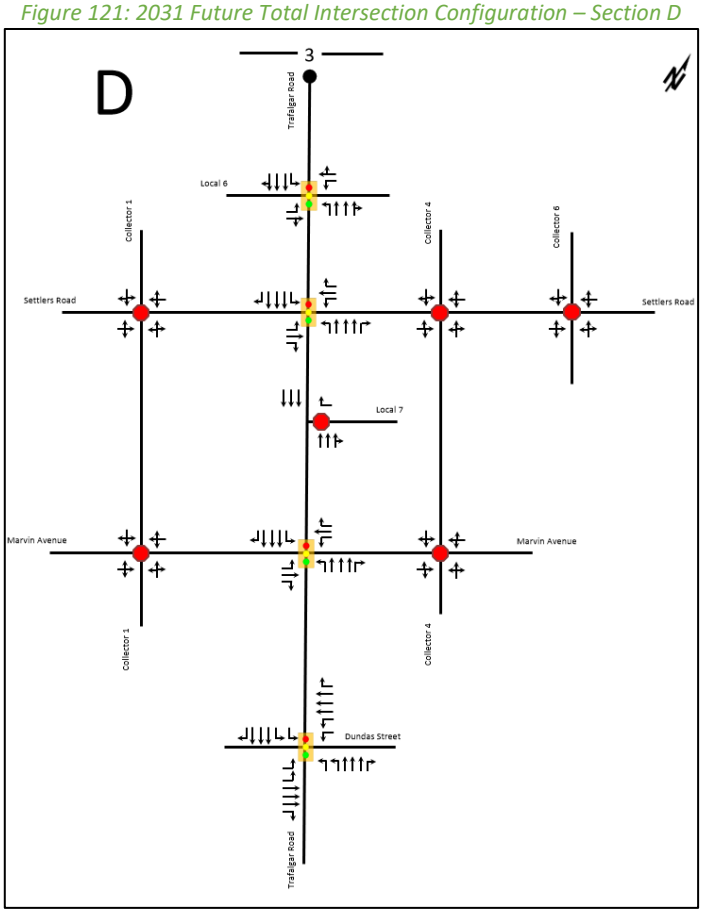


Figure 122: 2036 Future Total Intersection Configuration – Section A

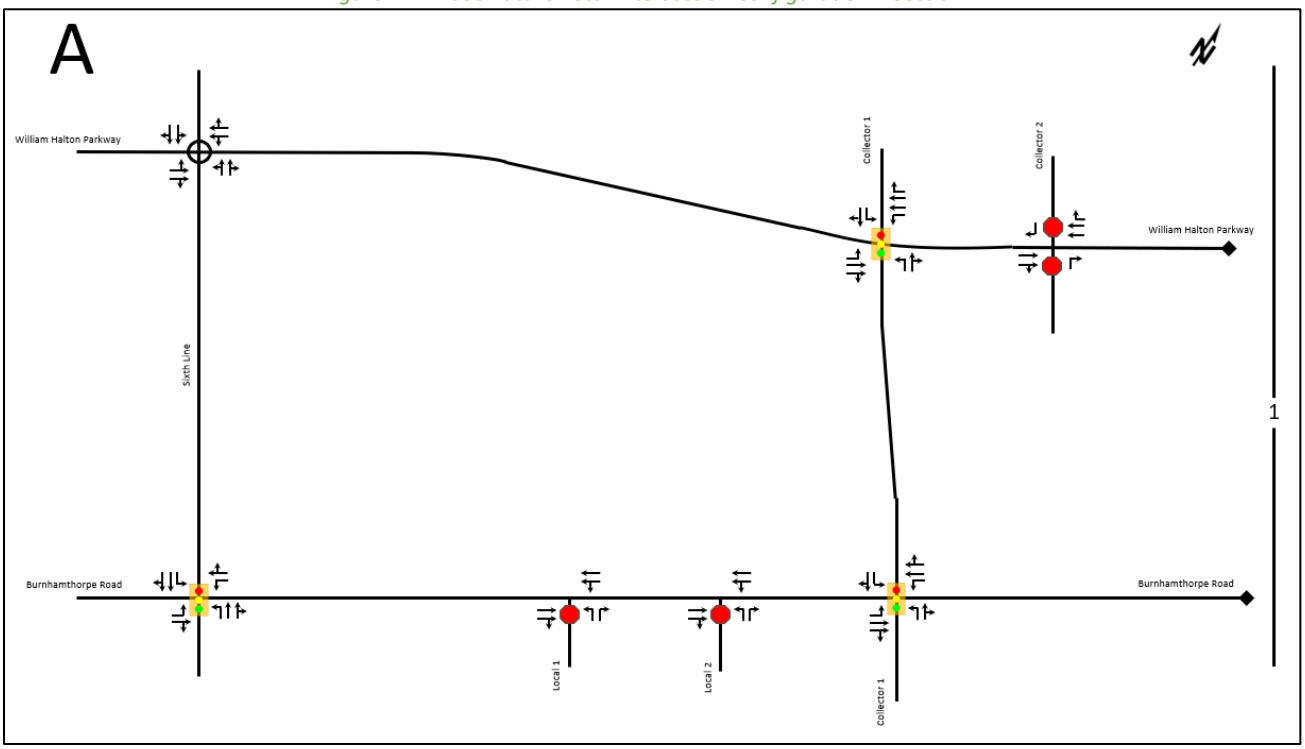


Figure 123: 2036 Future Total Intersection Configuration – Section B

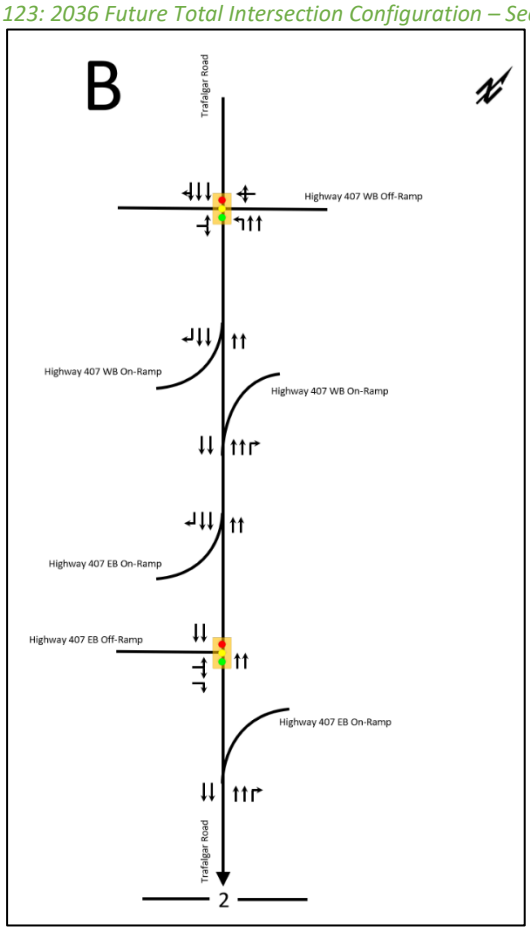


Figure 124: 2036 Future Total Intersection Configuration – Section C

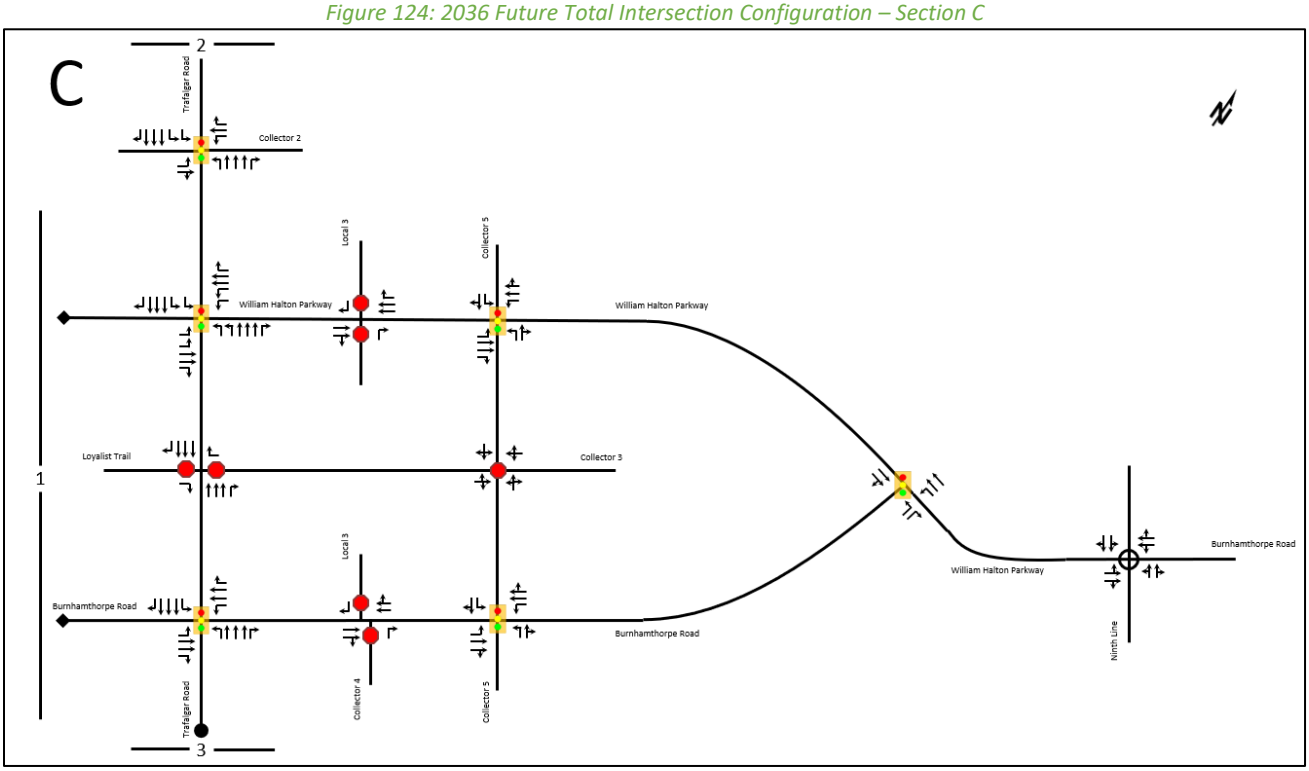


Figure 125: 2036 Future Total Intersection Configuration – Section D

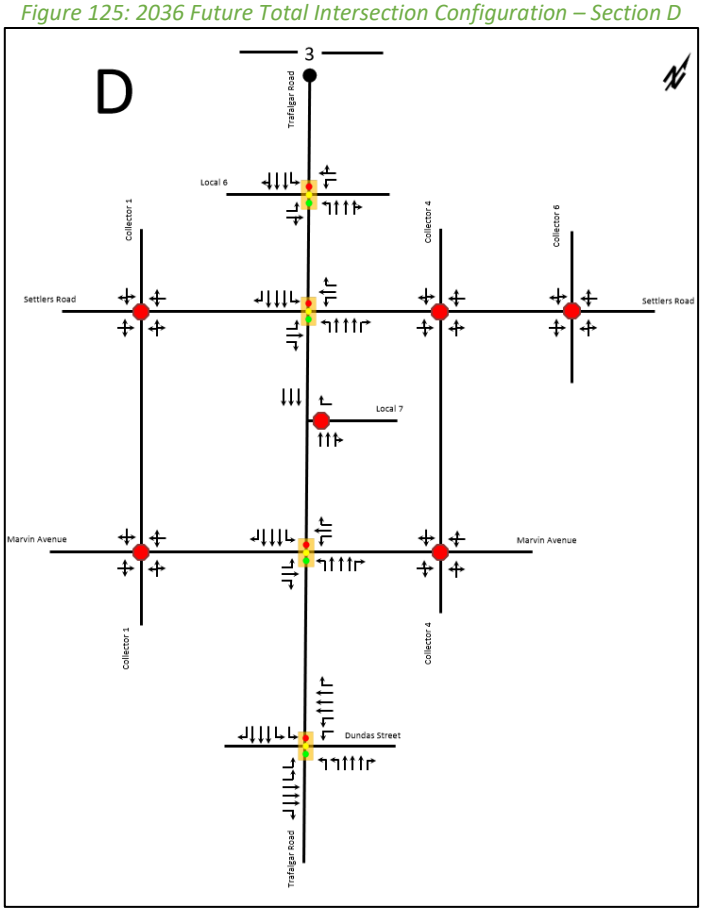


Figure 126: 2041 Future Total Intersection Configuration – Section A

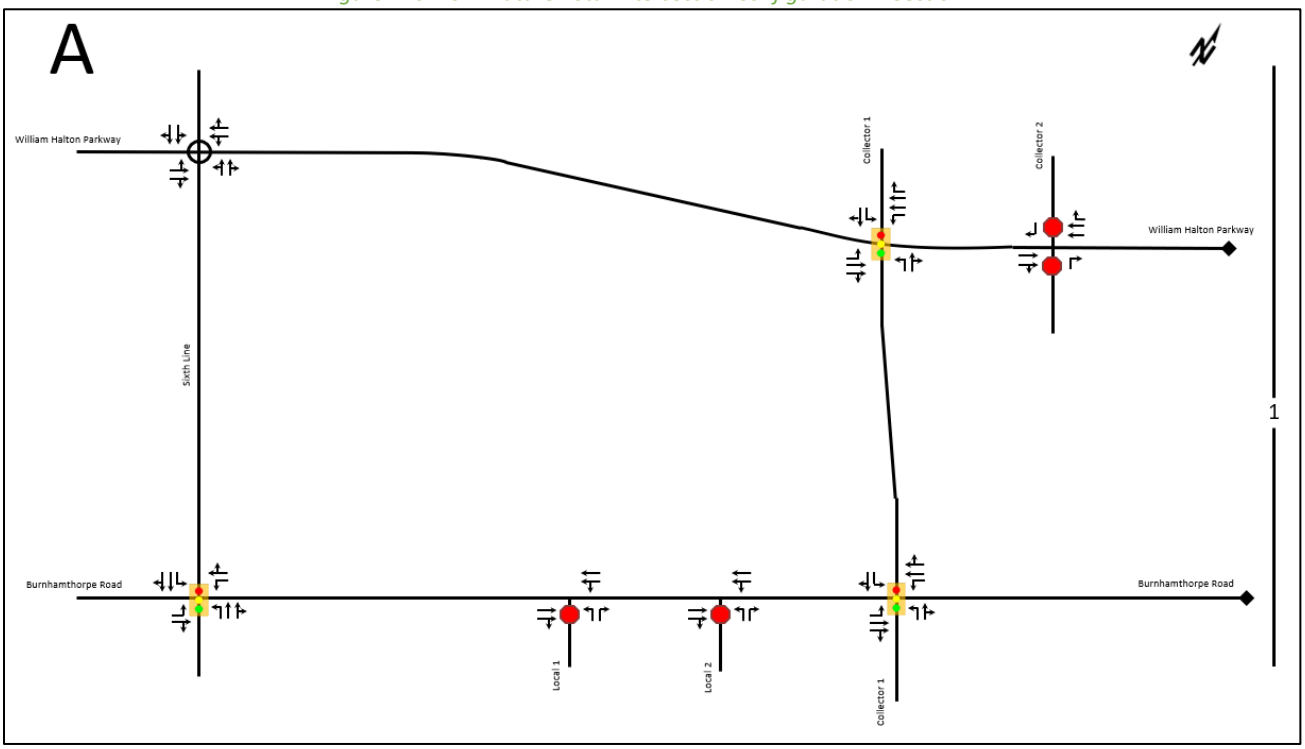


Figure 127: 2041 Future Total Intersection Configuration – Section B

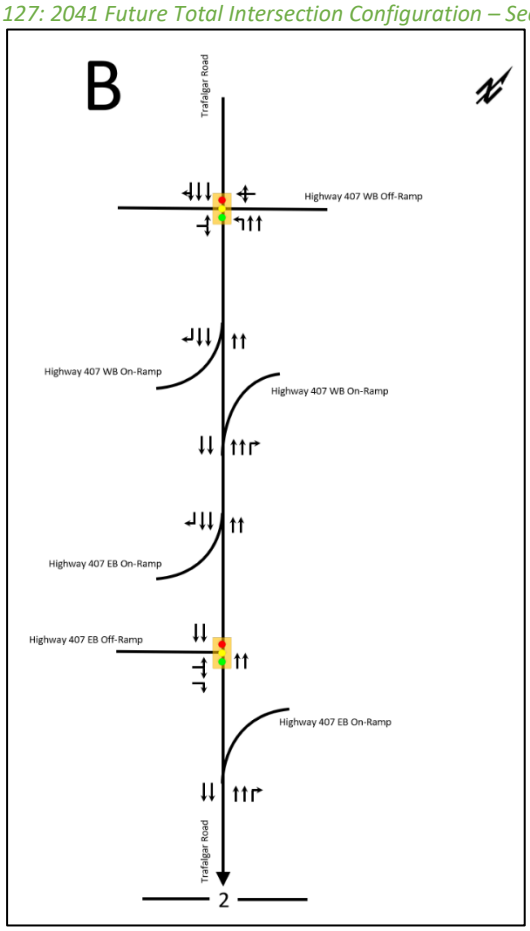


Figure 128: 2041 Future Total Intersection Configuration – Section C

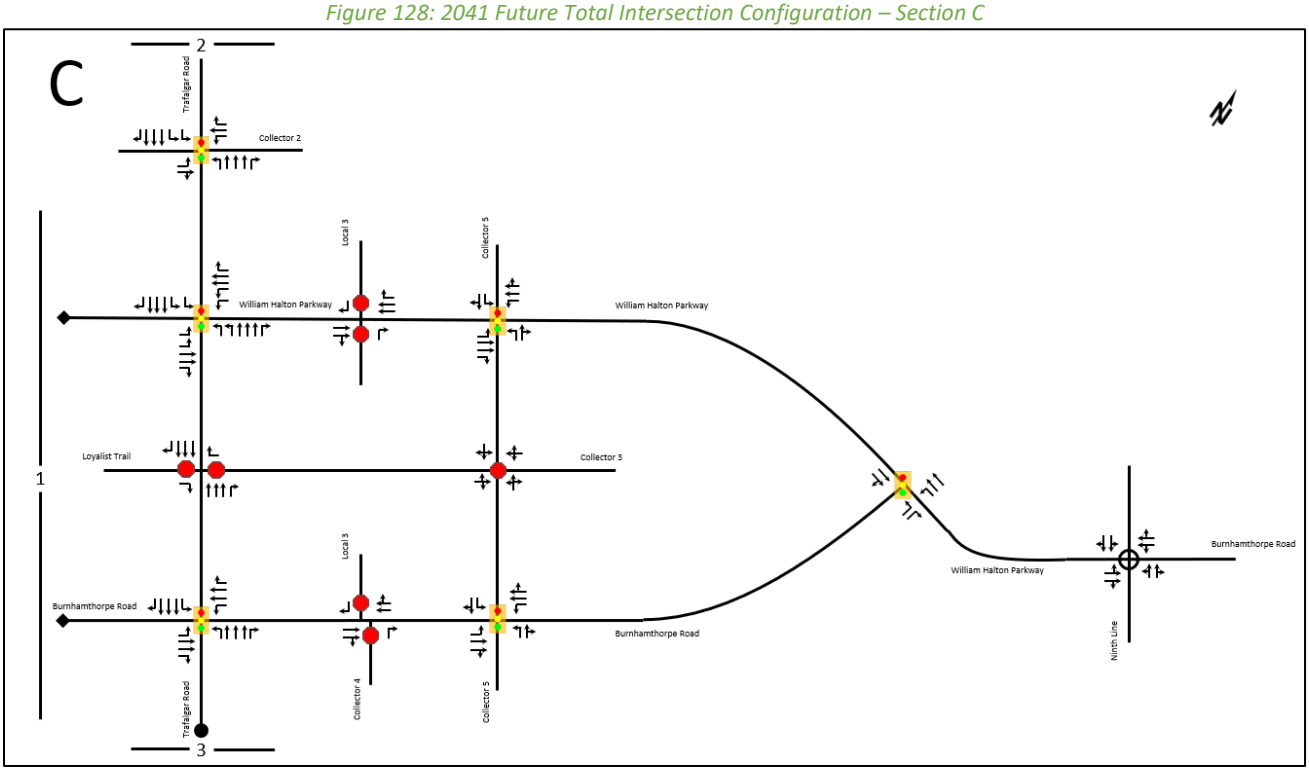
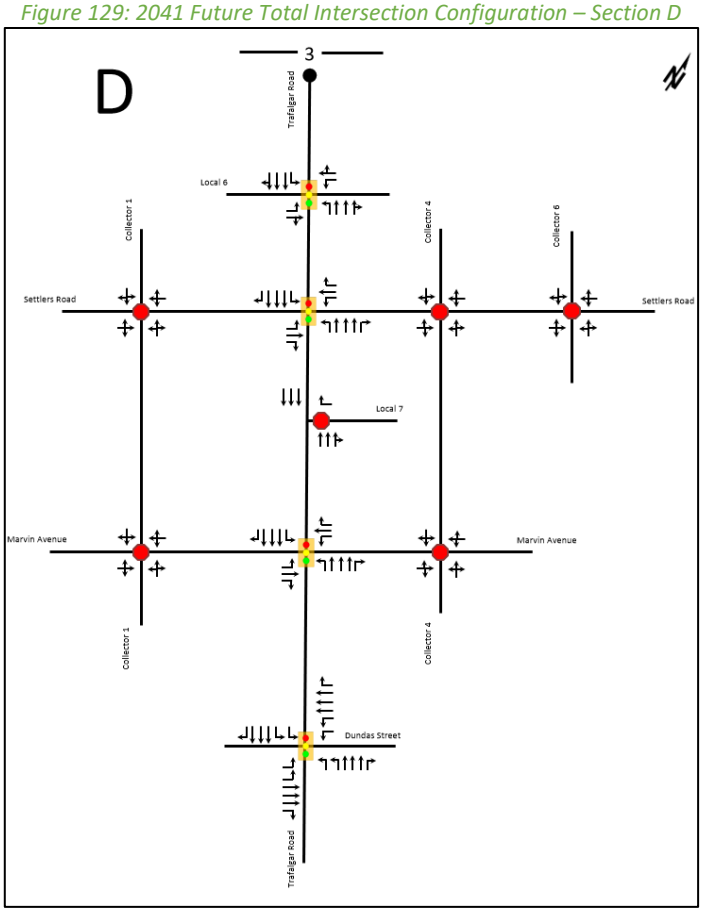


Figure 129: 2041 Future Total Intersection Configuration – Section D



8 Concept Plan Review

8.1 Intersection and Access Spacing

Intersection and access spacing for roadways within the Study Area are summarized in Table 58 below. Spacing along regional roads has been measured intersection stop-bar to intersection stop-bar. Spacing along Town of Oakville roads has been measured from intersection centreline to intersection centreline. This is reflective of the Regional access and intersection spacing requirements being measured intersection stop-bar to intersection stop-bar, and the Town's access and intersection spacing requirements being measured intersection centreline to intersection centreline.

The Halton Region TMP classifies Trafalgar Road as an N1 Urban Road and William Halton Parkway as a C2 Urban Road. Based on these classifications, the Halton Region Access Management Guidelines require a minimum spacing of 250 metres on Trafalgar Road and 300 metres for William Halton Parkway for full movement accesses, measured stop bar to stop bar. Right-in-right-out accesses require a minimum spacing of 115 metres on regional roads.

The North Oakville TOR for TIS and TFDS requires a minimum intersection spacing of 40 metres for adjacent three-leg and 60 metres for adjacent four-leg intersections on local roadways, measured centreline to centreline. For connector and avenue roadways, a minimum intersection spacing of 60 metres is required. For arterial roads, a minimum spacing of 200 metres for minor arterials and 400 metres for major arterials is required between signalized intersections. Adjacent all way stops require a minimum spacing of 250 metres.

Measured spacing that is less than the required spacing is identified in red below.

Table 58: Study Area Intersection and Access Spacing

Roadway	Classification	Town/Region	Segment	Direction of Spacing	Spacing (m)	
					Stop Bar	Centerline
Trafalgar Road	Arterial	Region	Threshing Mill – Marvin Avenue	North-South	490 m	-
			Marvin Avenue – Local 7		106 m	
			Local 7 – Settlers Rod		233 m	
			Settlers Road – Local 6		215 m	
			Local 6 – Burnhamthorpe Road		180 m	
			Burnhamthorpe Road – Loyalist Trail		220 m	
			Loyalist Trail – William Halton Parkway		125 m	
			William Halton Parkway – Collector 2		180 m	
William Halton Parkway	Arterial	Region	Collector 1 – Collector 2	East-West	145 m	-
			Collector 2 – Trafalgar Road		138 m	
			Trafalgar Road – Local 3		75 m	
			Local 3 – Collector 5		176 m	
			Collector 5 – Local road		245 m	

Burnhamthorpe Road	Major Collector	Town	Local road – Local 1	East-West	-	136 m
			Local 1 – Local 2			72 m
			Local 2 – Collector 1			131 m
			Collector 1 – Trafalgar Road			245 m
			Trafalgar Road – Local 3 / Collector 4			110
			Local 3 / Collector 4 - Collector 5			202 m
			Collector 5 – Local road			294 m
Settlers Road	Minor Collector	Town	Local road – Local road	East-West	-	71 m
			Local road – Local road			71 m
			Local road – Local road			72 m
			Local road – Local road			71 m
			Local road – Collector 1			120 m
			Collector 1 – Local road			104 m
			Local road – Trafalgar Road			121 m
			Trafalgar Road – Collector 4			127 m
			Collector 4 – Collector 6			123 m
			Collector 6 – Local road			157 m
			Local road – Local road			45 m
Marvin Avenue	Minor Collector	Town	Collector 1 – Trafalgar Road	East-West	-	186 m
			Trafalgar Road – Collector 4			126 m
Collector 2	Collector	Town	Loyalist Trail – Local road	North-South	-	100 m
			Local road – William Halton Parkway			107 m
			William Halton Parkway – Trafalgar Road	East-West		365 m
			Trafalgar Road – Local 3			115 m
			Local 3 – Collector 5			202 m
			Collector 5 – Local road			336 m
Loyalist Trail	Collector	Town	Local road – Local road	East-West	-	131 m
			Local road – Collector 1			162 m
			Collector 1 – Trafalgar Road			195 m
Collector 3	Collector	Town	Trafalgar Road – Local 3	East-West	-	113 m
			Local 3 – Collector 5			225 m
			Collector 5 – Local road			280 m
Local 6	Local	Town	Collector 1 – Local road	East-West	-	110 m
			Local road – Trafalgar Road			122m
			Trafalgar Road – Collector 4			128 m
			Collector 4 – Collector road			125 m

Local 7	Local	Town	Trafalgar Road – Collector 4	East-West	-	127 m
			Collector 4 – Collector 6			127 m
			Collector 6 – Local road			82 m
			Local road – Local road			80 m
			Local road – Local road	North-South		113 m
			Local road – Settlers Road			123 m
Collector 1	Collector	Town	Collector 1 – Local road	North-South	-	165 m
			Local road – Loyalist Trail			170 m
			Loyalist Trail – Burnhamthorpe Road			240 m
			Burnhamthorpe Road – Local 6			225 m
			Local 6 – Settlers Road			252 m
			Settlers Road – Marvin Avenue			427 m
Local 3	Local	Town	Collector 2 – William Halton Parkway	North-South	-	237 m
			William Halton Parkway – Collector 3			180 m
			Collector 3 – Burnhamthorpe Road			255 m
Collector 4	Collector	Town	Burnhamthorpe Road – Local 6	North-South	-	225 m
			Local 6 – Settlers Road			258 m
			Settlers Road – Local 7			275 m
			Local 7 – Marvin Avenue			145 m
Collector 5	Collector	Town	Collector 2 – Local road	North-South	-	153 m
			Local road – William Halton Parkway			168 m
			William Halton Parkway – Collector 3			175 m
			Collector 3 – Burnhamthorpe Road			250 m
			Burnhamthorpe Road – Local 6			227 m
Collector 6	Collector	Town	Local 6 – Settlers Road	North-South		258 m
			Settlers Road – Local 7			275 m
Local Road (E of Collector 5)	Local	Town	Collector 2 – Local road	North-South	-	193 m
			Local road – William Halton Parkway			167 m
			William Halton Parkway – Collector 3			200 m
			Collector 3 – Burnhamthorpe Road			223 m

Local road (W of Local 1)	Local	Town	Loyalist Trail – Local road	North-South	-	122 m
			Local road – Burnhamthorpe Road			73 m
			Burnhamthorpe Road – Local road			73 m
			Local road – Local road			45 m
			Local road – Local road			45 m
			Local road – Local road			45 m
			Local road – Settlers Road			95 m
Local 1	Local	Town	Burnhamthorpe Road – Local road	North-South	-	74 m
			Local road – Local road			45 m
			Local road – Local road			45 m
			Local road – Local road			45 m
			Local road – Settlers Road			133 m
Local 2	Local	Town	Burnhamthorpe Road – Local road	North-South	-	192 m
			Local road – Settlers Road			185 m
Local road (S of Burnhamthorpe Road)	Local	Town	Local road – Local 1	East-West	-	135 m

As shown above, the majority of intersections and accesses adhere to the Town and Region spacing requirements.

It is however noted that along Trafalgar Road, the right-in / right-out intersection of Trafalgar Road and Local 7 is located 106 metres north of Marvin Avenue, measured intersection stop-bar to intersection stop-bar. As TAC Design Guidelines indicate that along divided arterials, right-in / right-out intersections with a median may be permitted to be 100 metres from an adjacent all-way intersection, measured between the closest edges of pavement of the adjacent intersection roads. As such the spacing of this intersection should be considered acceptable.

Along Trafalgar Road, the signalized intersection of Local 6 and Trafalgar Road is located 215 metres north of Settlers Road and 180 metres south of Burnhamthorpe Road. This intersection has been signalized to support the full-movement nature of this intersection to allow for additional east-west connections between the lands east and west of Trafalgar Road given the high volumes noted along Burnhamthorpe Road. TAC Design Guidelines indicate that along arterial roadways within areas of intensification, 200 metres between adjacent signalized intersections is required. The location of this intersection has however been optimized based on the surrounding development parcels it is intending to support and the east leg of the intersection has been matched to the location of the west leg of the intersection. When preparing a land use plan, it is recognized that other factors influence intersection locations, as described above, however from a transportation perspective as the minimum intersection spacing is not met, it is recommended that, if possible, the intersection of Local 6 and Trafalgar Road be shifted south to increase the distance to Burnhamthorpe Road. This is something that should be further examined at subsequent development application stages.

Along Trafalgar Road, the signalized intersection of Collector 2 and Trafalgar Road is located 180 metres north of Settlers Road. As Collector 2 is not located on the subject development lands, the location of this roadway has been determined by others.

Along William Halton Parkway, the right-in / right-out intersection of Local 3 and William Halton Parkway is located 75 metres east of Trafalgar Road. TAC Design Guidelines indicate that along divided arterials, right-in / right-out intersections without a median opening may be permitted to be 100 metres from an adjacent all-way intersection, measured between the closest edges of pavement of the adjacent intersection roads. Measured between the closest edges of pavement of the adjacent intersection roads, the intersection of Local 3 at William Halton Parkway is 94 metres from Trafalgar Road. The location of this intersection has however been optimized based on the surrounding development parcels it is intending to support.

Along William Halton Parkway, the signalized intersection of William Halton Parkway and Collector 5 is located 245 metres east of a full-movement local road intersection to the east. Further details about this local road intersection are unknown and may be subject to change. In the event that this local road intersection is signalized, it is noted that TAC Design Guidelines indicate that along arterial roadways within areas of intensification, 200 metres between adjacent signalized intersections is required. Therefore, the intersection location of William Halton Parkway and Collector 5 is considered acceptable.

Along Settlers Road, two local roads are noted to have 45 metres between them measured intersection centreline to intersection centreline. Details of these local roadways are subject to future analysis at draft plan and site plan application submissions, however it is assumed that these will operate as right-in/right-out intersections. Additionally, following the provision of a site plan for the school located on the north side of Settlers Road, these local roadways may be shifted to line up with accesses to the school. As such, the spacing of these local roads will be evaluated at future submission stages.

8.2 Conceptual Intersection Layout

A conceptual intersection layout, shown in Appendix P, has been prepared and illustrates the proposed configurations of Study Area intersections that may impact the subject lands. These intersection layouts are reflective of what is anticipated to be required at the time of full build-out of the subject development lands and can be used to identify any impacts on the proposed rights-of-way of roadways within the Study Area. Information for these conceptual layouts has been taken from planning documents including the Trafalgar Road Improvements EA (2016) and the Burnhamthorpe Road Character Study ESR (2014), as well as mitigation measures recommended from the 2031 future total analysis. The conceptual intersection layouts have also been informed by TAC design guidelines, North Oakville standard roadway cross-sections, and the North Oakville TOR for TIS and TFDS. As discussed in Section 4.1.2 and 4.1.3, the detailed designs of Trafalgar Road and Burnhamthorpe Road are not yet available and as such, have not been considered within this study.

As no site survey is available at this stage, it is noted that the intersection layout is provided for conceptual purposes only. The purpose is to support future submissions and coordination to ensure that the appropriate right-of-way allowances are made for the road network to accommodate the projected traffic volumes and infrastructure requirements at full build-out of the subject development lands.

Following the provision of survey and the refinement of development statistics, a sight distance analysis will be performed at applicable access intersections and will be based on decision sight distance and turning sight distance as requested by Halton Region staff.

9 Transportation Demand Management Recommendations

The proposed development lands consist of a mix of residential unit types including townhouses, mid-rise and high-rise units. Additionally, retail, employment land uses, and schools are also proposed within the development lands. To support a mixed-use development with a significant amount of residential land uses, the most effective Transportation Demand Management (TDM) measures are the access and usability of transit, cycling, and pedestrian facilities. Additionally, it is noted that retail spaces within the mixed-use buildings provide residents convenient options for shopping locations within the development, reducing traffic generated externally on arterial roads.

The placement of proposed sidewalks and cycling facilities within the proposed development have been implemented based on the North Oakville Urban Design and Open Space Guidelines (2009), the North Oakville Trails Plan (2013), the North Oakville Secondary Plan, and are reflective of the future Study Area roadway improvements and cross sections discussed in both Section 4.1 and Section 6 above.

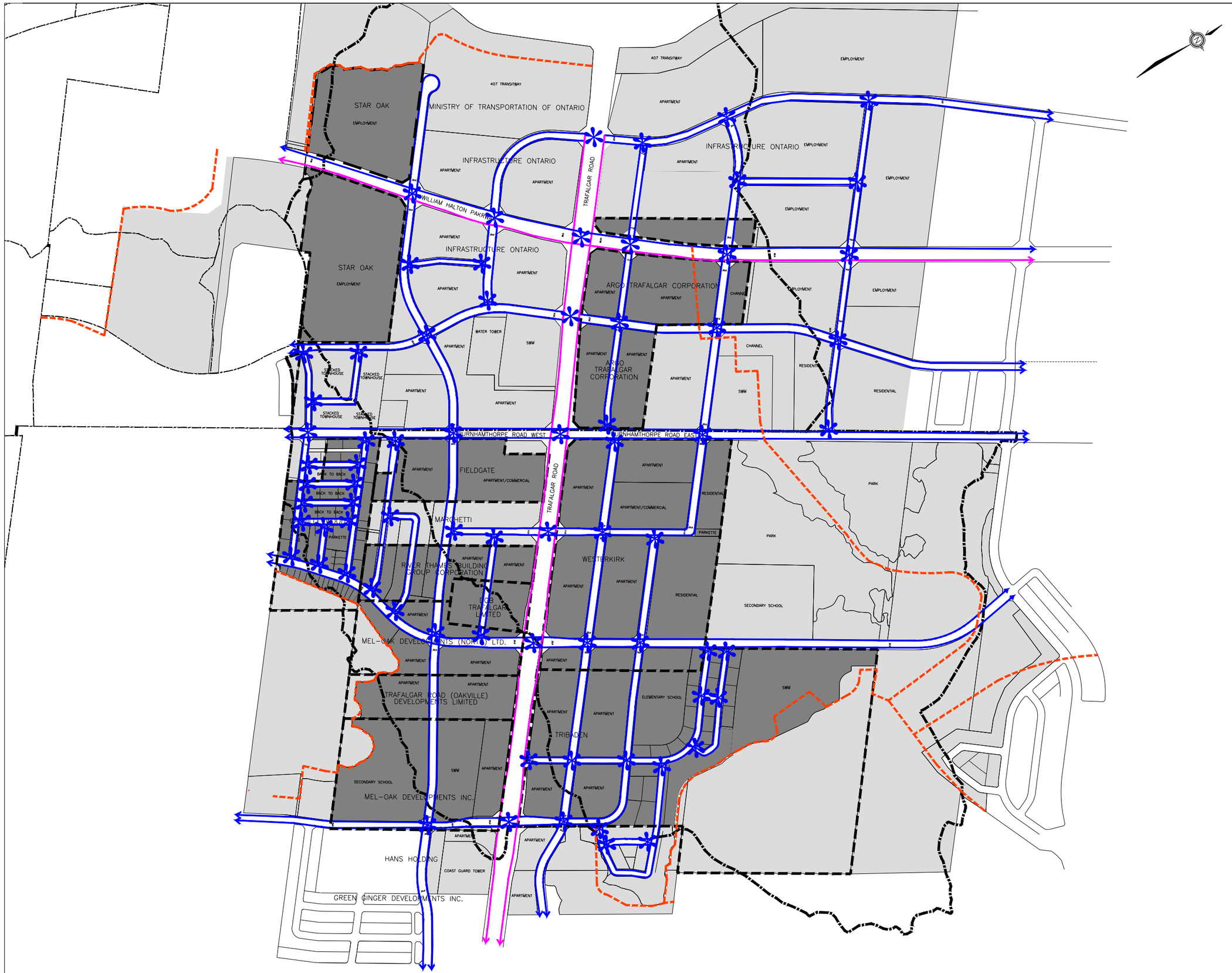
By the 2031 horizon, the active transportation infrastructure will include:

- Bike lanes on both sides of William Halton Parkway, Burnhamthorpe Road, Dundas Street, Sixth Line, and Ninth Line
- Signed bike routes along Settlers Road and Marvin Avenue
- A multi-use pathway on the south side of William Halton Parkway and on the west side of Ninth Line north of William Halton Parkway
- Multi-use pathways on both sides of Trafalgar Road, Dundas Street, and Ninth Line south of William Halton Parkway
- Sidewalks on both sides of connector and local roadways

Based on this information, a pedestrian facilities and trail plan and a cycling facilities concept plan have been prepared and are shown in Figure 130 and Figure 131 below. Within the pedestrian facilities and trail plan, it is noted that major trails within the Study Area have been shown. These trails are based on information shown in the North Oakville Trails Plan (2019) and are conceptual in nature. The exact location of these trails will be refined as part of future submission stages.

Within the Study Area, Trafalgar Road and Dundas Street are designated as busway corridors. William Halton Parkway, Burnhamthorpe Road, Ninth Line, Marvin Avenue, and a north-south collector road east and west of Trafalgar Road has been identified as community service corridors. Sixth Line and Settlers Road has been planned as secondary transit corridors. Bus stops anticipated to serve the subject development lands have been proposed based on Town of Oakville and Halton Region best practices with consideration given to the road network layout. Additionally, the Trafalgar Road EA preliminary design has been referenced to place transit stops along Trafalgar Road. It is noted that the EA does not consider the implementation of the BRT. In the absence of BRT stop locations, it has been assumed that BRT stops will be located in the same area as the bus stops identified in the Trafalgar Road EA preliminary design. Figure 132 illustrates the transit stop locations and Figure 133 illustrates the transit facilities concept plan. It is noted that within the transit stop location figure and the transit facilities concept plan, stops associated with participating development lands are shown in blue and transit stops not associated with participating properties are shown in orange. Therefore, orange transit stops have been included as a concept and are subject to change based on work done by other.

Figure 130: Pedestrian Facilities and Trail Plan



Notes:

Legend:

- Sidewalk
- Multi-Use Pathway
- Pedestrian Crossing Opportunity
- Major Trail
- Participating Properties
- Non-Participating Properties
- Participating Property Boundries

REV:	DESCRIPTION:	BY:	DATE:

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: EM4 JC7 JC9 Landowner's Group

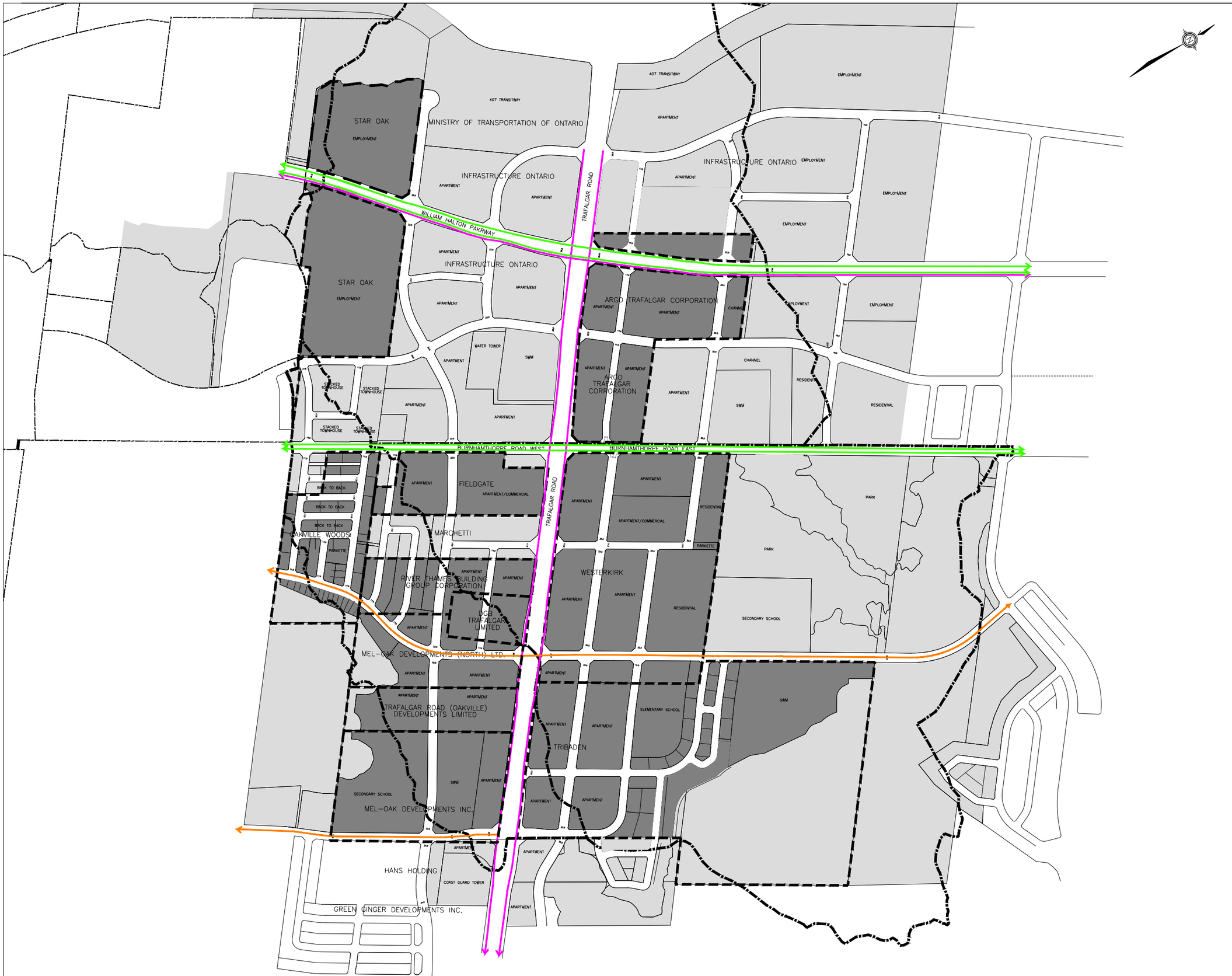
ARCHITECT:

SITE: EM4 JC7 JC9 Area

TITLE: Pedestrian Facilities and Trail Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-09-26	EA	RM
PROJECT NO:	DRAWING NO:		REVISION:
2023-084	130		01

Figure 131: Cycling Facilities Concept Plan



Notes:

Legend:

- Cycle Lane
- Signed Bike Route
- Multi-Use Pathway
- Participating Properties
- Non-Participating Properties
- Participating Property Boundries

REV:	DESCRIPTION:	BY:	DATE:

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: EM4 JC7 JC9 Landowner's Group

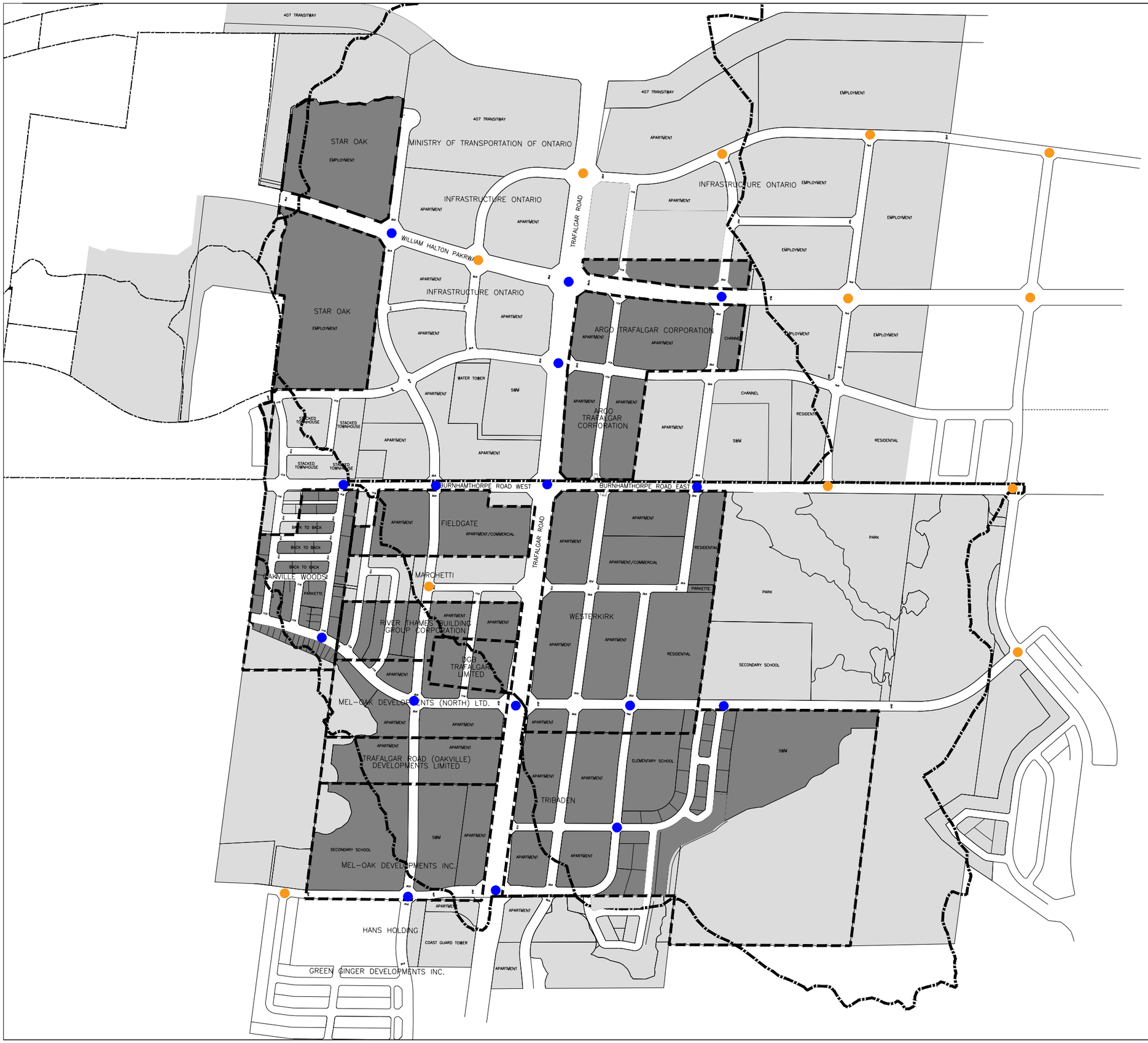
ARCHITECT:

SITE: EM4 JC7 JC9 Area

TITLE: Cycling Facilities Concept Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-09-26	EA	RM
PROJECT NO:	DRAWING NO:		REVISION:
2023-084	131		01

Figure 132: Transit Stop Locations



Notes:

Legend:

●	Transit Stop–Associated With Participating Properties
●	Transit Stop–Not Associated With Participating Properties
▬	Participating Properties
▬	Non–Participating Properties
- - -	Participating Property Boundries

REV:	DESCRIPTION:	BY:	DATE:

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: EM4 JC7 JC9 Landowner's Group

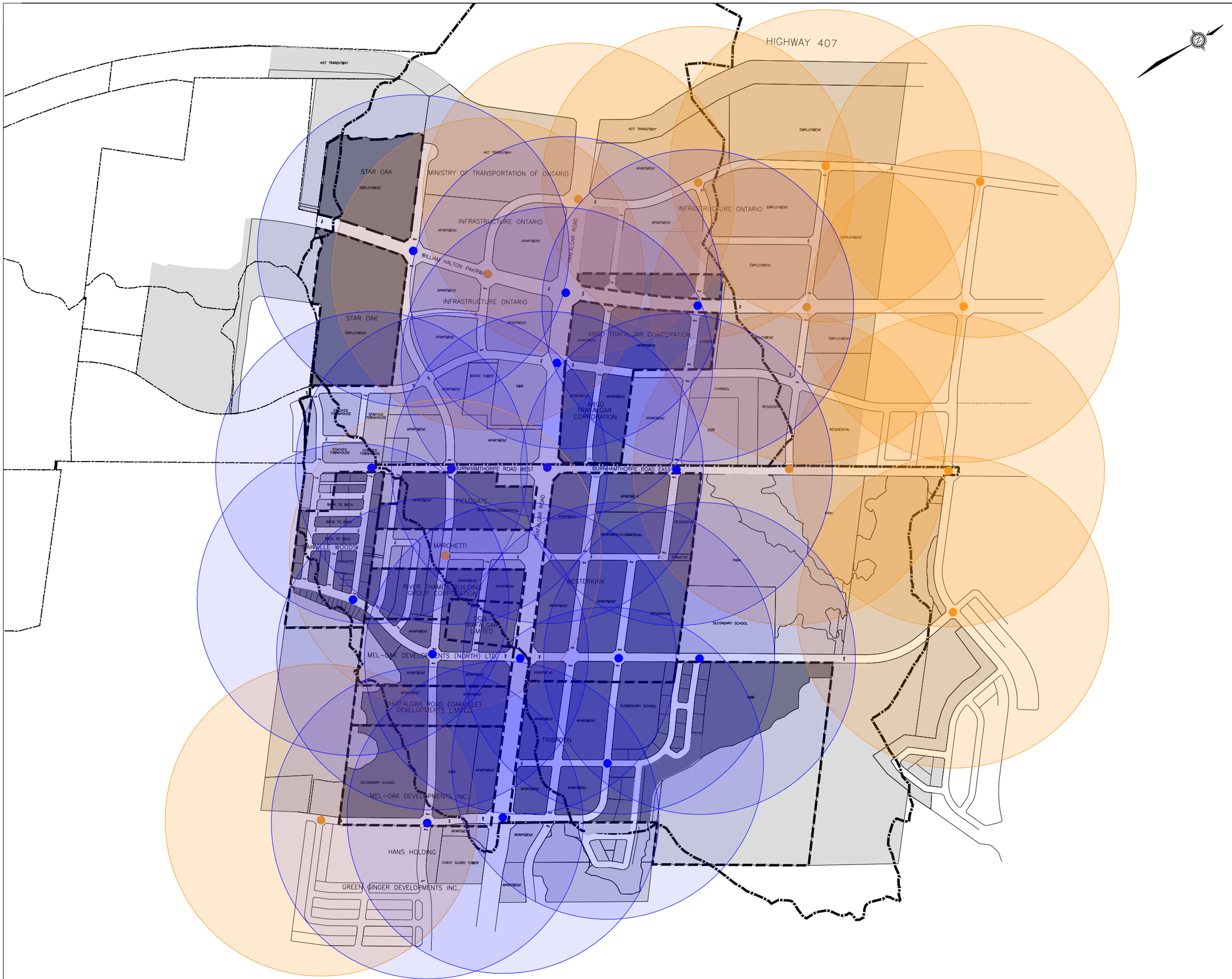
ARCHITECT:

SITE: EM4 JC7 JC9 Area

TITLE: Transit Stop Locations

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-09-26	EA	RM
PROJECT NO:	DRAWING NO:		REVISION:
2023-084	132		01

Figure 133: Transit Facilities Concept Plan



Notes:

Legend:

●	Transit Stop–Associated With Participating Properties
▬	400m Transit Walking Distance
●	Transit Stop–Not Associated With Participating Properties
▬	400m Transit Walking Distance
▬	Participating Properties
▬	Non–Participating Properties
- - -	Participating Property Boundries

REV:	DESCRIPTION:	BY:	DATE:

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: EM4 JC7 JC9 Landowner's Group

ARCHITECT:

SITE: EM4 JC7 JC9 Area

TITLE: Transit Facilities Concept Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-09-26	EA	RM

PROJECT NO:	DRAWING NO:	REVISION:
2023-084	133	01

10 Recommendations

It is noted that due to significant background development traffic generation and high compound annual growth rates provided by Town and Region staff, high volumes are noted along all arterial and major collector roadways within the Study Area. As such, multiple intersection improvements and mitigation measures have been proposed to support the 2031 full-build out analysis horizon. The resulting proposed intersection configurations are shown in Section 7.3.6 above, and in the form of conceptual intersection layouts as shown in Appendix P.

Limited intersection configuration changes have been proposed in the 2036 future total analysis horizon; however, the proposed intersection configurations are shown in Section 7.3.6.

Within the 2041 future total analysis, high volumes within the Study Area are noted. The planned conversion of Trafalgar Road and Dundas Street into transit corridors with BRT lanes further limits capacity along these routes within the Study Area. As a result of the high volumes and reduced capacity, critical movements are not able to be mitigated using reasonable mitigation measures. The poor operation noted at Study Area intersections cannot be addressed using Synchro analysis software using intersection specific mitigation measures. Instead, macroscopic modelling is required by the Region to identify feasible corridor level solutions. As the IMP is an ongoing study, the results and modelling of this scenario are not yet available, however it is recommended and anticipated that the modelling of these BRT scenarios will address the high traffic volumes in this area and the impact of reducing one through lane in each travel direction along Dundas Street as well as Trafalgar Road.

In order for the Study Area intersections to function adequately, a shift in mode share from single occupancy vehicles to transit is required to reduce traffic volumes along Trafalgar Road and Dundas Street.

11 Conclusions

This Transportation Impact Study has examined the trip generation, access requirements, and Study Area road network impact of the proposed EM4, JC7, and JC9 development. The TIS has shown the following:

a) The combined development analyzed herein will include a mix of residential units, employment, and retail land uses. It is currently projected to contain approximately 660 townhouse units, 2,600 mid-rise and 17,665 high-rise residential units, along with 32,665 square metres of retail, 58,530 square metres of employment, and three schools distributed throughout the lands. These preliminary site statistics have been developed for purposes of this traffic study. They are not final and are subject to change at future submission stages.
b) The Study Area is bounded by Sixth Line to the west, Ninth Line to the east, Highway 407 to the north, and Dundas Street to the south.
c) The TIS evaluates a total of 14 accesses intended to serve the combined developments, including four accesses on William Halton Parkway, five accesses on Burnhamthorpe Road, and five accesses on Trafalgar Road.
d) The study intersections consist of 10 existing intersections and 14 future intersections.
e) Nearby developments that are major trip generators have been included in the background traffic projections. These developments are Sherborne Lodge, Remington ENO, Landowner's Group Neighborhood 9/10/11, Sixth Oak School and Employment Lands, Star Oak Development, Infrastructure Ontario's Trafalgar Lands, Green Ginger Trafalgar Road, Bressa and Dunoak, Joshua Creek, Capoak and Redoak, and SmartCentres Oakville North. The developments contain a great variety of land uses from residential, industrial, office, to institutional and retail. Developments that were identified to generate

background traffic within the proposed study area but do not have an available TIS were assumed to be captured in background growth rates.

f) Background growth rates have been provided by Region of Halton and Town of Oakville for existing roads within the Study Area. A compound annual growth rate (CAGR) of 2% from 2024 to 2031 and 1% from 2031 to 2041 has been applied to William Halton Parkway, Dundas Road, Ninth Line, Trafalgar Road, and the Highway 407 Interchanges. A 3% CAGR has been applied to Burnhamthorpe Road and Sixth Line from 2024 to 2041.

g) To reflect the functional change of William Halton Parkway within the Study Area, the Region's EMME Model projections along William Halton Parkway for 2031 PM peak hour was considered and applied to all future analysis horizons using a methodology approved by Region staff.

h) To estimate the impact of the subject development on the Study Area, a vehicle trip generation exercise has been undertaken for each land use. The trip generation of the residential units, office, and retail buildings used the corresponding ITE rates. The mode shares have been determined using the target transit mode split for 2031 projected in the Halton Region Transportation Master Plan. The 2036 and 2041 horizon mode shares are beyond the timeline of this Transportation Master Plan and the same mode share as 2031 have been used. Primary trip reduction rates have been considered for the development due to its mixed-use nature. The subject development is anticipated to generate 6155 AM and 6997 PM peak hour external net new two-way auto trips combined during all future horizons.

i) In addition to the weekday AM and PM peak periods, a Saturday peak analysis is conducted at the two Highway 407 ramp terminal intersections on Trafalgar Road in response to the Ministry of Transportation Ontario (MTO) comments. The subject development is anticipated to generate 4962 net new Saturday external two-way peak hour auto trips.

j) Using the existing traffic volumes in 2024, an operational analysis of existing conditions was undertaken. Through this analysis, it was determined that several Study Area intersections operate with critical movements. As no over capacity movements are noted and multiple sections of the road network are planned to be widened in future horizons, no mitigation measures have been proposed.

k) The 2031 future background operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. Mitigation measures including additional turn lanes, increased storage distances, and signal timing optimization have been considered to address overcapacity movements. However, due to the high volumes along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street, critical movements are still present following the implementation of the mitigation measures.

l) The 2036 future background operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. Mitigation measures including additional turn lanes, increased storage distances, and signal timing optimization have been considered to address overcapacity movements. However, due to the high volumes along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street, critical movements are still present following the implementation of the mitigation measures.

m) The 2041 future background operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. As a result of the high volumes and reduced capacity due to the implementation of BRT lanes on Trafalgar Road and Dundas Street, critical movements are not able to be mitigated using reasonable measures discussed in previous analysis horizons. In order for the Study Area intersections to function adequately, through volumes along Trafalgar Road and Dundas Street were reduced to achieve a v/c ratio of below 1.00 at each intersection.

The corresponding number of transit vehicles to support the vehicle trips reduced has been estimated in order to promote a mode shift away from single occupancy vehicles.

n) The future background Saturday analysis for the 2031, 2036, and 2041 horizons indicates critical and overcapacity movements at the Highway 407 ramp terminals. Mitigation measures have been considered to address critical movements at the off-ramps. However, due to the high volumes along Trafalgar Road, critical movements are still present following the mitigation measures. In order for the Study Area intersections to function adequately in the 2041 horizon, through volumes along Trafalgar Road and Dundas Street were reduced to achieve a v/c ratio of below 1.00 at each intersection. The corresponding number of transit vehicles to support the vehicle trips reduced has been estimated in order to promote a mode shift away from single occupancy vehicles.

o) The 2031 future total operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. Mitigation measures including additional turn lanes, increased storage distances, and signal timing optimization have been considered to address overcapacity movements. However, due to the high volumes along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street, critical movements are still present following the implementation of the mitigation measures.

p) The 2036 future total operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. Mitigation measures including additional turn lanes, increased storage distances, and signal timing optimization have been considered to address overcapacity movements. However, due to the high volumes along Trafalgar Road, Burnhamthorpe Road, William Halton Parkway, and Dundas Street, critical movements are still present following the implementation of the mitigation measures.

q) The 2041 future total operational analysis indicates critical and overcapacity movements at multiple Study Area intersections in the AM and PM peak periods. As a result of the high volumes and reduced capacity due to the implementation of BRT lanes on Trafalgar Road and Dundas Street, critical movements are not able to be mitigated using reasonable measures discussed in previous analysis horizons. In order for the Study Area intersections to function adequately, through volumes along Trafalgar Road and Dundas Street was reduced to achieve a v/c ratio of below 1.00 at each intersection. The corresponding number of transit vehicles to support the vehicle trips reduced has been estimated in order to promote a mode shift away from single occupancy vehicles.

r) It is noted that in all future total analysis horizons, the access intersections to the subject development lands operate well with no noted over-capacity turning movements into or out of the subject development lands.

s) The future total Saturday analysis for the 2031, 2036, and 2041 horizons indicates critical and overcapacity movements at the Highway 407 ramp terminals. Mitigation measures have been considered to address critical movements at the off-ramps. However, due to the high volumes along Trafalgar Road, critical movements are still present following the mitigation measures. In order for the Study Area intersections to function adequately in the 2041 horizon, through volumes along Trafalgar Road were reduced to achieve a v/c ratio of below 1.00 at each intersection. The corresponding number of transit vehicles to support the vehicle trips reduced has been estimated in order to promote a mode shift away from single occupancy vehicles.

t) The operations noted at Study Area intersections in the 2041 future analysis horizons cannot be addressed using Synchro analysis software using intersection specific mitigation measures. Macroscopic modelling is required by the Region to identify feasible corridor level solutions. As the IMP is an ongoing study, the results and modelling of this scenario are not yet available, however it is recommended and anticipated

that the modelling of these BRT scenarios will address the high traffic volumes in this area and the impact of reducing one through lane in each travel direction along Dundas Street as well as Trafalgar Road.

u) TDM measures are proposed to further encourage commuters to shift away from single occupant vehicle trips. For this development, which primarily consists of mixed-use residential land uses, the most effective measures involve access and usability of transit, cycling and pedestrian facilities. To ensure the proposed developments are appropriate served by transit, cycling, and pedestrian facilities, concept plans have been prepared.

v) A conceptual intersection layout of the subject lands has been developed to support future submissions and coordination to ensure that the appropriate right-of-way allowances are made for the road network to accommodate the projected traffic volumes and infrastructure requirements.

The impact of the EM4, JC7, and JC9 development lands is consistent with future growth expected in the surrounding Study Area. The proposed accesses and internal site intersections will operate well. The proposed development will provide a good pedestrian and cycling network along with good access to transit throughout the development. It is therefore recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:





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Reviewed By:



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Appendix A

Scope Confirmation

Technical Memorandum

To:	Aquisha Khan – Town of Oakville Ayesha Khan – Halton Region	Date:	2023-11-20
Cc:	EM4 JC7 JC9 Landowner's Group		
From:	Mark Crockford, P. Eng.	Project Number:	2023-084

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference

CGH has been retained to undertake an area wide Transportation Impact Analysis for the combined Landowners' Group for each of EM4, JC7, and JC9 in North Oakville. The subject development areas are linked via catchment areas for their respective EIR/FSS. The developments are located along the corridor of Trafalgar Road, starting just north of William Halton Parkway and continuing to the south to Burnhamthorpe Road East. The proposed developments include a mix of residential and employment land uses. The unit count and employment areas are still being refined and will be finalized in later stages. The preliminary concept plan is shown in Attachment 1. Please note this concept plan is subject to change and is considered a draft. It has been circulated for discussion purposes only. A single TIS covering all three catchment areas is proposed.

We have prepared the following TIS scope of work for Halton Region's and the Town of Oakville's review. Please let us know if you have any comments or questions.

Transportation Impact Study Requirements (TIS):

The study will be in accordance with the Halton Region's *Guidelines for the Preparation of Traffic Impact Studies* and North Oakville's *Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies*.

Study Area:

- An overview of the transportation system existing conditions will be documented (including transit, cycling, pedestrian, and automobile modes).
- A summary of existing transportation planning policies within the Study Area will be identified.
- An overview of the Study Area road network will be provided including the road classification and descriptions of:
    - Trafalgar Road
    - William Halton Parkway
    - Burnhamthorpe Road
    - Sixth Line
    - Dundas Street
- The following intersections will be included in the Transportation Impact Study:
    - Trafalgar Road at Burnhamthorpe Road East
    - Trafalgar Road and William Halton Parkway
    - Trafalgar Road and Dundas Street
    - William Halton Parkway and Sixth Line
    - Burnhamthorpe Road at Sixth Line
    - William Halton Parkway and Burnhamthorpe Road East

Analysis Assumptions:

- Horizon years: 2023, 2033 (Buildout), 2038 (+5 years) and 2043 (+ 10 years).
- AM and PM peak hours will be analyzed.

Existing Study Area Multimodal Conditions:

- The study area is rapidly evolving. To avoid double-counting background development traffic from background developments that may have been partially built-out within the last year, Turning Movement Count data from April 21, 2022, will be used in combination with a compound annual background growth rate (CAGR) to determine the existing 2023 volumes. A CAGR of 1.5% will be used for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway, and a 0.5% CAGR will be used for Dundas Street to bring 2022 counts to 2023 existing conditions.
- **Signal Timing Plans will be requested from Halton Region's and the Town of Oakville's traffic signal operations division. These include:**
    - Burnhamthorpe Road and Trafalgar Road
    - Trafalgar Road and William Halton Parkway
    - Trafalgar Road and Dundas Street

Planned Transportation Improvements:

- Halton Region is making improvements to Trafalgar Road in the Town of Oakville to address future traffic demands and provide safe travel options for motorists, pedestrians and cyclists. Phase 1 construction has been completed, while Phase 2 is currently under design. Phase 2 of this project covers the section between Hays Boulevard and William Halton Parkway which includes the intersections within the subject Study Area. The road will be widened from 4 to 6 lanes and new sidewalks, multi-use paths and transit stops will be added. It is projected to be completed in 2026. According to the Trafalgar Road Improvements Class Environmental Assessment Study completed in 2015, upon completion of the widening project, the outer traffic lanes will be converted to High Occupancy Vehicle (HOV) lanes in the interim, and to BRT lanes by as early as 2031. A lane utilization factor of 0.8 will be used to estimate the impact of HOV lanes on north-south capacity along Trafalgar Road, in line with Region's recommendation for Dundas Street HOV lane analysis within Joshua Creek TIS prepared by CGH in 2021. **As part of this TOR, CGH would like to request the timelines associated with the HOV and BRT implementation along Trafalgar Road as well as the EMME link volumes along Trafalgar Road prior and post BRT implementation.**
- West of the development, the William Halton Parkway extension from Sixth Line to Third Line is under construction and will be completed by 2024. It will replace the regional arterial status that is currently held by Burnhamthorpe Road. Region of Halton has indicated the following volume projections along William Halton Parkway:
    - 2031 PM peak hour volume west of Trafalgar: 2100 (800 east and 1300 west)
    - 2031 PM Peak hour volume east of Trafalgar: 2400 (800 east and 1600 west)
- On average, the AM peak hour volumes are equal to 8% of daily traffic, where the PM peak hour volumes are equal to 10% of the daily traffic. Therefore, the PM peak hour volumes projected by Halton Region will be multiplied by a factor of 0.8 to determine the AM Peak hour volumes. Additionally, the PM peak hour volumes direction will be changed to represent the higher traffic flow towards east in the AM peak hour. The resulting AM peak hour volume projections along the William Halton Parkway are listed below:
    - 2031 AM peak hour volume west of Trafalgar: 1680 (1040 east and 640 west)
    - 2031 AM Peak hour volume east of Trafalgar: 1920 (1280 east and 640 west)
- As a result, on WHP implementation, the east-west through traffic travel pattern within the Study Area for this project will potentially change by 2033 and beyond.
- Dundas Street is currently a three-lane road in each direction, with all lanes operating as general-purpose traffic lanes with no restrictions. It has been indicated by Halton Region staff that by 2024, outer traffic lanes along Dundas Street are anticipated to be converted to HOV lanes. A lane utilization factor of 0.8, as instructed by Halton Region

staff, will be used to estimate the impact of HOV lanes on east-west capacity along Dundas Street, in line with Joshua Creek TIS prepared by CGH in 2021.

Background Growth:

- The following background developments will be considered in the study:
    - Sherborne Lodge Development
    - Remington Eno Development
    - Neighbourhood 9,10,11 Development
    - Sixth Oak Inc. School and Employment Lands
    - Star Oak Development
    - Crosstrail & TWKD at 40, 64 & 86 Burnhamthorpe Rd E
    - EMGO Draft Plan
    - Petgor Draft Plan
    - Infrastructure Ontario (IO) Trafalgar Lands
    - Green Ginger-Dundas Street East-Phase 2 Part of Lots 13 & 14
    - SmartCentres - 256, 260 and 294 Hays Boulevard and 271 Oak Park Boulevard - Z.1413.34 and OPA 1413.34
    - Bressa and Dunoak
    - Joshua Creek
- Additionally, the following developments were identified to generate background traffic within the proposed study area, but don't include a TIS within Oakville Active Development Applications Portal:
    - Minto Communities Oakvillage
    - 1086 Burnhamthorpe Road East
    - 98 Kaitting Trail
    - 2481, 2485, 2489 Taunton Road
- **Through this Terms of Reference, CGH would like to request the Traffic Impact Studies for these four developments to be considered as part of the background horizon volumes.**
- Majority of the growth in background horizons will be due to developments explicitly accounted for within the TIS, as outlined above. In addition to these developments, a background CAGR of 1.5% between 2023 and 2033 and 0.75% between 2033 and 2043 will be used for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway. Along Dundas Street, a CAGR of 0.5% will be used between 2023 and 2043. This is because areas south of Dundas Street are already build-out, resulting in less anticipated growth, and the implementation of HOV lanes by 2024 will constrain capacity of Dundas Street, resulting in less growth in through / nonlocal trips along this roadway.

Development Site Trip Distribution and Assignment:

- Trip generation: ITE Trip Generation Manual 11th Edition
    - Total person trip generation of the proposed development will be determined using ITE 11th Edition vehicle trip generation. The ITE vehicle trip generation will be treated as the total person trip generation, as majority of ITE studies were collected across United States in 1980s, 1990s, 2000s, the 2010s, and the 2020s. Thus, majority of the ITE data is representative of car-centric environments, where vehicle trips represent total person trips generated by a development. This methodology is consistent with ARGO Trafalgar TIS prepared by CGH in 2023.
    - The projected mode shares will be multiplied by total person trip generation to determine projected trips by each mode, including auto mode.
- Mode Share:
    - Halton's 2011 Transportation Master Plan utilizes a transit mode split of 10% for 2021, 15% for 2026 and 20% for 2031. For the purposes of this study, a transit mode split of 20% will be utilized for the buildout year 2033. The same 20% split will be used for the 2038 and 2043 horizon years as the current Halton Region's Transportation Master Plan and Active Transportation Master Plan Study only projects to 2031.

  - In 2033, assumption of travel via other modes (active transportation i.e.: walk, cycle) should utilize a 5% mode split, and 3% will be assigned to TDM (i.e. telecommuting). Transit mode splits will be adjusted from the 2011 TMP assumptions to reasonable percentages based on current year (2023), 2033, 2038, and 2043 planned and proposed mode splits based on existing facilities and service in the area to date (planned &/or proposed). Reasonable assumptions and rationale will be outlined clearly in the Study.
- Trip distribution and assignment: Transportation Tomorrow Survey (TTS), existing traffic routing patterns and access to major transportation infrastructure.

Site Access:

- Required/recommended road improvements either as a result of the development impacts, or general non-development improvements will be identified

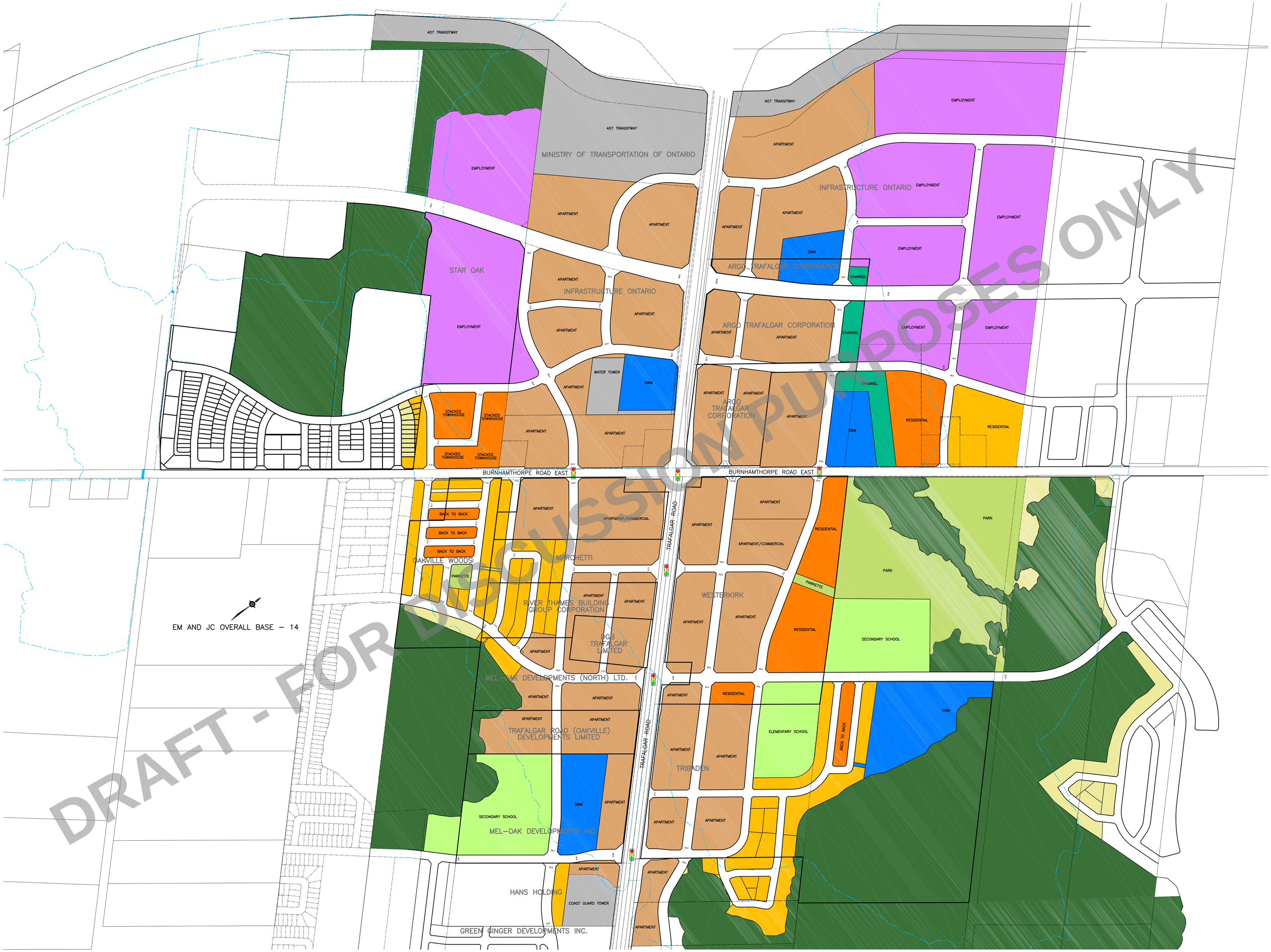
The TIS report will include:

- Site Plan and Map,
- Type and Size of Proposed Land Uses
- Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services),
- Existing Traffic Conditions (Site Operating Characteristics, Data Collection/Traffic Counts, Analysis Periods)
- Future Background Conditions (Horizon Years, Horizon Year Volumes)
- Background Traffic Demand (with TMC's < 2 years old)
- Background Traffic Demand Forecast (with acceptable growth rates)
- Site Generated Traffic (Transit Modal Split, Trip Generation/Distribution/Assignment)
- Future Total Traffic Demand
- Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios)
- Traffic Impacts (Tables – Total Traffic with/without Mitigation)
- Access Considerations – Existing, Proposed, Geometrics (turn lanes, sight lines)
- Recommendations
- TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)
- Conclusions

Attachment 1

DRAFT Concept Plan - For Discussion Purposes Only

CGH TRANSPORTATION



DRAFT - FOR DISCUSSION PURPOSES ONLY

Outlook

RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

From Aquisha Khan <aquisha.khan@oakville.ca>
Date Fri 2024-03-01 11:52
To Robin Marinac <robin.marinac@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Cc Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca <Ayesha.Khan@halton.ca>; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>

Hi Robin/Mark;

As per our conversation please find the adjustments that were discussed below in red. If I missed anything, please let me know.

Have a wonderful day and an amazing weekend 😊!

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

Aquisha Khan, **(She/Her/Hers)**, **P. Eng.**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3236 | www.oakville.ca

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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, February 20, 2024 11:16 AM
To: Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>; Aquisha Khan <aquisha.khan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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.

Hi Leigh, Gabe and Eric,

I hope you all had a lovely long weekend.

Were any of you able to discuss the Terms of Reference comments with Aquisha last week? Any notes that you can provide would be helpful so that we can continue with our work.

I apologize for being so adamant with my follow-ups on this, however as we had to wait over two months to receive the original round of comments on our Terms of Reference, we are now working on a very tight timeline and would appreciate feedback to allow us to move forward.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Wednesday, February 14, 2024 1:56 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

Thank you for letting us know.

Is there any chance that you would be able to provide some preliminary feedback on our comments below this week? Alternatively is there someone from your department we could meet with in your absence next week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Wednesday, February 14, 2024 10:36 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Unfortunately, I am unavailable.

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Wednesday, February 14, 2024 10:08 AM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Aquisha,

Thank you for the quick response and for proposing the additional meeting times below.

As we'd like to try and move forward with our work as quickly as we can, I was wondering if you instead have availability during the following times tomorrow:

- 12:00pm-1:30pm

- 2:30pm-3:30pm

If those times do not work for you, would you be able to provide some initial thoughts on our responses below prior to being away next week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Wednesday, February 14, 2024 9:52 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Good Morning Robin,

Happy Valentines Day!

Thank you for the request to meet, unfortunately, I am not available next week. The next availability for Town staff are as follows:

- Wednesday Feb 28 from 9:30am – 10:30am
- Friday March 01 from 11am – 12pm

I hope one of times work for you and your team.

Regards

Have a wonderful day 😊 !

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

---

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, February 13, 2024 11:15 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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.

Hi Aquisha,

Thank you for providing the comments below on our TOR. We have included our responses in blue. It may be easier to discuss these on a call. Please let me know if you are available for any of the times listed below:

- February 20th 10:00am-12:00pm and 4:00pm-5:00pm
- February 21st 1:00pm-2:00pm

- February 22nd 10:00am-12:00pm

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Tuesday, January 30, 2024 5:25 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hello Robin;

Forgive the delay, Town's response to the Terms of Reference are as follows:

  - Study Intersections:
- Please circulate TOR to MTO to get their input to this study's requirements.

Noted.

[AK] The highlighted intersections to be included in the study, the others may be dismissed.

- Please include the following intersections:
  - ~~Trafalgar Road and Wheat Boom intersection~~
  - ~~Trafalgar Road and Threshing Mills intersection~~
  - Trafalgar Road & Loyalist Trail
  - ~~Dundas Street East & 9th Line~~
  - Burnhamthorpe Road East & 9th Line
  - All existing and future collector roads intersecting Burnhamthorpe Road inclusive of the following:
    - ~~Post Road~~
    - ~~Vernon Powell~~
    - ~~Eternity Way~~
  - All future collector roads intersecting William Halton Parkway

As the intersections of Trafalgar Road at Wheat Boom Drive and at Threshing Mill Boulevard are not within the subject development lands and increases to turning movements are not expected at these intersections as a result of the subject lands, site generated volume is anticipated to be assigned primarily to the northbound through and southbound through movements at these intersections. As a result, we feel that it is not necessary to include these two intersections in our study. The inclusion of Dundas Street and Trafalgar Road just south of these two intersections is anticipated to better capture any trips south of the subject lands travelling to/from the south, east, and west. Future collector intersections on Trafalgar Road within the subject development lands will be considered and are anticipated to better reflect the impact of the site generated trips on the existing and future road network than these two suggested additional intersections. This justification was also shared with the Halton Region review staff (Ayesha), who accepted our explanation for excluding these intersections.

Similarly, the existing intersections of Post Road, Vernon Powell, and Eternity Way at Burnhamthorpe Road should not be considered either. These intersections are not within the subject development lands, and increases to turning movements are not expected at these intersections as a result of the subject lands. Site generated volume is anticipated to be assigned to the eastbound through and westbound through movements at these intersections. Intersections within the subject development along Burnhamthorpe Road east of these three intersections, as well as the intersection of Burnhamthorpe Road at Sixth Line will be analyzed and will serve to more clearly capture the impact of trips generated by the subject development along Burnhamthorpe Road.

The intersection of Trafalgar Road at Loyalist Trail as well as collector road intersections along Burnhamthorpe Road and William Halton Parkway within the subject development lands will be analyzed as part of future analysis horizons in the study. However,

the intersections of Dundas Street at Ninth Line and Burnhamthorpe Road at Ninth Line are both located well beyond the scope of our study area boundaries and should not be considered. Additionally, the Region has reviewed our TOR and has not identified these intersections, which I believe are the responsibility of the Region, as being required.

It is noted that the proposed study intersections were determined using similar criteria to the analyzed study area intersections for the adjacent Neighbourhood 9/10/11 development and are therefore expected to sufficiently reflect the impact of site generated trips on the surrounding network.

Additionally, please note that our future total study area network is anticipated to include upwards of 20 intersections. As such, we feel that these additional intersections should not be included in our analysis.

- Assumption Analysis:
- Horizon years should align with the Planned Transportation Improvements, i.e. the horizon years should be: existing, 2031, 2036, 2041, and ~~2051~~

Our proposed horizon years of existing, 2033, 2038, and 2043 aligns with the landowners' anticipated build-out, build-out plus five years, and build out plus ten years of the development respectively. Based on the Halton Region and Town of Oakville guidelines, five and ten years beyond development are appropriate. Additionally, the Region has reviewed our horizons and found them to be appropriate.

[AK] 2051 horizon to be removed from the analysis. If the full build out is 2033, use that in the analysis and then 2036 and 2041 for the future horizons.

- AM, PM and Weekend Peak Period should be taking under consideration.

[AK] Include in the trip generation table, the trips for all three peak period and state the reason for providing capacity analysis for AM/PM peak or PM/Weekend Peak.

The Halton Region TIS Guidelines and the North Oakville TOR for TIS suggest that the weekend peak period should be taken under consideration for retail, entertainment, religious, institutional, and sports facility uses. Our development consists of approximately 13,900 residential units, 650 000 square metres of office GFA, and 41 000 square metres of supporting retail GFA. As the development consists mostly of residential and office land uses, corresponding to typical weekday AM and PM peak hours, weekend peak period analysis should not be included in our TIS.

- Existing Study Area Multimodal conditions:
- A CAGR of 3% will be used for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway, and a 2% CAGR will be used for Dundas Street.

Comments received from Halton Region staff indicate a CAGR of 1.5% should be used from existing-2033 and 0.75% from 2033-2043 for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway, and a CAGR of 0.5% from 2023-2043 for Dundas Street. As site generated traffic is likely to account for a significant portion of growth of the surrounding network traffic, a 3% and 2% CAGR are too conservative for the purposes of this study. Additionally, as requested site traffic associated with all developments and site applications from Ward 6 and Ward 7 of the Town of Oakville Development and Site Plan Applications portal, where TISs are available, will be considered. This is expected to make up a significant portion of background traffic growth on these roads. As a result, we would propose that the CAGR provided by Halton Region is considered to be more appropriate for the purposes of this study.

[AK] For all regional roads, please use their growth rates provided and apply 3% to Town owned roads

- Signal Timing Plans:
  - Please obtain signal timing plan for all signalized intersections within the study area corridor from the region for Regional Road intersection.
  - Please obtain signal timing plans for the signalized intersections for 6th Line and Burnhamthorpe Road.

Noted.

- Mode Share:
- The most recent TTS data should be used.

Noted.

- Geometric Analysis:
- Intersection details for future design should be include (radius, corner clearance, daylight triangles etc., access locations, access widths)
- Sightline analysis should be included

Noted.

- TDM Measures:

- Trail and transit connectivity/impacts to be included.
- Forecast any future traffic calming measures for implementation

Noted.

- This study should include and identify intersection separation distance analysis and traffic device analysis along William Halton Parkway, Burnhamthorpe Road, Threshing Mills Boulevard , Wheat Boom Boulevard, and Future Marvin Road to ensure they meet Town/Region/Province Requirements.

Noted.

- Figures for all conditions to be included in report.

Noted.

- Mitigation measures to be included for all conditions.

Noted.

- Parking Section should be included to identify forecasted parking requirements

Noted. Future parking requirements will be noted based on existing by-law requirements. This will be further explored during the Site Plan application for each site. ***[AK]*** this would be based on the Town of Oakville zoning requirements for parking for the proposed developments.

- Preliminary Phasing Construction Mitigation Plan to be included as per OTM Book 7

As the study is intended to be used as a Draft Plan application, the details and timeline of the construction for the development is unknown. The Preliminary Phasing Construction Mitigation Plan would be more appropriately examined during the detailed engineering stage of each site.
[AK] This would be a statement as a reminder to consider OTM Book 7 and that a memo is to be provided prior to any construction/clearance of lands.

Have a wonderful day ☺

Aquisha Khan, P. Eng.
Transportation Engineer,
Transportation Strategy Department,
Town of Oakville | 905-845-6601, | www.oakville.ca
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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: January 28, 2024 4:59 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Aquisha,

Do you think we will be able to receive feedback on our Terms of Reference this week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Friday, January 12, 2024 8:49 AM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

I hope you had a nice winter break!

I just wanted to see if you had any updates regarding when we can expect to receive the TOR review and comments.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Monday, December 18, 2023 1:55 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

Thank you very much for the update!

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Thursday, December 14, 2023 9:20 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>; Ayesha.Khan@halton.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Robin;

I just wanted to update on the status of the Terms of Reference review. Town staff received the TOR and is currently reviewing it. We will respond to you shortly. Please be patient with us.

Thanks

Happy Holidays and have a wonder winter day! 😊!

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

Aquisha Khan, (She/Her/Hers), P. Eng.
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3236 | www.oakville.ca

Vision: A vibrant and livable community for all
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http://www.oakville.ca/privacy.html

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Monday, November 20, 2023 4:41 PM
To: Ayesha.Khan@halton.ca; Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha and Aquisha,

Please see the attached Terms of Reference Scoping Document for the EM4 JC7 JC9 Area Transportation Impact Analysis. I'd like to note that the concept provided in the attachment is a draft concept only and has been included for discussion purposes only. Please let me know if you have any questions or comments as part of your review.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

Outlook

RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

From Aquisha Khan <aquisha.khan@oakville.ca>
Date Fri 2024-03-01 11:52
To Robin Marinac <robin.marinac@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Cc Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca <Ayesha.Khan@halton.ca>; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>

Hi Robin/Mark;

As per our conversation please find the adjustments that were discussed below in red. If I missed anything, please let me know.

Have a wonderful day and an amazing weekend 😊!

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

Aquisha Khan, **(She/Her/Hers)**, **P. Eng.**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3236 | www.oakville.ca

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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, February 20, 2024 11:16 AM
To: Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>; Aquisha Khan <aquisha.khan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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.

Hi Leigh, Gabe and Eric,

I hope you all had a lovely long weekend.

Were any of you able to discuss the Terms of Reference comments with Aquisha last week? Any notes that you can provide would be helpful so that we can continue with our work.

I apologize for being so adamant with my follow-ups on this, however as we had to wait over two months to receive the original round of comments on our Terms of Reference, we are now working on a very tight timeline and would appreciate feedback to allow us to move forward.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Wednesday, February 14, 2024 1:56 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

Thank you for letting us know.

Is there any chance that you would be able to provide some preliminary feedback on our comments below this week? Alternatively is there someone from your department we could meet with in your absence next week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Wednesday, February 14, 2024 10:36 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Unfortunately, I am unavailable.

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Wednesday, February 14, 2024 10:08 AM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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.

Hi Aquisha,

Thank you for the quick response and for proposing the additional meeting times below.

As we'd like to try and move forward with our work as quickly as we can, I was wondering if you instead have availability during the following times tomorrow:

- 12:00pm-1:30pm

- 2:30pm-3:30pm

If those times do not work for you, would you be able to provide some initial thoughts on our responses below prior to being away next week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Wednesday, February 14, 2024 9:52 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Good Morning Robin,

Happy Valentines Day!

Thank you for the request to meet, unfortunately, I am not available next week. The next availability for Town staff are as follows:

- Wednesday Feb 28 from 9:30am – 10:30am
- Friday March 01 from 11am – 12pm

I hope one of times work for you and your team.

Regards

Have a wonderful day 😊 !

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

---

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, February 13, 2024 11:15 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Aquisha,

Thank you for providing the comments below on our TOR. We have included our responses in blue. It may be easier to discuss these on a call. Please let me know if you are available for any of the times listed below:

- February 20th 10:00am-12:00pm and 4:00pm-5:00pm
- February 21st 1:00pm-2:00pm

- February 22nd 10:00am-12:00pm

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Tuesday, January 30, 2024 5:25 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>; Leigh Musson <leigh.musson@oakville.ca>; Gabe Charles <gabe.charles@oakville.ca>; Eric Chan <eric.chan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hello Robin;

Forgive the delay, Town's response to the Terms of Reference are as follows:

  - Study Intersections:
- Please circulate TOR to MTO to get their input to this study's requirements.

Noted.

[AK] The highlighted intersections to be included in the study, the others may be dismissed.

- Please include the following intersections:
  - ~~Trafalgar Road and Wheat Boom intersection~~
  - ~~Trafalgar Road and Threshing Mills intersection~~
  - Trafalgar Road & Loyalist Trail
  - ~~Dundas Street East & 9th Line~~
  - Burnhamthorpe Road East & 9th Line
  - All existing and future collector roads intersecting Burnhamthorpe Road inclusive of the following:
    - ~~Post Road~~
    - ~~Vernon Powell~~
    - ~~Eternity Way~~
  - All future collector roads intersecting William Halton Parkway

As the intersections of Trafalgar Road at Wheat Boom Drive and at Threshing Mill Boulevard are not within the subject development lands and increases to turning movements are not expected at these intersections as a result of the subject lands, site generated volume is anticipated to be assigned primarily to the northbound through and southbound through movements at these intersections. As a result, we feel that it is not necessary to include these two intersections in our study. The inclusion of Dundas Street and Trafalgar Road just south of these two intersections is anticipated to better capture any trips south of the subject lands travelling to/from the south, east, and west. Future collector intersections on Trafalgar Road within the subject development lands will be considered and are anticipated to better reflect the impact of the site generated trips on the existing and future road network than these two suggested additional intersections. This justification was also shared with the Halton Region review staff (Ayesha), who accepted our explanation for excluding these intersections.

Similarly, the existing intersections of Post Road, Vernon Powell, and Eternity Way at Burnhamthorpe Road should not be considered either. These intersections are not within the subject development lands, and increases to turning movements are not expected at these intersections as a result of the subject lands. Site generated volume is anticipated to be assigned to the eastbound through and westbound through movements at these intersections. Intersections within the subject development along Burnhamthorpe Road east of these three intersections, as well as the intersection of Burnhamthorpe Road at Sixth Line will be analyzed and will serve to more clearly capture the impact of trips generated by the subject development along Burnhamthorpe Road.

The intersection of Trafalgar Road at Loyalist Trail as well as collector road intersections along Burnhamthorpe Road and William Halton Parkway within the subject development lands will be analyzed as part of future analysis horizons in the study. However,

the intersections of Dundas Street at Ninth Line and Burnhamthorpe Road at Ninth Line are both located well beyond the scope of our study area boundaries and should not be considered. Additionally, the Region has reviewed our TOR and has not identified these intersections, which I believe are the responsibility of the Region, as being required.

It is noted that the proposed study intersections were determined using similar criteria to the analyzed study area intersections for the adjacent Neighbourhood 9/10/11 development and are therefore expected to sufficiently reflect the impact of site generated trips on the surrounding network.

Additionally, please note that our future total study area network is anticipated to include upwards of 20 intersections. As such, we feel that these additional intersections should not be included in our analysis.

- Assumption Analysis:
- Horizon years should align with the Planned Transportation Improvements, i.e. the horizon years should be: existing, 2031, 2036, 2041, and ~~2051~~

Our proposed horizon years of existing, 2033, 2038, and 2043 aligns with the landowners' anticipated build-out, build-out plus five years, and build out plus ten years of the development respectively. Based on the Halton Region and Town of Oakville guidelines, five and ten years beyond development are appropriate. Additionally, the Region has reviewed our horizons and found them to be appropriate.

[AK] 2051 horizon to be removed from the analysis. If the full build out is 2033, use that in the analysis and then 2036 and 2041 for the future horizons.

- AM, PM and Weekend Peak Period should be taking under consideration.

[AK] Include in the trip generation table, the trips for all three peak period and state the reason for providing capacity analysis for AM/PM peak or PM/Weekend Peak.

The Halton Region TIS Guidelines and the North Oakville TOR for TIS suggest that the weekend peak period should be taken under consideration for retail, entertainment, religious, institutional, and sports facility uses. Our development consists of approximately 13,900 residential units, 650 000 square metres of office GFA, and 41 000 square metres of supporting retail GFA. As the development consists mostly of residential and office land uses, corresponding to typical weekday AM and PM peak hours, weekend peak period analysis should not be included in our TIS.

- Existing Study Area Multimodal conditions:
- A CAGR of 3% will be used for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway, and a 2% CAGR will be used for Dundas Street.

Comments received from Halton Region staff indicate a CAGR of 1.5% should be used from existing-2033 and 0.75% from 2033-2043 for Burnhamthorpe Road, Trafalgar Road, and William Halton Parkway, and a CAGR of 0.5% from 2023-2043 for Dundas Street. As site generated traffic is likely to account for a significant portion of growth of the surrounding network traffic, a 3% and 2% CAGR are too conservative for the purposes of this study. Additionally, as requested site traffic associated with all developments and site applications from Ward 6 and Ward 7 of the Town of Oakville Development and Site Plan Applications portal, where TISs are available, will be considered. This is expected to make up a significant portion of background traffic growth on these roads. As a result, we would propose that the CAGR provided by Halton Region is considered to be more appropriate for the purposes of this study.

[AK] For all regional roads, please use their growth rates provided and apply 3% to Town owned roads

- Signal Timing Plans:
  - Please obtain signal timing plan for all signalized intersections within the study area corridor from the region for Regional Road intersection.
  - Please obtain signal timing plans for the signalized intersections for 6th Line and Burnhamthorpe Road.

Noted.

- Mode Share:
- The most recent TTS data should be used.

Noted.

- Geometric Analysis:
- Intersection details for future design should be include (radius, corner clearance, daylight triangles etc., access locations, access widths)
- Sightline analysis should be included

Noted.

- TDM Measures:

- Trail and transit connectivity/impacts to be included.
- Forecast any future traffic calming measures for implementation

Noted.

- This study should include and identify intersection separation distance analysis and traffic device analysis along William Halton Parkway, Burnhamthorpe Road, Threshing Mills Boulevard , Wheat Boom Boulevard, and Future Marvin Road to ensure they meet Town/Region/Province Requirements.

Noted.

- Figures for all conditions to be included in report.

Noted.

- Mitigation measures to be included for all conditions.

Noted.

- Parking Section should be included to identify forecasted parking requirements

Noted. Future parking requirements will be noted based on existing by-law requirements. This will be further explored during the Site Plan application for each site. ***[AK]*** this would be based on the Town of Oakville zoning requirements for parking for the proposed developments.

- Preliminary Phasing Construction Mitigation Plan to be included as per OTM Book 7

As the study is intended to be used as a Draft Plan application, the details and timeline of the construction for the development is unknown. The Preliminary Phasing Construction Mitigation Plan would be more appropriately examined during the detailed engineering stage of each site.
[AK] This would be a statement as a reminder to consider OTM Book 7 and that a memo is to be provided prior to any construction/clearance of lands.

Have a wonderful day ☺

Aquisha Khan, P. Eng.
Transportation Engineer,
Transportation Strategy Department,
Town of Oakville | 905-845-6601, | www.oakville.ca
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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: January 28, 2024 4:59 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Aquisha,

Do you think we will be able to receive feedback on our Terms of Reference this week?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Friday, January 12, 2024 8:49 AM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

I hope you had a nice winter break!

I just wanted to see if you had any updates regarding when we can expect to receive the TOR review and comments.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Monday, December 18, 2023 1:55 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Ayesha.Khan@halton.ca
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Aquisha,

Thank you very much for the update!

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Thursday, December 14, 2023 9:20 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>; Ayesha.Khan@halton.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Robin;

I just wanted to update on the status of the Terms of Reference review. Town staff received the TOR and is currently reviewing it. We will respond to you shortly. Please be patient with us.

Thanks

Happy Holidays and have a wonder winter day! 😊!

Aquisha Khan, (She/Her/Hers), P. Eng.,
Transportation Engineer, East Oakville
Transportation Planning Services,
Town of Oakville | P: 905-845-6601, Ext. 3236 | C: 289-952-9345 | www.oakville.ca

Aquisha Khan, (She/Her/Hers), P. Eng.
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3236 | www.oakville.ca

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

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Monday, November 20, 2023 4:41 PM
To: Ayesha.Khan@halton.ca; Aquisha Khan <aquisha.khan@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha and Aquisha,

Please see the attached Terms of Reference Scoping Document for the EM4 JC7 JC9 Area Transportation Impact Analysis. I'd like to note that the concept provided in the attachment is a draft concept only and has been included for discussion purposes only. Please let me know if you have any questions or comments as part of your review.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

Outlook

RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

From Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Date Mon 2024-03-18 11:43
To Robin Marinac <robin.marinac@cghtransportation.com>
Cc Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>

2 attachments (201 KB)
Action Plans.JPG; 407 EB Schedules.JPG;

Hi Robin,

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference
North Oakville, Halton Region, ON. (Hwy 407)

MTO Traffic Office comments:

1. 41000 square meters (441320 square feet) is not an insignificant size, our preference is to include the Saturday analysis. Consultant can include the Saturday analysis only for the 407 ramps.

407 ETR Concession Company:

1. There are no schedules/day plans/action plans/splits for the WB off ramp.
2. Attached is schedule/action plans for the EB off ramp.

Thanks,

PaulN

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: March 16, 2024 11:01 AM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Paul,

Thank you for the provided STPs. Are you able to provide us with a version that also shows the information from the tabs in your screenshot? This would be the schedule, day plan, action plan, patterns, and splits information.

Can you please also provide feedback on our responses in green? We'd like to confirm that our justification for not including a Saturday analysis has been accepted so that we can proceed with our work.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: Tuesday, March 12, 2024 10:24 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Good morning Robin,

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference
North Oakville, Halton Region, ON. (Hwy 407)

Please find attached the 2 intersections requested.

Regarding the access from the Go Lot, both the MTO & 407 ETR Concession Company would not support this proposal, all traffic from the development should access via Trafalgar/William Halton.

Also, we believe the subject GO lot is operated by Metrolinx, therefore, I have reached out to them for comment as well.

Thanks,

PaulN

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: March 11, 2024 7:30 AM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

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Hi Paul,

I hope you had a nice weekend.

Do you have an idea of when you might be able to provide further feedback on our submitted responses? When you have a chance can you please also provide the requested STPs or direct us to the individual who can provide them?

Kind regards,
Robin Marinac

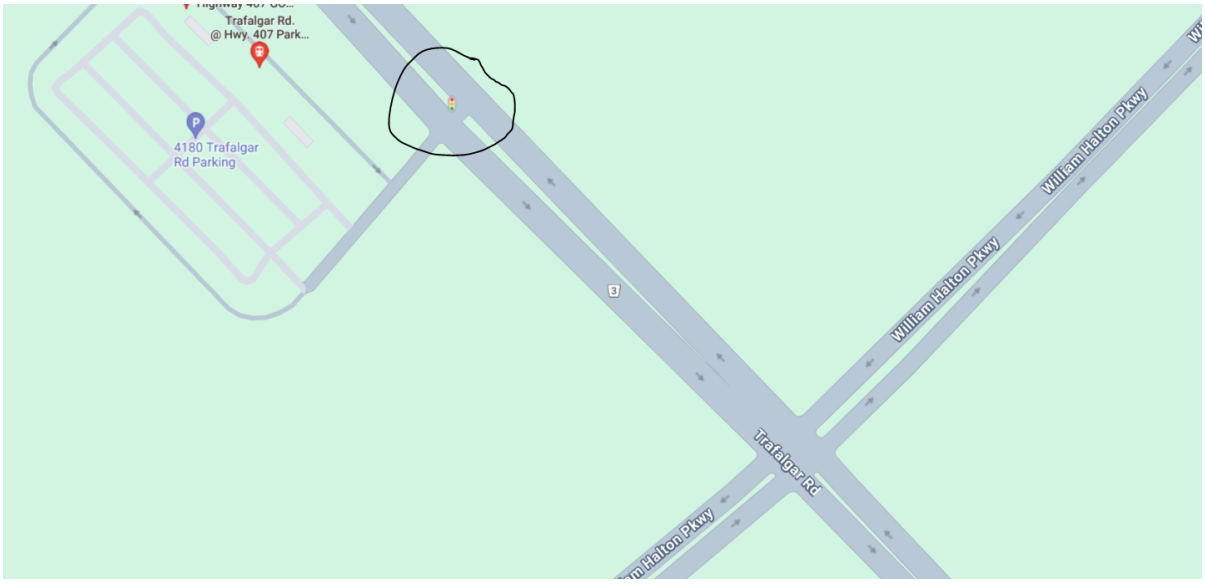
Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: Monday, March 4, 2024 9:15 AM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Hi Paul,

I hope you had a nice weekend!

We were referring to the signalized intersection just north of Trafalgar Road and William Halton Parkway that provides access to the GO lot.



Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: Monday, March 4, 2024 8:55 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Good morning Robin,

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference
North Oakville, Halton Region, ON. (Hwy 407)

Regarding the tie in with signalized intersections, please confirm which intersections? Are you referencing to Trafalgar/William Halton Pkwy signalized intersection south of the GO lot?

Thanks,

Paul Nunes
Senior Project Manager (Peel/Halton) | Corridor Management, Central Region West | Operations Division
Ministry of Transportation | Ontario Public Service
416-270-3108 | paul.nunes@ontario.ca

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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: February 29, 2024 6:25 PM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

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Hi Paul,

Thank you for providing your review below. Please see our responses in green below. Please let me know if you have any questions or would like to discuss this over a call.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: Tuesday, February 27, 2024 8:53 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Good morning Robin,

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference
North Oakville, Halton Region, ON. (Hwy 407)

After review of the terms of reference for the above described proposed TIS, and in accordance with the PTHIA, the MTO offers the following comments:

MTO Traffic:

1. The study area should include the 407 ramps;

Noted. The 407 ramps on Trafalgar Road will be considered within the project analysis.

2. Study should include AM/PM and Saturday analysis;

The Halton Region TIS Guidelines and the North Oakville TOR for TIS suggest that the weekend peak period should be taken under consideration for retail, entertainment, religious, institutional, and sports facility uses. Our development consists of approximately 13,900 residential units, 650 000 square metres of office GFA, and 41 000 square metres of supporting retail GFA. As the development consists mostly of residential and office land uses, corresponding to typical weekday AM and PM peak hours, as a result we would propose that the weekend peak period analysis should not be included in our TIS.

3. What is the growth rate proposed and justification? Maybe we missed it;

While the majority of the growth in the future background analysis horizons will be the result of development explicitly accounted for within the TIS in the form of background development traffic taken from TISs prepared by others, a compound annual growth rate of 1.5% will be applied between existing 2024 and the future 2033 analysis horizon. A 0.75% compound annual growth rate will be used between 2033 and 2043. These growth rates will be applied to the Trafalgar Road interchanges as no 407 historical data is available to calculate growth rates. It is noted that these growth rates have been accepted by Region staff.

4. Proponent to follow MTO TIS guidelines which include executive summary and intro, which is in addition to what is being proposed;

Noted. An introduction and executive summary will be included in the study.

407ETR

1. 407ETR will only be able to provide Single Timing counts for the Trafalgar Interchange. 407ETR does not provide traffic volumes for any of the interchanges within the Highway 407 network;

Noted. Can you please provide these Signal Timing plans, or point us in the direction of a colleague who can?

2. All access points or signalized intersections will need to be min 400 m away from the existing signalized intersections of the Trafalgar Interchange;

Noted. Beyond the existing unsignalized access for the 4180 Trafalgar Road Parking lot and the signalized intersection for the 4180 Trafalgar Road Parking lot which are approximately 100 metres and 240 metres south of the Highway 407 EB Off-ramp, respectively, no additional intersections are proposed within 400 metres of the existing signalized intersections of the Trafalgar interchange. It should be noted that the subject development and surroundings areas are proposed to tie into the existing signalized intersection.

3. All access to sites shall be from the existing municipal road system (i.e. Trafalgar Road), no direct access to Highway 407ETR will be permitted now or in the future;

Noted.

Please do not hesitate to contact me if you have any questions.

Thanks,

Paul Nunes | Senior Project Manager (Peel/Halton)
Highway Corridor Management Section | Central Operations | Ontario Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor, Toronto, ON. M3M 0B7
Telephone: 416-270-3108 | Email: paul.nunes@ontario.ca

Ontario

From: Nunes, Paul (MTO)
Sent: February 24, 2024 5:16 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>; Akhtar, Usman (MTO) <Usman.Akhtar@ontario.ca>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Hi Robin,

Re: EM4 JC7 JC9 Area Wide Transportation Impact Analysis – Terms of Reference
North Oakville, Halton Region, ON. (Hwy 407)

Received, and I have circulated for review and comments.

Thanks,

Paul Nunes | Senior Project Manager (Peel/Halton)
Highway Corridor Management Section | Central Operations | Ontario Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor, Toronto, ON. M3M 0B7
Telephone: 416-270-3108 | Email: paul.nunes@ontario.ca

Ontario

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: February 21, 2024 3:15 PM
To: Akhtar, Usman (MTO) <Usman.Akhtar@ontario.ca>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Usman,

Thank you for your quick response.

Paul – it's nice to meet you. I've attached the TOR for the North Oakville TIS we are looking to have you review.

Please let me know if you have any questions or if you'd like to discuss over a call.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Akhtar, Usman (MTO) <Usman.Akhtar@ontario.ca>
Sent: Wednesday, February 21, 2024 2:26 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Subject: FW: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

Hi Robin,

Please contact my colleague Paul Nunes (CC'd on this email).

Thanks,

Usman

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: February 21, 2024 2:22 PM
To: Akhtar, Usman (MTO) <Usman.Akhtar@ontario.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: Terms of Reference Review Request - EM4 JC7 JC9 N Oakville TIS TOR

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Usman,

I received your contact information from my colleague Mark Crockford. We are looking to circulate a Terms of Reference document for Traffic Impact Study in North Oakville for review by MTO. I'm not sure who the appropriate contact would be to send this to, and so I'm hoping to get your help in passing this along to them.

Please let me know if you have any questions or comments on this.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

Appendix B

Turning Movement Count Data

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-011 - CGH Transportation

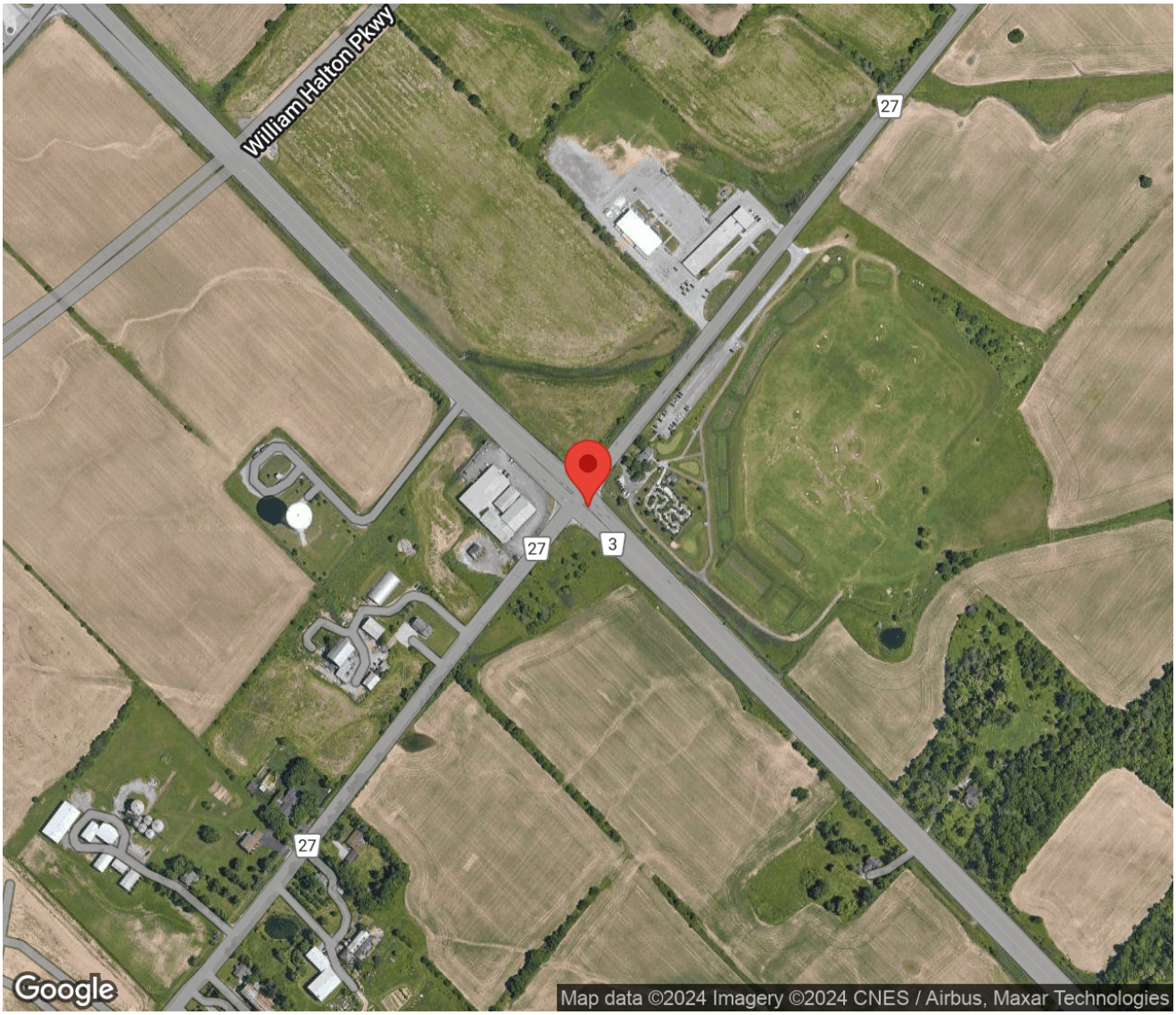
Intersection Count Report

Intersection:	Burnhamthorpe Rd E & Trafalgar Rd
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Burnhamthorpe Rd E & Trafalgar Rd
Site Code:	2401100001
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	3	683	24	0	710	0	23	559	39	0	621	0	1331
08:00 - 09:00	56	916	28	0	1000	0	59	729	90	0	878	1	1878
BREAK													
16:00 - 17:00	11	616	64	0	691	0	74	995	87	0	1156	2	1847
17:00 - 18:00	11	773	68	0	852	0	80	987	81	0	1148	0	2000
GRAND TOTAL	**81**	**2988**	**184**	**0**	**3253**	**0**	**236**	**3270**	**297**	**0**	**3803**	**3**	**7056**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

Burnhamthorpe Rd E - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	48	48	5	0	101	1	30	67	66	0	163	0	264
08:00 - 09:00	67	65	29	1	162	0	71	114	75	0	260	0	422
BREAK													
16:00 - 17:00	46	72	5	0	123	0	64	87	53	0	204	0	327
17:00 - 18:00	63	86	8	0	157	0	37	87	39	0	163	0	320
GRAND TOTAL	**224**	**271**	**47**	**1**	**543**	**1**	**202**	**355**	**233**	**0**	**790**	**0**	**1333**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	1	118	1	0	120	0	8	1	0	9	0	0	0	0	0	0
07:15	1	129	10	0	140	0	6	2	0	8	0	0	0	0	0	0
07:30	1	186	5	0	192	0	8	2	0	10	0	0	0	0	0	0
07:45	0	221	3	0	224	0	7	0	0	7	0	0	0	0	0	0
08:00	9	198	6	0	213	0	9	0	0	9	0	0	0	0	0	0
08:15	16	235	5	0	256	0	7	0	0	7	0	0	0	0	0	0
08:30	18	228	8	0	254	0	7	0	0	7	0	0	0	0	0	0
08:45	13	226	9	0	248	0	6	0	0	6	0	0	0	0	0	0
SUBTOTAL	59	1541	47	0	1647	0	58	5	0	63	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	1	138	16	0	155	0	4	4	0	8	0	0	0	0	0	0
16:15	4	146	13	0	163	1	6	3	0	10	0	0	0	0	0	0
16:30	3	156	13	0	172	0	2	3	0	5	0	0	0	0	0	0
16:45	2	161	12	0	175	0	3	0	0	3	0	0	0	0	0	0
17:00	2	176	19	0	197	0	4	0	0	4	0	0	0	0	0	0
17:15	6	192	13	0	211	0	7	0	0	7	0	0	0	0	0	0
17:30	2	177	13	0	192	0	6	0	0	6	0	0	0	0	0	0
17:45	1	209	22	0	232	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	21	1355	121	0	1497	1	34	11	0	46	0	0	0	0	0	0
GRAND TOTAL	**80**	**2896**	**168**	**0**	**3144**	**1**	**92**	**16**	**0**	**109**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	4	109	6	0	119	0	2	0	0	2	0	0	0	0	0	0
07:15	5	116	4	0	125	1	4	0	0	5	0	0	0	0	0	0
07:30	6	152	10	0	168	1	8	0	0	9	0	0	0	0	0	0
07:45	5	165	19	0	189	1	3	0	0	4	0	0	0	0	0	0
08:00	6	184	11	0	201	2	6	0	0	8	0	0	0	0	0	0
08:15	22	224	22	0	268	0	5	1	0	6	0	0	0	0	0	0
08:30	17	189	32	0	238	0	3	0	0	3	0	0	0	0	0	1
08:45	11	115	24	0	150	1	3	0	0	4	0	0	0	0	0	0
SUBTOTAL	76	1254	128	0	1458	6	34	1	0	41	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	12	209	25	0	246	1	3	0	0	4	0	0	0	0	0	0
16:15	23	249	21	0	293	0	7	0	0	7	0	0	0	0	0	1
16:30	23	238	21	0	282	0	6	0	0	6	0	0	0	0	0	1
16:45	15	276	20	0	311	0	7	0	0	7	0	0	0	0	0	0
17:00	18	253	26	0	297	0	5	0	0	5	0	0	0	0	0	0
17:15	25	274	27	0	326	0	2	0	0	2	0	0	0	0	0	0
17:30	19	256	12	0	287	0	4	0	0	4	0	0	0	0	0	0
17:45	18	190	15	0	223	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	153	1945	167	0	2265	1	37	1	0	39	0	0	0	0	0	2
GRAND TOTAL	**229**	**3199**	**295**	**0**	**3723**	**7**	**71**	**2**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**3**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	21	27	3	0	51	0	1	0	0	1	0	0	0	0	0	1
07:15	12	7	1	0	20	1	1	0	0	2	0	0	0	0	0	0
07:30	9	7	0	0	16	0	0	0	0	0	0	0	0	0	0	0
07:45	5	5	1	0	11	0	0	0	0	0	0	0	0	0	0	0
08:00	9	14	3	0	26	0	0	0	0	0	0	0	0	0	0	0
08:15	14	10	1	0	25	0	1	0	0	1	0	0	0	0	0	0
08:30	25	10	15	1	51	0	0	0	0	0	0	0	0	0	0	0
08:45	19	27	10	0	56	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	114	107	34	1	256	1	6	0	0	7	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	13	17	2	0	32	0	0	1	0	1	0	0	0	0	0	0
16:15	9	16	0	0	25	0	0	0	0	0	0	0	0	0	0	0
16:30	9	20	1	0	30	0	1	0	0	1	0	0	0	0	0	0
16:45	15	18	1	0	34	0	0	0	0	0	0	0	0	0	0	0
17:00	17	16	2	0	35	0	0	0	0	0	0	0	0	0	0	0
17:15	8	24	1	0	33	0	0	0	0	0	0	0	0	0	0	0
17:30	26	25	5	0	56	0	0	0	0	0	0	0	0	0	0	0
17:45	12	21	0	0	33	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	109	157	12	0	278	0	1	1	0	2	0	0	0	0	0	0
GRAND TOTAL	**223**	**264**	**46**	**1**	**534**	**1**	**7**	**1**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	2	9	8	0	19	0	0	3	0	3	0	0	0	0	0	0
07:15	8	14	15	0	37	0	0	2	0	2	0	0	0	0	0	0
07:30	6	13	13	0	32	1	0	3	0	4	0	0	0	0	0	0
07:45	11	31	22	0	64	2	0	0	0	2	0	0	0	0	0	0
08:00	17	22	13	0	52	0	0	1	0	1	0	0	0	0	0	0
08:15	16	29	17	0	62	0	0	0	0	0	0	0	0	0	0	0
08:30	22	31	29	0	82	0	1	0	0	1	0	0	0	0	0	0
08:45	16	31	15	0	62	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	98	180	132	0	410	3	1	9	0	13	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	9	20	6	0	35	6	0	2	0	8	0	0	0	0	0	0
16:15	10	23	14	0	47	6	1	0	0	7	0	0	0	0	0	0
16:30	11	20	15	0	46	4	1	0	0	5	0	0	0	0	0	0
16:45	15	21	16	0	52	3	1	0	0	4	0	0	0	0	0	0
17:00	5	25	8	0	38	0	0	0	0	0	0	0	0	0	0	0
17:15	12	18	14	0	44	0	1	0	0	1	0	0	0	0	0	0
17:30	9	19	8	0	36	0	0	0	0	0	0	0	0	0	0	0
17:45	11	24	9	0	44	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	82	170	90	0	342	19	4	2	0	25	0	0	0	0	0	0
GRAND TOTAL	**180**	**350**	**222**	**0**	**752**	**22**	**5**	**11**	**0**	**38**	**0**	**0**	**0**	**0**	**0**	**0**

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	971	812	1783
Trucks	29	17	46
Bicycles	0	0	0
	1000	**829**	**1829**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	29	0	0
Cars	28	887	56	0
Totals	**28**	**916**	**56**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	158	259	417
Trucks	4	2	6
Bicycles	0	0	0
	162	**261**	**423**

Burnhamthorpe Rd E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	71	**71**
0	1	113	**114**
0	1	74	**75**

Peds: 0



Peds: 0

Burnhamthorpe Rd E

Totals	Cars	Trucks	Bicycles
1	1	0	0
29	29	0	0
65	61	4	0
67	67	0	0

Peds: 1

West Approach

	Out	In	Total
Cars	258	145	403
Trucks	2	7	9
Bicycles	0	0	0
	260	**152**	**412**

Totals	**59**	**729**	**90**	**0**
Cars	56	712	89	0
Trucks	3	17	1	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	857	1028	1885
Trucks	21	30	51
Bicycles	0	0	0
	878	**1058**	**1936**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	9	207	6	0	0	222	8	190	11	0	0	209	9	14	3	0	0	26	17	22	14	0	0	53	510
08:15	16	242	5	0	0	263	22	229	23	0	0	274	14	11	1	0	0	26	16	29	17	0	0	62	625
08:30	18	235	8	0	0	261	17	192	32	0	1	241	25	10	15	1	0	51	22	32	29	0	0	83	636
08:45	13	232	9	0	0	254	12	118	24	0	0	154	19	30	10	0	0	59	16	31	15	0	0	62	529
Grand Total	**56**	**916**	**28**	**0**	**0**	**1000**	**59**	**729**	**90**	**0**	**1**	**878**	**67**	**65**	**29**	**1**	**0**	**162**	**71**	**114**	**75**	**0**	**0**	**260**	**2300**
Approach %	5.6	91.6	2.8	0		-	6.7	83	10.3	0		-	41.4	40.1	17.9	0.6		-	27.3	43.8	28.8	0		-	
Totals %	2.4	39.8	1.2	0		43.5	2.6	31.7	3.9	0		38.2	2.9	2.8	1.3	0		7	3.1	5	3.3	0		11.3	
PHF	**0.78**	**0.95**	**0.78**	**0**		**0.95**	**0.67**	**0.8**	**0.7**	**0**		**0.8**	**0.67**	**0.54**	**0.48**	**0.25**		**0.69**	**0.81**	**0.89**	**0.65**	**0**		**0.78**	**0.9**
Cars	56	887	28	0		971	56	712	89	0		857	67	61	29	1		158	71	113	74	0		258	2244
% Cars	100	96.8	100	0		97.1	94.9	97.7	98.9	0		97.6	100	93.8	100	100		97.5	100	99.1	98.7	0		99.2	97.6
Trucks	0	29	0	0		29	3	17	1	0		21	0	4	0	0		4	0	1	1	0		2	56
% Trucks	0	3.2	0	0		2.9	5.1	2.3	1.1	0		2.4	0	6.2	0	0		2.5	0	0.9	1.3	0		0.8	2.4
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					1	-					0	-					0	-	1
% Peds					0	-					100	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	775	1109	1884
Trucks	20	21	41
Bicycles	0	0	0
	795	**1130**	**1925**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	20	0	0
Cars	57	706	12	0
Totals	**57**	**726**	**12**	**0**

East Approach

	Out	In	Total
Cars	158	180	338
Trucks	0	2	2
Bicycles	0	0	0
	158	**182**	**340**

Peds: 0

Burnhamthorpe Rd E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	3	41	**44**
0	2	83	**85**
0	0	46	**46**

Peds: 0



Peds: 0

Burnhamthorpe Rd E

Totals	Cars	Trucks	Bicycles
0	0	0	0
9	9	0	0
83	83	0	0
66	66	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	170	217	387
Trucks	5	0	5
Bicycles	0	0	0
	175	**217**	**392**

Trafalgar Rd

Totals	**77**	**1077**	**85**	**0**
Cars	77	1059	85	0
Trucks	0	18	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1221	818	2039
Trucks	18	20	38
Bicycles	0	0	0
	1239	**838**	**2077**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45	2	164	12	0	0	178	15	283	20	0	0	318	15	18	1	0	0	34	18	22	16	0	0	56	586
17:00	2	180	19	0	0	201	18	258	26	0	0	302	17	16	2	0	0	35	5	25	8	0	0	38	576
17:15	6	199	13	0	0	218	25	276	27	0	0	328	8	24	1	0	0	33	12	19	14	0	0	45	624
17:30	2	183	13	0	0	198	19	260	12	0	0	291	26	25	5	0	0	56	9	19	8	0	0	36	581
Grand Total	**12**	**726**	**57**	**0**	**0**	**795**	**77**	**1077**	**85**	**0**	**0**	**1239**	**66**	**83**	**9**	**0**	**0**	**158**	**44**	**85**	**46**	**0**	**0**	**175**	**2367**
Approach %	1.5	91.3	7.2	0		-	6.2	86.9	6.9	0		-	41.8	52.5	5.7	0		-	25.1	48.6	26.3	0		-	
Totals %	0.5	30.7	2.4	0		33.6	3.3	45.5	3.6	0		52.3	2.8	3.5	0.4	0		6.7	1.9	3.6	1.9	0		7.4	
PHF	**0.5**	**0.91**	**0.75**	**0**		**0.91**	**0.77**	**0.95**	**0.79**	**0**		**0.94**	**0.63**	**0.83**	**0.45**	**0**		**0.71**	**0.61**	**0.85**	**0.72**	**0**		**0.78**	**0.95**
Cars	12	706	57	0		775	77	1059	85	0		1221	66	83	9	0		158	41	83	46	0		170	2324
% Cars	100	97.2	100	0		97.5	100	98.3	100	0		98.5	100	100	100	0		100	93.2	97.6	100	0		97.1	98.2
Trucks	0	20	0	0		20	0	18	0	0		18	0	0	0	0		0	3	2	0	0		5	43
% Trucks	0	2.8	0	0		2.5	0	1.7	0	0		1.5	0	0	0	0		0	6.8	2.4	0	0		2.9	1.8
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
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Project #24-011 - CGH Transportation

Intersection Count Report

Intersection:	William Halton Pkwy & Trafalgar Rd
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
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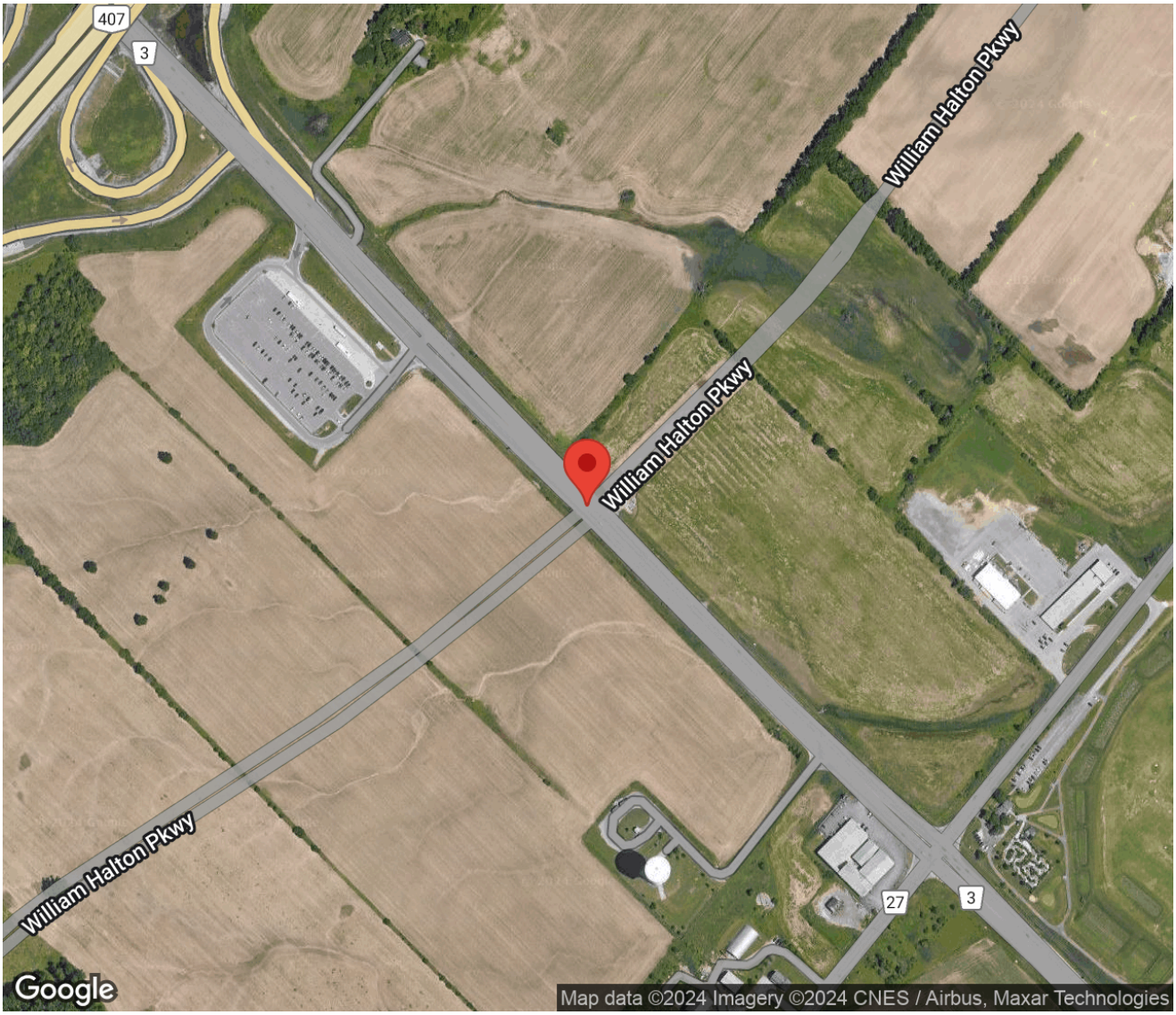
Traffic Count Map

Intersection:	William Halton Pkwy & Trafalgar Rd
Site Code:	2401100002
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	223	600	55	0	878	0	30	567	13	0	610	0	1488
08:00 - 09:00	216	807	83	1	1107	0	54	742	14	1	811	0	1918
BREAK													
16:00 - 17:00	127	612	118	1	858	0	80	973	14	0	1067	0	1925
17:00 - 18:00	115	735	128	0	978	0	81	930	19	0	1030	0	2008
GRAND TOTAL	**681**	**2754**	**384**	**2**	**3821**	**0**	**245**	**3212**	**60**	**1**	**3518**	**0**	**7339**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

William Halton Pkwy - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	18	85	111	0	214	0	130	347	103	0	580	0	794
08:00 - 09:00	19	169	94	0	282	0	125	523	166	0	814	0	1096
BREAK													
16:00 - 17:00	32	355	334	0	721	0	62	216	55	0	333	0	1054
17:00 - 18:00	43	345	408	1	797	0	91	206	67	0	364	0	1161
GRAND TOTAL	**112**	**954**	**947**	**1**	**2014**	**0**	**408**	**1292**	**391**	**0**	**2091**	**0**	**4105**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	41	110	5	0	156	1	7	0	0	8	0	0	0	0	0	0
07:15	50	117	14	0	181	2	7	0	0	9	0	0	0	0	0	0
07:30	65	153	20	0	238	4	11	0	0	15	0	0	0	0	0	0
07:45	59	189	16	0	264	1	6	0	0	7	0	0	0	0	0	0
08:00	48	165	19	0	232	2	10	0	0	12	0	0	0	0	0	0
08:15	56	206	18	1	281	1	6	0	0	7	0	0	0	0	0	0
08:30	60	214	27	0	301	3	5	0	0	8	0	0	0	0	0	0
08:45	44	193	19	0	256	2	8	0	0	10	0	0	0	0	0	0
SUBTOTAL	423	1347	138	1	1909	16	60	0	0	76	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	29	126	24	0	179	7	10	0	0	17	0	0	0	0	0	0
16:15	25	155	25	0	205	1	11	0	0	12	0	0	0	0	0	0
16:30	33	150	34	1	218	2	4	0	0	6	0	0	0	0	0	0
16:45	28	155	35	0	218	2	1	0	0	3	0	0	0	0	0	0
17:00	33	156	28	0	217	0	2	1	0	3	0	0	0	0	0	0
17:15	33	188	39	0	260	4	7	0	0	11	0	0	0	0	0	0
17:30	22	158	35	0	215	1	4	0	0	5	0	0	0	0	0	0
17:45	19	216	24	0	259	3	4	1	0	8	0	0	0	0	0	0
SUBTOTAL	222	1304	244	1	1771	20	43	2	0	65	0	0	0	0	0	0
GRAND TOTAL	645	2651	382	2	3680	36	103	2	0	141	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	9	98	4	0	111	0	0	0	0	0	0	0	0	0	0	0
07:15	5	126	3	0	134	0	4	0	0	4	0	0	0	0	0	0
07:30	7	141	3	0	151	0	9	0	0	9	0	0	0	0	0	0
07:45	9	183	3	0	195	0	6	0	0	6	0	0	0	0	0	0
08:00	12	191	0	0	203	0	5	0	0	5	0	0	0	0	0	0
08:15	13	214	8	0	235	1	5	1	0	7	0	0	0	0	0	0
08:30	20	194	2	0	216	0	3	0	0	3	0	0	0	0	0	0
08:45	8	127	3	1	139	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	83	1274	26	1	1384	1	35	1	0	37	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	14	210	4	0	228	2	9	0	0	11	0	0	0	0	0	0
16:15	16	236	0	0	252	0	12	0	0	12	0	0	0	0	0	0
16:30	24	218	3	0	245	0	11	0	0	11	0	0	0	0	0	0
16:45	24	268	6	0	298	0	9	1	0	10	0	0	0	0	0	0
17:00	22	225	6	0	253	0	5	0	0	5	0	0	0	0	0	0
17:15	21	276	3	0	300	0	3	0	0	3	0	0	0	0	0	0
17:30	22	228	7	0	257	0	2	0	0	2	0	0	0	0	0	0
17:45	16	189	2	0	207	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	159	1850	31	0	2040	2	53	2	0	57	0	0	0	0	0	0
GRAND TOTAL	**242**	**3124**	**57**	**1**	**3424**	**3**	**88**	**3**	**0**	**94**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	2	12	20	0	34	2	0	7	0	9	0	0	0	0	0	0
07:15	3	20	23	0	46	1	0	7	0	8	0	0	0	0	0	0
07:30	7	36	26	0	69	0	0	3	0	3	0	0	0	0	0	0
07:45	3	16	21	0	40	0	1	4	0	5	0	0	0	0	0	0
08:00	5	37	18	0	60	0	0	3	0	3	0	0	0	0	0	0
08:15	5	46	22	0	73	0	2	2	0	4	0	0	0	0	0	0
08:30	2	43	23	0	68	0	0	0	0	0	0	0	0	0	0	0
08:45	7	40	25	0	72	0	1	1	0	2	0	0	0	0	0	0
SUBTOTAL	34	250	178	0	462	3	4	27	0	34	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	6	86	81	0	173	1	2	6	0	9	0	0	0	0	0	0
16:15	8	63	58	0	129	0	0	0	0	0	0	0	0	0	0	0
16:30	7	72	79	0	158	0	1	1	0	2	0	0	0	0	0	0
16:45	9	131	107	0	247	1	0	2	0	3	0	0	0	0	0	0
17:00	12	81	107	0	200	1	0	3	0	4	0	0	0	0	0	0
17:15	10	82	125	1	218	0	0	0	0	0	0	0	0	0	0	0
17:30	12	116	96	0	224	0	0	0	0	0	0	0	0	0	0	0
17:45	8	65	77	0	150	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	72	696	730	1	1499	3	4	12	0	19	0	0	0	0	0	0
GRAND TOTAL	**106**	**946**	**908**	**1**	**1961**	**6**	**8**	**39**	**0**	**53**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	26	43	10	0	79	0	0	0	0	0	0	0	0	0	0	0
07:15	34	56	17	0	107	0	0	0	0	0	0	0	0	0	0	0
07:30	35	122	39	0	196	1	0	0	0	1	0	0	0	0	0	0
07:45	34	126	37	0	197	0	0	0	0	0	0	0	0	0	0	0
08:00	37	127	38	0	202	0	1	0	0	1	0	0	0	0	0	0
08:15	36	150	42	0	228	0	1	0	0	1	0	0	0	0	0	0
08:30	24	124	46	0	194	0	2	0	0	2	0	0	0	0	0	0
08:45	28	117	40	0	185	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	254	865	269	0	1388	1	5	0	0	6	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	16	44	12	0	72	0	1	0	0	1	0	0	0	0	0	0
16:15	15	60	11	0	86	1	2	0	0	3	0	0	0	0	0	0
16:30	16	63	14	0	93	0	1	0	0	1	0	0	0	0	0	0
16:45	14	44	18	0	76	0	1	0	0	1	0	0	0	0	0	0
17:00	29	48	20	0	97	1	1	0	0	2	0	0	0	0	0	0
17:15	25	50	21	0	96	0	1	0	0	1	0	0	0	0	0	0
17:30	19	60	9	0	88	0	0	0	0	0	0	0	0	0	0	0
17:45	17	45	17	0	79	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	151	414	122	0	687	2	8	0	0	10	0	0	0	0	0	0
GRAND TOTAL	**405**	**1279**	**391**	**0**	**2075**	**3**	**13**	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	09:00:00	To:	08:45:00

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	1078	998	2076
Trucks	34	28	62
Bicycles	0	0	0
	1112	**1026**	**2138**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	27	7	0
Cars	80	774	223	1
Totals	**80**	**801**	**230**	**1**

East Approach

	Out	In	Total
Cars	241	763	1004
Trucks	12	12	24
Bicycles	0	0	0
	253	**775**	**1028**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	131	**131**
0	4	527	**531**
0	0	163	**163**

Peds: 0



Peds: 0

Peds: 0

William Halton Pkwy

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	93	84	9	0
	145	142	3	0
	15	15	0	0

West Approach

	Out	In	Total
Cars	821	276	1097
Trucks	4	4	8
Bicycles	0	0	0
	825	**280**	**1105**

Totals	**55**	**801**	**14**	**0**
Cars	54	782	13	0
Trucks	1	19	1	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	849	952	1801
Trucks	21	27	48
Bicycles	0	0	0
	870	**979**	**1849**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	60	195	16	0	0	271	9	189	3	0	0	201	3	17	25	0	0	45	34	126	37	0	0	197	714
08:00	50	175	19	0	0	244	12	196	0	0	0	208	5	37	21	0	0	63	37	128	38	0	0	203	718
08:15	57	212	18	1	0	288	14	219	9	0	0	242	5	48	24	0	0	77	36	151	42	0	0	229	836
08:30	63	219	27	0	0	309	20	197	2	0	0	219	2	43	23	0	0	68	24	126	46	0	0	196	792
Grand Total	**230**	**801**	**80**	**1**	**0**	**1112**	**55**	**801**	**14**	**0**	**0**	**870**	**15**	**145**	**93**	**0**	**0**	**253**	**131**	**531**	**163**	**0**	**0**	**825**	**3060**
Approach %	20.7	72	7.2	0.1		-	6.3	92.1	1.6	0		-	5.9	57.3	36.8	0		-	15.9	64.4	19.8	0		-	
Totals %	7.5	26.2	2.6	0		36.3	1.8	26.2	0.5	0		28.4	0.5	4.7	3	0		8.3	4.3	17.4	5.3	0		27	
PHF	**0.91**	**0.91**	**0.74**	**0.25**		**0.9**	**0.69**	**0.91**	**0.39**	**0**		**0.9**	**0.75**	**0.76**	**0.93**	**0**		**0.82**	**0.89**	**0.88**	**0.89**	**0**		**0.9**	**0.92**
Cars	223	774	80	1		1078	54	782	13	0		849	15	142	84	0		241	131	527	163	0		821	2989
% Cars	97	96.6	100	100		96.9	98.2	97.6	92.9	0		97.6	100	97.9	90.3	0		95.3	100	99.2	100	0		99.5	97.7
Trucks	7	27	0	0		34	1	19	1	0		21	0	3	9	0		12	0	4	0	0		4	71
% Trucks	3	3.4	0	0		3.1	1.8	2.4	7.1	0		2.4	0	2.1	9.7	0		4.7	0	0.8	0	0		0.5	2.3
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:45:00
To:	18:00:00	To:	17:45:00

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	910	1519	2429
Trucks	22	25	47
Bicycles	0	0	0
	932	**1544**	**2476**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	1	14	7	0
Cars	137	657	116	0
Totals	**138**	**671**	**123**	**0**

East Approach

	Out	In	Total
Cars	889	341	1230
Trucks	7	11	18
Bicycles	0	0	0
	896	**352**	**1248**

Peds: 0

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	87	**88**
0	3	202	**205**
0	0	68	**68**

Peds: 0



Peds: 0

William Halton Pkwy

Totals	Cars	Trucks	Bicycles
1	1	0	0
440	435	5	0
410	410	0	0
45	43	2	0

Peds: 0

West Approach

	Out	In	Total
Cars	357	636	993
Trucks	4	1	5
Bicycles	0	0	0
	361	**637**	**998**

Trafalgar Rd

Totals	**89**	**1016**	**23**	**0**
Cars	89	997	22	0
Trucks	0	19	1	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1108	768	1876
Trucks	20	16	36
Bicycles	0	0	0
	1128	**784**	**1912**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Trafalgar Rd
Site Code: 2401100002
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
16:45	30	156	35	0	0	221	24	277	7	0	0	308	10	131	109	0	0	250	14	45	18	0	0	77	856
17:00	33	158	29	0	0	220	22	230	6	0	0	258	13	81	110	0	0	204	30	49	20	0	0	99	781
17:15	37	195	39	0	0	271	21	279	3	0	0	303	10	82	125	1	0	218	25	51	21	0	0	97	889
17:30	23	162	35	0	0	220	22	230	7	0	0	259	12	116	96	0	0	224	19	60	9	0	0	88	791
Grand Total	**123**	**671**	**138**	**0**	**0**	**932**	**89**	**1016**	**23**	**0**	**0**	**1128**	**45**	**410**	**440**	**1**	**0**	**896**	**88**	**205**	**68**	**0**	**0**	**361**	**3317**
Approach %	13.2	72	14.8	0		-	7.9	90.1	2	0		-	5	45.8	49.1	0.1		-	24.4	56.8	18.8	0		-	
Totals %	3.7	20.2	4.2	0		28.1	2.7	30.6	0.7	0		34	1.4	12.4	13.3	0		27	2.7	6.2	2.1	0		10.9	
PHF	**0.83**	**0.86**	**0.88**	**0**		**0.86**	**0.93**	**0.91**	**0.82**	**0**		**0.92**	**0.87**	**0.78**	**0.88**	**0.25**		**0.9**	**0.73**	**0.85**	**0.81**	**0**		**0.91**	**0.93**
Cars	116	657	137	0		910	89	997	22	0		1108	43	410	435	1		889	87	202	68	0		357	3264
% Cars	94.3	97.9	99.3	0		97.6	100	98.1	95.7	0		98.2	95.6	100	98.9	100		99.2	98.9	98.5	100	0		98.9	98.4
Trucks	7	14	1	0		22	0	19	1	0		20	2	0	5	0		7	1	3	0	0		4	53
% Trucks	5.7	2.1	0.7	0		2.4	0	1.9	4.3	0		1.8	4.4	0	1.1	0		0.8	1.1	1.5	0	0		1.1	1.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-011 - CGH Transportation

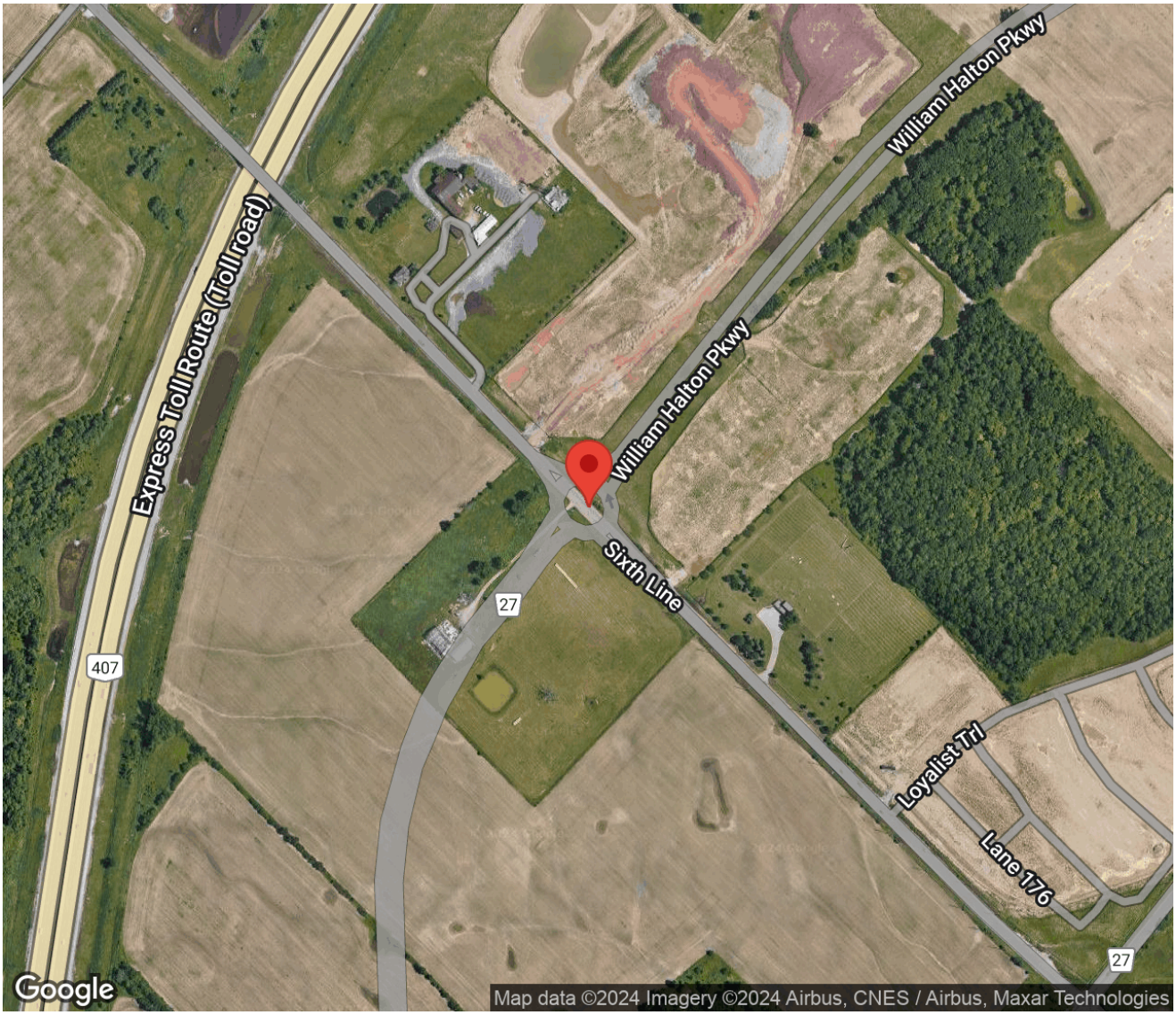
Intersection Count Report

Intersection:	William Halton Pkwy & Sixth Line
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100003
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	William Halton Pkwy & Sixth Line
Site Code:	2401100003
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

Sixth Line - Traffic Summary

Hour	North Approach Totals (Includes Cars, Trucks, Bicycles)						South Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	355	103	154	0	612	0	5	116	63	1	185	0	797
08:00 - 09:00	548	150	209	0	907	0	3	127	86	0	216	0	1123
BREAK													
16:00 - 17:00	169	154	159	0	482	0	8	144	43	0	195	0	677
17:00 - 18:00	175	176	164	0	515	0	3	151	55	0	209	0	724
GRAND TOTAL	**1247**	**583**	**686**	**0**	**2516**	**0**	**19**	**538**	**247**	**1**	**805**	**0**	**3321**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

William Halton Pkwy - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	13	79	74	0	166	0	121	165	4	0	290	0	456
08:00 - 09:00	21	179	111	0	311	0	137	177	5	0	319	0	630
BREAK													
16:00 - 17:00	36	199	304	0	539	0	127	121	2	0	250	0	789
17:00 - 18:00	53	213	302	1	569	0	125	135	6	0	266	0	835
GRAND TOTAL	**123**	**670**	**791**	**1**	**1585**	**0**	**510**	**598**	**17**	**0**	**1125**	**0**	**2710**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	40	14	29	0	83	0	0	0	0	0	0	0	0	0	0	0
07:15	68	18	27	0	113	0	0	0	0	0	0	0	0	0	0	0
07:30	115	36	34	0	185	0	2	1	0	3	0	0	0	0	0	0
07:45	132	33	63	0	228	0	0	0	0	0	0	0	0	0	0	0
08:00	132	40	44	0	216	1	0	0	0	1	0	0	0	0	0	0
08:15	147	29	65	0	241	0	0	4	0	4	0	0	0	0	0	0
08:30	146	34	51	0	231	0	2	0	0	2	0	0	0	0	0	0
08:45	121	44	45	0	210	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	901	248	358	0	1507	2	5	5	0	12	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	34	30	32	0	96	1	0	1	0	2	0	0	0	0	0	0
16:15	48	39	53	0	140	0	0	0	0	0	0	0	0	0	0	0
16:30	49	47	33	0	129	0	0	0	0	0	0	0	0	0	0	0
16:45	37	38	40	0	115	0	0	0	0	0	0	0	0	0	0	0
17:00	51	44	45	0	140	0	0	0	0	0	0	0	0	0	0	0
17:15	45	51	40	0	136	1	1	0	0	2	0	0	0	0	0	0
17:30	37	39	41	0	117	1	0	0	0	1	0	0	0	0	0	0
17:45	40	41	38	0	119	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	341	329	322	0	992	3	1	1	0	5	0	0	0	0	0	0
GRAND TOTAL	**1242**	**577**	**680**	**0**	**2499**	**5**	**6**	**6**	**0**	**17**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	12	8	0	20	0	1	0	0	1	0	0	0	0	0	0
07:15	2	30	17	0	49	0	0	0	0	0	0	0	0	0	0	0
07:30	0	34	15	0	49	0	0	0	1	1	0	0	0	0	0	0
07:45	3	39	23	0	65	0	0	0	0	0	0	0	0	0	0	0
08:00	1	22	21	0	44	0	1	0	0	1	0	0	0	0	0	0
08:15	0	43	28	0	71	0	0	1	0	1	0	0	0	0	0	0
08:30	2	37	22	0	61	0	0	0	0	0	0	0	0	0	0	0
08:45	0	23	14	0	37	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	8	240	148	0	396	0	3	1	1	5	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	3	37	7	0	47	0	1	0	0	1	0	0	0	0	0	0
16:15	1	33	10	0	44	0	0	0	0	0	0	0	0	0	0	0
16:30	2	35	16	0	53	0	0	0	0	0	0	0	0	0	0	0
16:45	2	37	10	0	49	0	1	0	0	1	0	0	0	0	0	0
17:00	0	31	17	0	48	0	2	1	0	3	0	0	0	0	0	0
17:15	2	41	13	0	56	0	0	0	0	0	0	0	0	0	0	0
17:30	1	40	8	0	49	0	0	0	0	0	0	0	1	0	1	0
17:45	0	36	15	0	51	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	11	290	96	0	397	0	5	1	0	6	0	0	1	0	1	0
GRAND TOTAL	**19**	**530**	**244**	**0**	**793**	**0**	**8**	**2**	**1**	**11**	**0**	**0**	**1**	**0**	**1**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	1	8	14	0	23	0	0	0	0	0	0	0	0	0	0	0
07:15	5	17	16	0	38	0	0	0	0	0	0	0	0	0	0	0
07:30	5	26	24	0	55	0	0	0	0	0	0	0	0	0	0	0
07:45	2	27	20	0	49	0	1	0	0	1	0	0	0	0	0	0
08:00	4	45	18	0	67	0	0	0	0	0	0	0	0	0	0	0
08:15	8	49	22	0	79	0	2	1	0	3	0	0	0	0	0	0
08:30	2	45	40	0	87	0	0	0	0	0	0	0	0	0	0	0
08:45	6	38	30	0	74	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	33	255	184	0	472	1	3	1	0	5	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	8	49	69	0	126	0	0	3	0	3	0	0	0	0	0	0
16:15	5	43	67	0	115	0	1	0	0	1	0	0	0	0	0	0
16:30	6	50	60	0	116	0	0	1	0	1	0	0	0	0	0	0
16:45	17	56	104	0	177	0	0	0	0	0	0	0	0	0	0	0
17:00	13	45	86	0	144	0	1	0	0	1	0	0	0	0	0	0
17:15	14	55	66	0	135	0	0	0	0	0	0	0	0	0	0	0
17:30	15	70	87	0	172	0	0	0	0	0	0	0	0	0	0	0
17:45	11	41	62	1	115	0	1	1	0	2	0	0	0	0	0	0
SUBTOTAL	89	409	601	1	1100	0	3	5	0	8	0	0	0	0	0	0
GRAND TOTAL	**122**	**664**	**785**	**1**	**1572**	**1**	**6**	**6**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	27	32	0	0	59	0	0	0	0	0	0	0	0	0	0	0
07:15	26	31	1	0	58	0	0	0	0	0	0	0	0	0	0	0
07:30	33	50	0	0	83	0	1	0	0	1	0	0	0	0	0	0
07:45	35	51	3	0	89	0	0	0	0	0	0	0	0	0	0	0
08:00	43	49	1	0	93	0	0	0	0	0	0	0	0	0	0	0
08:15	40	57	0	0	97	1	0	0	0	1	0	0	0	0	0	0
08:30	27	32	2	0	61	0	2	0	0	2	0	0	0	0	0	0
08:45	25	37	2	0	64	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	256	339	9	0	604	2	3	0	0	5	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	27	34	1	0	62	0	1	0	0	1	0	0	0	0	0	0
16:15	29	24	0	0	53	0	2	0	0	2	0	0	0	0	0	0
16:30	39	31	0	0	70	0	1	0	0	1	0	0	0	0	0	0
16:45	32	27	1	0	60	0	1	0	0	1	0	0	0	0	0	0
17:00	41	35	2	0	78	0	1	0	0	1	0	0	0	0	0	0
17:15	30	34	0	0	64	0	0	0	0	0	0	0	0	0	0	0
17:30	25	40	3	0	68	0	0	0	0	0	0	0	0	0	0	0
17:45	29	25	1	0	55	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	252	250	8	0	510	0	6	0	0	6	0	0	0	0	0	0
GRAND TOTAL	**508**	**589**	**17**	**0**	**1114**	**2**	**9**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	09:00:00	To:	08:45:00

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	916	386	1302
Trucks	7	3	10
Bicycles	0	0	0
	923	**389**	**1312**

Sixth Line

Bicycles	0	0	0	0
Trucks	4	2	1	0
Cars	223	136	557	0
Totals	**227**	**138**	**558**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	282	840	1122
Trucks	4	4	8
Bicycles	0	0	0
	286	**844**	**1130**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	145	**146**
0	2	189	**191**
0	0	6	**6**

Peds: 0



Peds: 0

William Halton Pkwy

Totals	Cars	Trucks	Bicycles
0	0	0	0
101	100	1	0
169	166	3	0
16	16	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	340	395	735
Trucks	3	7	10
Bicycles	0	0	0
	343	**402**	**745**

Sixth Line

Totals	**6**	**142**	**95**	**0**
Cars	6	141	94	0
Trucks	0	1	1	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	241	158	399
Trucks	2	2	4
Bicycles	0	0	0
	243	**160**	**403**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	132	33	63	0	0	228	3	39	23	0	0	65	2	28	20	0	0	50	35	51	3	0	0	89	432
08:00	133	40	44	0	0	217	1	23	21	0	0	45	4	45	18	0	0	67	43	49	1	0	0	93	422
08:15	147	29	69	0	0	245	0	43	29	0	0	72	8	51	23	0	0	82	41	57	0	0	0	98	497
08:30	146	36	51	0	0	233	2	37	22	0	0	61	2	45	40	0	0	87	27	34	2	0	0	63	444
Grand Total	**558**	**138**	**227**	**0**	**0**	**923**	**6**	**142**	**95**	**0**	**0**	**243**	**16**	**169**	**101**	**0**	**0**	**286**	**146**	**191**	**6**	**0**	**0**	**343**	**1795**
Approach %	60.5	15	24.6	0		-	2.5	58.4	39.1	0		-	5.6	59.1	35.3	0		-	42.6	55.7	1.7	0		-	
Totals %	31.1	7.7	12.6	0		51.4	0.3	7.9	5.3	0		13.5	0.9	9.4	5.6	0		15.9	8.1	10.6	0.3	0		19.1	
PHF	**0.95**	**0.86**	**0.82**	**0**		**0.94**	**0.5**	**0.83**	**0.82**	**0**		**0.84**	**0.5**	**0.83**	**0.63**	**0**		**0.82**	**0.85**	**0.84**	**0.5**	**0**		**0.88**	**0.9**
Cars	557	136	223	0		916	6	141	94	0		241	16	166	100	0		282	145	189	6	0		340	1779
% Cars	99.8	98.6	98.2	0		99.2	100	99.3	98.9	0		99.2	100	98.2	99	0		98.6	99.3	99	100	0		99.1	99.1
Trucks	1	2	4	0		7	0	1	1	0		2	0	3	1	0		4	1	2	0	0		3	16
% Trucks	0.2	1.4	1.8	0		0.8	0	0.7	1.1	0		0.8	0	1.8	1	0		1.4	0.7	1	0	0		0.9	0.9
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:45:00
To:	18:00:00	To:	17:45:00

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	508	620	1128
Trucks	3	3	6
Bicycles	0	0	0
	511	**623**	**1134**

Sixth Line

Bicycles	0	0	0	0
Trucks	0	1	2	0
Cars	166	172	170	0
Totals	**166**	**173**	**172**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	628	354	982
Trucks	1	5	6
Bicycles	0	1	1
	629	**360**	**989**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	128	**128**
0	2	136	**138**
0	0	6	**6**

Peds: 0

N
W E
S

Peds: 0

William Halton Pkwy

Totals	Cars	Trucks	Bicycles
0	0	0	0
343	343	0	0
227	226	1	0
59	59	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	270	397	667
Trucks	2	1	3
Bicycles	0	0	0
	272	**398**	**670**

Totals	**5**	**152**	**50**	**0**
Cars	5	149	48	0
Trucks	0	3	1	0
Bicycles	0	0	1	0

Sixth Line

South Approach

	Out	In	Total
Cars	202	237	439
Trucks	4	1	5
Bicycles	1	0	1
	207	**238**	**445**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Sixth Line
Site Code: 2401100003
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
16:45	37	38	40	0	0	115	2	38	10	0	0	50	17	56	104	0	0	177	32	28	1	0	0	61	403
17:00	51	44	45	0	0	140	0	33	18	0	0	51	13	46	86	0	0	145	41	36	2	0	0	79	415
17:15	46	52	40	0	0	138	2	41	13	0	0	56	14	55	66	0	0	135	30	34	0	0	0	64	393
17:30	38	39	41	0	0	118	1	40	9	0	0	50	15	70	87	0	0	172	25	40	3	0	0	68	408
Grand Total	**172**	**173**	**166**	**0**	**0**	**511**	**5**	**152**	**50**	**0**	**0**	**207**	**59**	**227**	**343**	**0**	**0**	**629**	**128**	**138**	**6**	**0**	**0**	**272**	**1619**
Approach %	33.7	33.9	32.5	0		-	2.4	73.4	24.2	0		-	9.4	36.1	54.5	0		-	47.1	50.7	2.2	0		-	
Totals %	10.6	10.7	10.3	0		31.6	0.3	9.4	3.1	0		12.8	3.6	14	21.2	0		38.9	7.9	8.5	0.4	0		16.8	
PHF	**0.84**	**0.83**	**0.92**	**0**		**0.91**	**0.63**	**0.93**	**0.69**	**0**		**0.92**	**0.87**	**0.81**	**0.82**	**0**		**0.89**	**0.78**	**0.86**	**0.5**	**0**		**0.86**	**0.98**
Cars	170	172	166	0		508	5	149	48	0		202	59	226	343	0		628	128	136	6	0		270	1608
% Cars	98.8	99.4	100	0		99.4	100	98	96	0		97.6	100	99.6	100	0		99.8	100	98.6	100	0		99.3	99.3
Trucks	2	1	0	0		3	0	3	1	0		4	0	1	0	0		1	0	2	0	0		2	10
% Trucks	1.2	0.6	0	0		0.6	0	2	2	0		1.9	0	0.4	0	0		0.2	0	1.4	0	0		0.7	0.6
Bicycles	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	0	0	2	0		0.5	0	0	0	0		0	0	0	0	0		0	0.1
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-011 - CGH Transportation

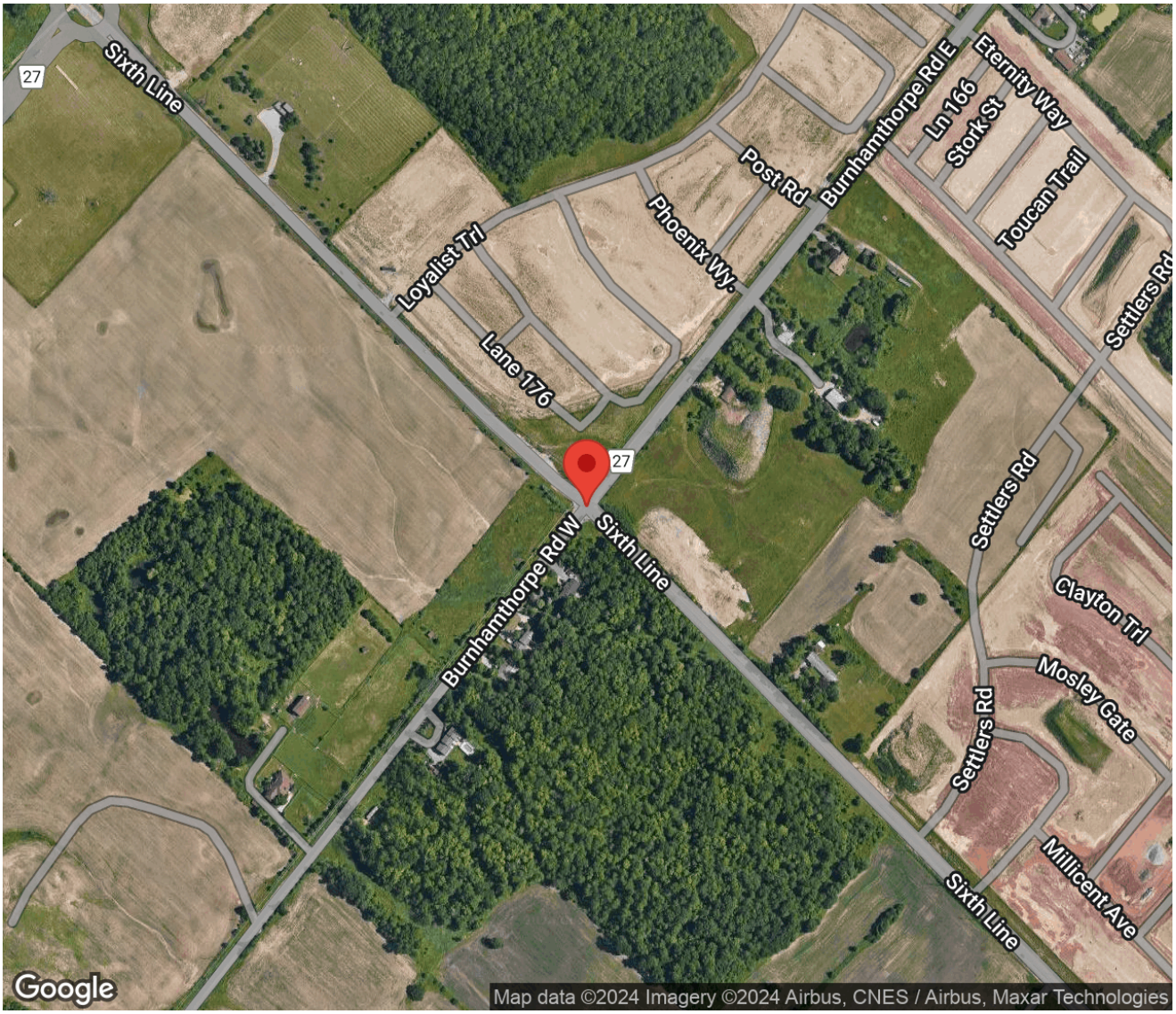
Intersection Count Report

Intersection:	Burnhamthorpe Rd & Sixth Line
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100004
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Burnhamthorpe Rd & Sixth Line
Site Code:	2401100004
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

Sixth Line - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	12	100	3	4	119	0	2	168	31	0	201	0	320
08:00 - 09:00	20	160	3	0	183	0	15	203	70	0	288	0	471
BREAK													
16:00 - 17:00	15	167	8	0	190	0	10	179	67	1	257	0	447
17:00 - 18:00	10	208	11	0	229	0	7	182	62	0	251	0	480
GRAND TOTAL	**57**	**635**	**25**	**4**	**721**	**0**	**34**	**732**	**230**	**1**	**997**	**0**	**1718**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

Burnhamthorpe Rd - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	36	23	5	3	67	0	2	14	2	0	18	0	85
08:00 - 09:00	45	54	9	3	111	0	2	32	12	0	46	0	157
BREAK													
16:00 - 17:00	43	45	18	0	106	0	6	18	3	0	27	0	133
17:00 - 18:00	57	39	21	0	117	0	4	16	9	0	29	0	146
GRAND TOTAL	**181**	**161**	**53**	**6**	**401**	**0**	**14**	**80**	**26**	**0**	**120**	**0**	**521**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	1	14	0	0	15	1	0	0	0	1	0	0	0	0	0	0
07:15	4	18	3	0	25	0	0	0	1	1	0	0	0	0	0	0
07:30	4	39	0	0	43	0	0	0	1	1	0	0	0	0	0	0
07:45	2	29	0	1	32	0	0	0	1	1	0	0	0	0	0	0
08:00	4	40	1	0	45	0	0	0	0	0	0	0	0	0	0	0
08:15	3	35	2	0	40	0	0	0	0	0	0	0	0	0	0	0
08:30	6	33	0	0	39	1	1	0	0	2	0	0	0	0	0	0
08:45	6	48	0	0	54	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	30	256	6	1	293	2	4	0	3	9	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	4	30	2	0	36	0	0	0	0	0	0	0	0	0	0	0
16:15	2	38	4	0	44	0	1	0	0	1	0	0	0	0	0	0
16:30	6	46	0	0	52	0	0	0	0	0	0	0	0	0	0	0
16:45	3	52	2	0	57	0	0	0	0	0	0	0	0	0	0	0
17:00	4	49	4	0	57	0	0	0	0	0	0	0	0	0	0	0
17:15	2	56	4	0	62	0	1	0	0	1	0	0	0	0	0	0
17:30	2	50	2	0	54	0	0	0	0	0	0	0	0	0	0	0
17:45	1	52	1	0	54	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	24	373	19	0	416	1	2	0	0	3	0	0	0	0	0	0
GRAND TOTAL	**54**	**629**	**25**	**1**	**709**	**3**	**6**	**0**	**3**	**12**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	25	2	0	27	0	1	0	0	1	0	0	0	0	0	0
07:15	0	40	5	0	45	0	0	0	0	0	0	0	0	0	0	0
07:30	0	48	6	0	54	0	0	0	0	0	0	0	0	0	0	0
07:45	2	54	17	0	73	0	0	1	0	1	0	0	0	0	0	0
08:00	4	39	14	0	57	0	0	1	0	1	0	0	0	0	0	0
08:15	7	68	13	0	88	0	1	0	0	1	0	0	0	0	0	0
08:30	4	56	25	0	85	0	0	0	0	0	0	0	0	0	0	0
08:45	0	39	14	0	53	0	0	3	0	3	0	0	0	0	0	0
SUBTOTAL	17	369	96	0	482	0	2	5	0	7	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	6	44	9	0	59	0	0	1	0	1	0	0	0	0	0	0
16:15	0	46	17	0	63	0	1	1	0	2	0	0	0	0	0	0
16:30	4	43	19	0	66	0	0	1	0	1	0	0	0	0	0	0
16:45	0	45	19	1	65	0	0	0	0	0	0	0	0	0	0	0
17:00	1	44	18	0	63	0	1	0	0	1	0	0	0	0	0	0
17:15	2	45	15	0	62	0	0	1	0	1	0	0	0	0	0	0
17:30	3	44	11	0	58	0	0	0	0	0	0	0	0	0	0	0
17:45	1	47	17	0	65	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	17	358	125	1	501	0	3	4	0	7	0	0	0	0	0	0
GRAND TOTAL	**34**	**727**	**221**	**1**	**983**	**0**	**5**	**9**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	8	8	1	0	17	2	1	0	0	3	0	0	0	0	0	0
07:15	7	2	1	0	10	3	1	0	1	5	0	0	0	0	0	0
07:30	7	2	1	0	10	1	3	0	1	5	0	0	0	0	0	0
07:45	7	5	2	0	14	1	1	0	1	3	0	0	0	0	0	0
08:00	10	6	1	0	17	0	0	1	1	2	0	0	0	0	0	0
08:15	10	13	6	0	29	2	2	0	1	5	0	0	0	0	0	0
08:30	9	19	0	0	28	0	0	0	1	1	0	0	0	0	0	0
08:45	13	14	1	0	28	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	71	69	13	0	153	10	8	1	6	25	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	9	9	1	0	19	0	1	0	0	1	0	0	0	0	0	0
16:15	6	8	5	0	19	0	0	0	0	0	0	0	0	0	0	0
16:30	17	13	6	0	36	0	1	0	0	1	0	0	0	0	0	0
16:45	11	13	5	0	29	0	0	1	0	1	0	0	0	0	0	0
17:00	11	9	2	0	22	0	0	2	0	2	0	0	0	0	0	0
17:15	15	6	11	0	32	0	0	0	0	0	0	0	0	0	0	0
17:30	19	12	4	0	35	0	0	0	0	0	0	0	0	0	0	0
17:45	12	12	2	0	26	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	100	82	36	0	218	0	2	3	0	5	0	0	0	0	0	0
GRAND TOTAL	**171**	**151**	**49**	**0**	**371**	**10**	**10**	**4**	**6**	**30**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:15	2	3	1	0	6	0	0	0	0	0	0	0	0	0	0	0
07:30	0	5	0	0	5	0	1	0	0	1	0	0	0	0	0	0
07:45	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0
08:00	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0
08:15	1	4	4	0	9	0	0	0	0	0	0	0	0	0	0	0
08:30	1	16	4	0	21	0	0	0	0	0	0	0	0	0	0	0
08:45	0	8	3	0	11	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	4	45	14	0	63	0	1	0	0	1	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	2	4	1	0	7	0	0	0	0	0	0	0	0	0	0	0
16:15	0	7	1	0	8	0	2	0	0	2	0	0	0	0	0	0
16:30	3	2	1	0	6	0	0	0	0	0	0	0	0	0	0	0
16:45	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0
17:00	1	4	4	0	9	0	0	0	0	0	0	0	0	0	0	0
17:15	2	8	3	0	13	0	0	0	0	0	0	0	0	0	0	0
17:30	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0
17:45	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	10	32	12	0	54	0	2	0	0	2	0	0	0	0	0	0
GRAND TOTAL	**14**	**77**	**26**	**0**	**117**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	178	212	390
Trucks	5	2	7
Bicycles	0	0	0
	183	**214**	**397**

Sixth Line

Bicycles	0	0	0	0
Trucks	0	4	1	0
Cars	3	156	19	0
Totals	**3**	**160**	**20**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	102	117	219
Trucks	9	8	17
Bicycles	0	0	0
	111	**125**	**236**

Burnhamthorpe Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	0	2	**2**	
0	0	32	**32**	
0	0	12	**12**	

Peds: 0



Peds: 0

Burnhamthorpe Rd

	Totals	Cars	Trucks	Bicycles
	3	0	3	0
	9	8	1	0
	54	52	2	0
	45	42	3	0

Peds: 0

West Approach

	Out	In	Total
Cars	46	70	116
Trucks	0	2	2
Bicycles	0	0	0
	46	**72**	**118**

Sixth Line

Totals	**15**	**203**	**70**	**0**
Cars	15	202	66	0
Trucks	0	1	4	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	283	210	493
Trucks	5	7	12
Bicycles	0	0	0
	288	**217**	**505**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach Burnhamthorpe Rd						West Approach Burnhamthorpe Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	4	40	1	0	0	45	4	39	15	0	0	58	10	6	2	1	0	19	0	4	1	0	0	5	127
08:15	3	35	2	0	0	40	7	69	13	0	0	89	12	15	6	1	0	34	1	4	4	0	0	9	172
08:30	7	34	0	0	0	41	4	56	25	0	0	85	9	19	0	1	0	29	1	16	4	0	0	21	176
08:45	6	51	0	0	0	57	0	39	17	0	0	56	14	14	1	0	0	29	0	8	3	0	0	11	153
Grand Total	**20**	**160**	**3**	**0**	**0**	**183**	**15**	**203**	**70**	**0**	**0**	**288**	**45**	**54**	**9**	**3**	**0**	**111**	**2**	**32**	**12**	**0**	**0**	**46**	**628**
Approach %	10.9	87.4	1.6	0		-	5.2	70.5	24.3	0		-	40.5	48.6	8.1	2.7		-	4.3	69.6	26.1	0		-	
Totals %	3.2	25.5	0.5	0		29.1	2.4	32.3	11.1	0		45.9	7.2	8.6	1.4	0.5		17.7	0.3	5.1	1.9	0		7.3	
PHF	**0.71**	**0.78**	**0.38**	**0**		**0.8**	**0.54**	**0.74**	**0.7**	**0**		**0.81**	**0.8**	**0.71**	**0.38**	**0.75**		**0.82**	**0.5**	**0.5**	**0.75**	**0**		**0.55**	**0.89**
Cars	19	156	3	0		178	15	202	66	0		283	42	52	8	0		102	2	32	12	0		46	609
% Cars	95	97.5	100	0		97.3	100	99.5	94.3	0		98.3	93.3	96.3	88.9	0		91.9	100	100	100	0		100	97
Trucks	1	4	0	0		5	0	1	4	0		5	3	2	1	3		9	0	0	0	0		0	19
% Trucks	5	2.5	0	0		2.7	0	0.5	5.7	0		1.7	6.7	3.7	11.1	100		8.1	0	0	0	0		0	3
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:30:00
To:	18:00:00	To:	17:30:00

Intersection: Burnhamthorpe Rd & Sixth Line
Site Code: 2401100004
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	228	208	436
Trucks	1	4	5
Bicycles	0	0	0
	229	**212**	**441**

Sixth Line

Bicycles	0	0	0	0
Trucks	0	1	0	0
Cars	10	203	15	0
Totals	**10**	**204**	**15**	**0**

East Approach

	Out	In	Total
Cars	119	103	222
Trucks	4	2	6
Bicycles	0	0	0
	123	**105**	**228**

Peds: 0

Burnhamthorpe Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	0	7	**7**	
0	0	17	**17**	
0	0	8	**8**	

Peds: 0



Peds: 0

Burnhamthorpe Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
27	24	3	0
42	41	1	0
54	54	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	32	58	90
Trucks	0	1	1
Bicycles	0	0	0
	32	**59**	**91**

Sixth Line

Totals	**7**	**178**	**73**	**1**
Cars	7	177	71	1
Trucks	0	1	2	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	256	266	522
Trucks	3	1	4
Bicycles	0	0	0
	259	**267**	**526**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection:	Burnhamthorpe Rd & Sixth Line
Site Code:	2401100004
Count Date:	Jan 17, 2024
Period:	16:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach Burnhamthorpe Rd						West Approach Burnhamthorpe Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:30	6	46	0	0	0	52	4	43	20	0	0	67	17	14	6	0	0	37	3	2	1	0	0	6	162
16:45	3	52	2	0	0	57	0	45	19	1	0	65	11	13	6	0	0	30	1	3	0	0	0	4	156
17:00	4	49	4	0	0	57	1	45	18	0	0	64	11	9	4	0	0	24	1	4	4	0	0	9	154
17:15	2	57	4	0	0	63	2	45	16	0	0	63	15	6	11	0	0	32	2	8	3	0	0	13	171
Grand Total	**15**	**204**	**10**	**0**	**0**	**229**	**7**	**178**	**73**	**1**	**0**	**259**	**54**	**42**	**27**	**0**	**0**	**123**	**7**	**17**	**8**	**0**	**0**	**32**	**643**
Approach %	6.6	89.1	4.4	0		-	2.7	68.7	28.2	0.4		-	43.9	34.1	22	0		-	21.9	53.1	25	0		-	
Totals %	2.3	31.7	1.6	0		35.6	1.1	27.7	11.4	0.2		40.3	8.4	6.5	4.2	0		19.1	1.1	2.6	1.2	0		5	
PHF	**0.63**	**0.89**	**0.63**	**0**		**0.91**	**0.44**	**0.99**	**0.91**	**0.25**		**0.97**	**0.79**	**0.75**	**0.61**	**0**		**0.83**	**0.58**	**0.53**	**0.5**	**0**		**0.62**	**0.94**
Cars	15	203	10	0		228	7	177	71	1		256	54	41	24	0		119	7	17	8	0		32	635
% Cars	100	99.5	100	0		99.6	100	99.4	97.3	100		98.8	100	97.6	88.9	0		96.7	100	100	100	0		100	98.8
Trucks	0	1	0	0		1	0	1	2	0		3	0	1	3	0		4	0	0	0	0		0	8
% Trucks	0	0.5	0	0		0.4	0	0.6	2.7	0		1.2	0	2.4	11.1	0		3.3	0	0	0	0		0	1.2
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
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Project #24-011 - CGH Transportation

Intersection Count Report

Intersection:	Trafalgar Rd & Dundas St E
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100005
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Trafalgar Rd & Dundas St E
Site Code:	2401100005
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Trafalgar Rd & Dundas St E
Site Code:	2401100005
Municipality:	Oakville
Count Date:	Jan 17, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	131	541	117	0	789	4	65	341	48	2	456	12	1245
08:00 - 09:00	176	739	145	0	1060	4	161	486	93	2	742	2	1802
BREAK													
16:00 - 17:00	137	432	148	3	720	5	250	725	151	8	1134	17	1854
17:00 - 18:00	136	537	205	1	879	2	278	745	137	5	1165	10	2044
GRAND TOTAL	**580**	**2249**	**615**	**4**	**3448**	**15**	**754**	**2297**	**429**	**17**	**3497**	**41**	**6945**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Dundas St E
Site Code:	2401100005
Municipality:	Oakville
Count Date:	Jan 17, 2024

Dundas St E - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	116	517	93	1	727	8	179	1426	164	1	1770	7	2497
08:00 - 09:00	153	732	134	2	1021	3	259	1678	203	3	2143	6	3164
BREAK													
16:00 - 17:00	219	1336	177	2	1734	4	243	1004	163	6	1416	12	3150
17:00 - 18:00	211	1313	170	0	1694	2	246	1025	172	10	1453	9	3147
GRAND TOTAL	**699**	**3898**	**574**	**5**	**5176**	**17**	**927**	**5133**	**702**	**20**	**6782**	**34**	**11958**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	27	80	27	0	134	0	6	0	0	6	0	0	0	0	0	1
07:15	31	91	32	0	154	3	4	3	0	10	0	0	0	0	0	1
07:30	32	146	28	0	206	1	10	2	0	13	0	0	0	0	0	2
07:45	37	199	22	0	258	0	5	3	0	8	0	0	0	0	0	0
08:00	33	159	34	0	226	0	5	1	0	6	0	0	0	0	0	3
08:15	47	179	31	0	257	3	7	1	0	11	0	0	0	0	0	0
08:30	39	198	35	0	272	3	5	0	0	8	0	0	0	0	0	1
08:45	50	182	41	0	273	1	4	2	0	7	0	0	0	0	0	0
SUBTOTAL	296	1234	250	0	1780	11	46	12	0	69	0	0	0	0	0	8

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	30	95	32	0	157	4	2	4	0	10	0	0	0	0	0	0
16:15	30	100	36	0	166	1	5	0	0	6	0	0	0	0	0	2
16:30	42	117	34	1	194	0	2	0	0	2	0	0	0	0	0	1
16:45	28	111	41	2	182	2	0	1	0	3	0	0	0	0	0	2
17:00	34	133	51	0	218	0	3	0	0	3	0	0	0	0	0	1
17:15	32	115	49	0	196	3	1	0	0	4	0	0	0	0	0	1
17:30	27	146	45	0	218	2	5	0	0	7	0	0	0	0	0	0
17:45	38	134	58	1	231	0	0	2	0	2	0	0	0	0	0	0
SUBTOTAL	261	951	346	4	1562	12	18	7	0	37	0	0	0	0	0	7
GRAND TOTAL	**557**	**2185**	**596**	**4**	**3342**	**23**	**64**	**19**	**0**	**106**	**0**	**0**	**0**	**0**	**0**	**15**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	13	48	11	0	72	1	0	0	0	1	0	0	0	0	0	2
07:15	16	82	8	1	107	1	3	1	0	5	0	0	0	0	0	3
07:30	16	92	9	1	118	0	4	2	0	6	0	0	0	0	0	0
07:45	17	108	15	0	140	1	4	2	0	7	0	0	0	0	0	7
08:00	32	112	16	1	161	1	3	2	0	6	0	0	0	0	0	0
08:15	45	134	29	1	209	0	3	0	0	3	0	0	0	0	0	0
08:30	45	140	27	0	212	2	6	0	0	8	0	0	0	0	0	0
08:45	33	83	19	0	135	3	5	0	0	8	0	0	0	0	0	2
SUBTOTAL	217	799	134	4	1154	9	28	7	0	44	0	0	0	0	0	14

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	64	153	37	4	258	0	3	2	0	5	0	0	0	0	0	3
16:15	56	180	27	2	265	1	2	2	0	5	0	0	0	0	0	7
16:30	73	188	45	2	308	0	4	0	0	4	0	0	0	0	0	0
16:45	55	190	38	0	283	1	5	0	0	6	0	0	0	0	0	7
17:00	61	216	31	3	311	0	3	0	0	3	0	0	0	0	0	5
17:15	72	184	31	1	288	0	3	0	0	3	0	0	0	0	0	3
17:30	78	203	34	0	315	0	2	0	0	2	0	0	0	0	0	1
17:45	67	130	41	1	239	0	4	0	0	4	0	0	0	0	0	1
SUBTOTAL	526	1444	284	13	2267	2	26	4	0	32	0	0	0	0	0	27
GRAND TOTAL	**743**	**2243**	**418**	**17**	**3421**	**11**	**54**	**11**	**0**	**76**	**0**	**0**	**0**	**0**	**0**	**41**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Dundas St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	19	123	33	0	175	0	7	0	0	7	0	0	0	0	0	1
07:15	25	114	17	0	156	3	15	1	0	19	0	0	0	0	0	3
07:30	26	114	18	1	159	2	13	1	0	16	0	0	0	0	0	2
07:45	40	123	22	0	185	1	8	1	0	10	0	0	0	0	0	2
08:00	32	157	37	0	226	1	18	2	0	21	0	0	0	0	0	3
08:15	31	162	49	1	243	3	14	2	0	19	0	0	0	0	0	0
08:30	43	168	30	0	241	2	9	1	0	12	0	0	0	0	0	0
08:45	40	194	12	1	247	1	10	1	0	12	0	0	0	0	0	0
SUBTOTAL	256	1155	218	3	1632	13	94	9	0	116	0	0	0	0	0	11

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Dundas St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	53	312	40	1	406	1	10	0	0	11	0	0	0	0	0	0
16:15	53	349	46	0	448	1	11	2	0	14	0	0	0	0	0	2
16:30	55	332	53	1	441	2	8	3	0	13	0	0	0	0	0	1
16:45	53	310	33	0	396	1	4	0	0	5	0	0	0	0	0	1
17:00	52	300	37	0	389	1	0	0	0	1	0	0	0	0	0	1
17:15	45	368	63	0	476	1	1	0	0	2	0	0	0	0	0	1
17:30	52	313	32	0	397	2	2	2	0	6	0	0	0	0	0	0
17:45	57	329	36	0	422	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	420	2613	340	2	3375	10	36	7	0	53	0	0	0	0	0	6
GRAND TOTAL	**676**	**3768**	**558**	**5**	**5007**	**23**	**130**	**16**	**0**	**169**	**0**	**0**	**0**	**0**	**0**	**17**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Dundas St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	43	292	31	0	366	0	5	0	0	5	0	0	0	0	0	0
07:15	30	297	29	0	356	0	12	1	0	13	0	0	0	0	0	1
07:30	49	387	51	1	488	0	7	2	0	9	0	0	0	0	0	1
07:45	57	422	50	0	529	0	4	0	0	4	0	0	0	0	0	5
08:00	70	404	48	2	524	3	3	2	0	8	0	0	0	0	0	1
08:15	67	417	54	0	538	0	11	2	0	13	0	0	0	0	0	0
08:30	62	390	40	1	493	1	8	2	0	11	0	0	0	0	0	0
08:45	55	437	55	0	547	1	8	0	0	9	0	0	0	0	0	5
SUBTOTAL	433	3046	358	4	3841	5	58	9	0	72	0	0	0	0	0	13

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Dundas St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	63	214	41	3	321	2	12	0	0	14	0	0	0	0	0	0
16:15	63	244	35	1	343	3	12	0	0	15	0	0	0	0	0	10
16:30	55	222	44	2	323	1	5	0	0	6	0	0	0	0	0	1
16:45	56	283	43	0	382	0	12	0	0	12	0	0	0	0	0	1
17:00	56	285	41	0	382	1	6	0	0	7	0	0	0	0	0	3
17:15	73	255	36	4	368	0	8	0	0	8	0	0	0	0	0	1
17:30	55	223	48	2	328	0	2	0	0	2	0	0	0	0	0	3
17:45	61	242	47	4	354	0	4	0	0	4	0	0	0	0	0	2
SUBTOTAL	482	1968	335	16	2801	7	61	0	0	68	0	0	0	0	0	21
GRAND TOTAL	**915**	**5014**	**693**	**20**	**6642**	**12**	**119**	**9**	**0**	**140**	**0**	**0**	**0**	**0**	**0**	**34**

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dundas St E runs E/W

North Approach

	Out	In	Total
Cars	1028	851	1879
Trucks	32	28	60
Bicycles	0	0	0
	1060	**879**	**1939**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	4	21	7	0
Cars	141	718	169	0
Totals	**145**	**739**	**176**	**0**

East Approach

	Out	In	Total
Cars	957	1910	2867
Trucks	64	39	103
Bicycles	0	0	0
	1021	**1949**	**2970**

Peds: 4

Dundas St E

Bicycles	Trucks	Cars	Totals
0	0	3	**3**
0	5	254	**259**
0	30	1648	**1678**
0	6	197	**203**

Peds: 6



Peds: 3

Dundas St E

Totals	Cars	Trucks	Bicycles
2	2	0	0
134	128	6	0
732	681	51	0
153	146	7	0

Peds: 2

West Approach

	Out	In	Total
Cars	2102	980	3082
Trucks	41	61	102
Bicycles	0	0	0
	2143	**1041**	**3184**

Trafalgar Rd

Totals	**161**	**486**	**93**	**2**
Cars	155	469	91	2
Trucks	6	17	2	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	717	1063	1780
Trucks	25	34	59
Bicycles	0	0	0
	742	**1097**	**1839**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Dundas St E						West Approach Dundas St E						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
08:00	33	164	35	0	3	232	33	115	18	1	0	167	33	175	39	0	3	247	73	407	50	2	1	532	1178
08:15	50	186	32	0	0	268	45	137	29	1	0	212	34	176	51	1	0	262	67	428	56	0	0	551	1293
08:30	42	203	35	0	1	280	47	146	27	0	0	220	45	177	31	0	0	253	63	398	42	1	0	504	1257
08:45	51	186	43	0	0	280	36	88	19	0	2	143	41	204	13	1	0	259	56	445	55	0	5	556	1238
Grand Total	**176**	**739**	**145**	**0**	**4**	**1060**	**161**	**486**	**93**	**2**	**2**	**742**	**153**	**732**	**134**	**2**	**3**	**1021**	**259**	**1678**	**203**	**3**	**6**	**2143**	**4966**
Approach %	16.6	69.7	13.7	0		-	21.7	65.5	12.5	0.3		-	15	71.7	13.1	0.2		-	12.1	78.3	9.5	0.1		-	
Totals %	3.5	14.9	2.9	0		21.3	3.2	9.8	1.9	0		14.9	3.1	14.7	2.7	0		20.6	5.2	33.8	4.1	0.1		43.2	
PHF	**0.86**	**0.91**	**0.84**	**0**		**0.95**	**0.86**	**0.83**	**0.8**	**0.5**		**0.84**	**0.85**	**0.9**	**0.66**	**0.5**		**0.97**	**0.89**	**0.94**	**0.91**	**0.38**		**0.96**	**0.96**
Cars	169	718	141	0		1028	155	469	91	2		717	146	681	128	2		957	254	1648	197	3		2102	4804
% Cars	96	97.2	97.2	0		97	96.3	96.5	97.8	100		96.6	95.4	93	95.5	100		93.7	98.1	98.2	97	100		98.1	96.7
Trucks	7	21	4	0		32	6	17	2	0		25	7	51	6	0		64	5	30	6	0		41	162
% Trucks	4	2.8	2.8	0		3	3.7	3.5	2.2	0		3.4	4.6	7	4.5	0		6.3	1.9	1.8	3	0		1.9	3.3
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					4	-					2	-					3	-					6	-	15
% Peds					26.7	-					13.3	-					20	-					40	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:30:00
To:	18:00:00	To:	17:30:00

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dundas St E runs E/W

North Approach

	Out	In	Total
Cars	790	1207	1997
Trucks	12	20	32
Bicycles	0	0	0
	802	**1227**	**2029**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	1	6	5	0
Cars	175	476	136	3
Totals	**176**	**482**	**141**	**3**

East Approach

	Out	In	Total
Cars	1702	1327	3029
Trucks	21	36	57
Bicycles	0	0	0
	1723	**1363**	**3086**

Peds: 5

Dundas St E

Bicycles	Trucks	Cars	Totals	
0	0	6	**6**	
0	2	240	**242**	
0	31	1045	**1076**	
0	0	164	**164**	

Peds: 6



Peds: 4

Dundas St E

	Totals	Cars	Trucks	Bicycles
	1	1	0	0
	189	186	3	0
	1323	1310	13	0
	210	205	5	0

Peds: 15

West Approach

	Out	In	Total
Cars	1455	1752	3207
Trucks	33	15	48
Bicycles	0	0	0
	1488	**1767**	**3255**

Totals	**262**	**793**	**145**	**6**
Cars	261	778	145	6
Trucks	1	15	0	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	1190	851	2041
Trucks	16	11	27
Bicycles	0	0	0
	1206	**862**	**2068**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Dundas St E
Site Code: 2401100005
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Dundas St E						West Approach Dundas St E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:30	42	119	34	1	1	196	73	192	45	2	0	312	57	340	56	1	1	454	56	227	44	2	1	329	1291
16:45	30	111	42	2	2	185	56	195	38	0	7	289	54	314	33	0	1	401	56	295	43	0	1	394	1269
17:00	34	136	51	0	1	221	61	219	31	3	5	314	53	300	37	0	1	390	57	291	41	0	3	389	1314
17:15	35	116	49	0	1	200	72	187	31	1	3	291	46	369	63	0	1	478	73	263	36	4	1	376	1345
Grand Total	**141**	**482**	**176**	**3**	**5**	**802**	**262**	**793**	**145**	**6**	**15**	**1206**	**210**	**1323**	**189**	**1**	**4**	**1723**	**242**	**1076**	**164**	**6**	**6**	**1488**	**5219**
Approach %	17.6	60.1	21.9	0.4		-	21.7	65.8	12	0.5		-	12.2	76.8	11	0.1		-	16.3	72.3	11	0.4		-	
Totals %	2.7	9.2	3.4	0.1		15.4	5	15.2	2.8	0.1		23.1	4	25.3	3.6	0		33	4.6	20.6	3.1	0.1		28.5	
PHF	**0.84**	**0.89**	**0.86**	**0.38**		**0.91**	**0.9**	**0.91**	**0.81**	**0.5**		**0.96**	**0.92**	**0.9**	**0.75**	**0.25**		**0.9**	**0.83**	**0.91**	**0.93**	**0.38**		**0.94**	**0.97**
Cars	136	476	175	3		790	261	778	145	6		1190	205	1310	186	1		1702	240	1045	164	6		1455	5137
% Cars	96.5	98.8	99.4	100		98.5	99.6	98.1	100	100		98.7	97.6	99	98.4	100		98.8	99.2	97.1	100	100		97.8	98.4
Trucks	5	6	1	0		12	1	15	0	0		16	5	13	3	0		21	2	31	0	0		33	82
% Trucks	3.5	1.2	0.6	0		1.5	0.4	1.9	0	0		1.3	2.4	1	1.6	0		1.2	0.8	2.9	0	0		2.2	1.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					5	-					15	-					4	-					6	-	30
% Peds					16.7	-					50	-					13.3	-					20	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-011 - CGH Transportation

Intersection Count Report

Intersection:	William Halton Pkwy & Burnhamthorpe Rd
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100006
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
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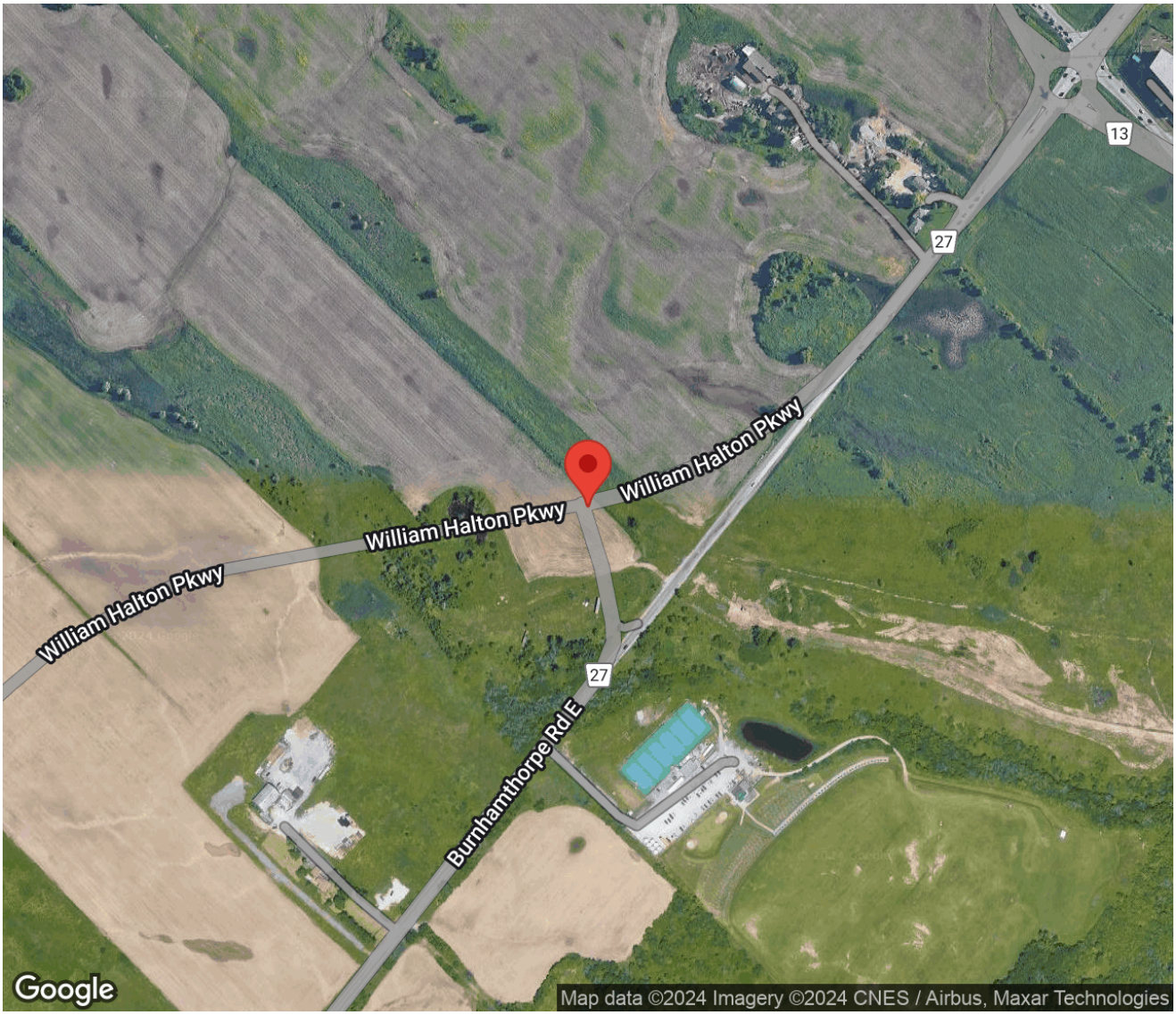
Traffic Count Map

Intersection:	William Halton Pkwy & Burnhamthorpe Rd
Site Code:	2401100006
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

Burnhamthorpe Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	0	0	0	0	0	0	103	0	103	0	103
08:00 - 09:00	0	0	0	0	0	0	0	0	198	0	198	0	198
BREAK													
16:00 - 17:00	0	0	0	0	0	0	0	0	173	0	173	0	173
17:00 - 18:00	0	0	0	0	0	0	0	0	173	0	173	0	173
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**647**	**0**	**647**	**0**	**647**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

William Halton Pkwy - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	48	218	0	0	266	0	0	586	0	0	586	0	852
08:00 - 09:00	124	277	0	0	401	0	0	752	1	0	753	0	1154
BREAK													
16:00 - 17:00	114	712	0	0	826	0	0	363	1	0	364	0	1190
17:00 - 18:00	140	809	0	0	949	0	0	338	1	0	339	0	1288
GRAND TOTAL	**426**	**2016**	**0**	**0**	**2442**	**0**	**0**	**2039**	**3**	**0**	**2042**	**0**	**4484**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	0	19	0	19	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	27	0	27	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	42	0	42	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	37	0	37	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	45	0	45	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	61	0	61	0	0	1	0	1	0	0	0	0	0	0
08:45	0	0	53	0	53	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	0	0	299	0	299	0	0	2	0	2	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Burnhamthorpe Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	0	0	46	0	46	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	40	0	40	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	49	0	49	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	37	0	37	0	0	1	0	1	0	0	0	0	0	0
17:00	0	0	28	0	28	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	45	0	45	0	0	1	0	1	0	0	0	0	0	0
17:30	0	0	57	0	57	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	41	0	41	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	0	0	343	0	343	0	0	3	0	3	0	0	0	0	0	0
GRAND TOTAL	0	0	642	0	642	0	0	5	0	5	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	10	39	0	0	49	2	9	0	0	11	0	0	0	0	0	0
07:15	11	53	0	0	64	0	8	0	0	8	0	0	0	0	0	0
07:30	13	57	0	0	70	0	3	0	0	3	0	0	0	0	0	0
07:45	12	43	0	0	55	0	6	0	0	6	0	0	0	0	0	0
08:00	20	61	0	0	81	2	2	0	0	4	0	0	0	0	0	0
08:15	21	71	0	0	92	1	4	0	0	5	0	0	0	0	0	0
08:30	38	70	0	0	108	0	0	0	0	0	0	0	0	0	0	0
08:45	40	66	0	0	106	2	3	0	0	5	0	0	0	0	0	0
SUBTOTAL	165	460	0	0	625	7	35	0	0	42	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	26	174	0	0	200	2	10	0	0	12	0	0	0	0	0	0
16:15	29	125	0	0	154	1	0	0	0	1	0	0	0	0	0	0
16:30	29	163	0	0	192	0	2	0	0	2	0	0	0	0	0	0
16:45	27	235	0	0	262	0	3	0	0	3	0	0	0	0	0	0
17:00	32	213	0	0	245	1	4	0	0	5	0	0	0	0	0	0
17:15	42	220	0	0	262	0	0	0	0	0	0	0	0	0	0	0
17:30	32	214	0	0	246	0	0	0	0	0	0	0	0	0	0	0
17:45	33	158	0	0	191	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	250	1502	0	0	1752	4	19	0	0	23	0	0	0	0	0	0
GRAND TOTAL	**415**	**1962**	**0**	**0**	**2377**	**11**	**54**	**0**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	86	0	0	86	0	2	0	0	2	0	0	0	0	0	0
07:15	0	110	0	0	110	0	1	0	0	1	0	0	0	0	0	0
07:30	0	188	0	0	188	0	4	0	0	4	0	0	0	0	0	0
07:45	0	193	0	0	193	0	2	0	0	2	0	0	0	0	0	0
08:00	0	181	0	0	181	0	2	0	0	2	0	0	0	0	0	0
08:15	0	198	0	0	198	0	2	0	0	2	0	0	0	0	0	0
08:30	0	193	0	0	193	0	5	0	0	5	0	0	0	0	0	0
08:45	0	169	1	0	170	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	0	1318	1	0	1319	0	20	0	0	20	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	0	73	0	0	73	0	7	0	0	7	0	0	0	0	0	0
16:15	0	91	0	0	91	0	5	0	0	5	0	0	0	0	0	0
16:30	0	89	1	0	90	0	1	0	0	1	0	0	0	0	0	0
16:45	0	91	0	0	91	0	6	0	0	6	0	0	0	0	0	0
17:00	0	78	0	0	78	0	2	0	0	2	0	0	0	0	0	0
17:15	0	92	1	0	93	0	4	0	0	4	0	0	0	0	0	0
17:30	0	80	0	0	80	0	2	0	0	2	0	0	0	0	0	0
17:45	0	76	0	0	76	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	0	670	2	0	672	0	31	0	0	31	0	0	0	0	0	0
GRAND TOTAL	**0**	**1988**	**3**	**0**	**1991**	**0**	**51**	**0**	**0**	**51**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	09:00:00	To:	09:00:00

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: William Halton Pkwy runs E/W

East Approach

	Out	In	Total
Cars	387	937	1324
Trucks	14	13	27
Bicycles	0	0	0
	401	**950**	**1351**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	11	741	**752**
0	0	1	**1**

Peds: 0

Peds: 0

Peds: 0



William Halton Pkwy

Totals	Cars	Trucks	Bicycles
0	0	0	0
277	268	9	0
124	119	5	0

West Approach

	Out	In	Total
Cars	742	268	1010
Trucks	11	9	20
Bicycles	0	0	0
	753	**277**	**1030**

Totals	0	198	0
Cars	0	196	0
Trucks	0	2	0
Bicycles	0	0	0

Burnhamthorpe Rd

South Approach

	Out	In	Total
Cars	196	120	316
Trucks	2	5	7
Bicycles	0	0	0
	198	**125**	**323**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach						South Approach Burnhamthorpe Rd						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00					0		0	37	0	0	37		22	63		0	0	85		183	0	0	0	183	305
08:15					0		0	45	0	0	45		22	75		0	0	97		200	0	0	0	200	342
08:30					0		0	62	0	0	62		38	70		0	0	108		198	0	0	0	198	368
08:45					0		0	54	0	0	54		42	69		0	0	111		171	1	0	0	172	337
Grand Total					**0**	**0**	**0**	**198**	**0**	**0**	**198**		**124**	**277**		**0**	**0**	**401**		**752**	**1**	**0**	**0**	**753**	**1352**
Approach %						-	0	100	0		-		30.9	69.1		0		-		99.9	0.1	0		-	
Totals %						0	0	14.6	0		14.6		9.2	20.5		0		29.7		55.6	0.1	0		55.7	
PHF						**0**	**0**	**0.8**	**0**		**0.8**		**0.74**	**0.92**		**0**		**0.9**		**0.94**	**0.25**	**0**		**0.94**	**0.92**
Cars						0	0	196	0		196		119	268		0		387		741	1	0		742	1325
% Cars						0	0	99	0		99		96	96.8		0		96.5		98.5	100	0		98.5	98
Trucks						0	0	2	0		2		5	9		0		14		11	0	0		11	27
% Trucks						0	0	1	0		1		4	3.2		0		3.5		1.5	0	0		1.5	2
Bicycles						0	0	0	0		0		0	0		0		0		0	0	0		0	0
% Bicycles						0	0	0	0		0		0	0		0		0		0	0	0		0	0
Peds					0	-				0	-						0	-					0	-	0
% Peds					0	-				0	-						0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: William Halton Pkwy runs E/W

East Approach

	Out	In	Total
Cars	1015	508	1523
Trucks	8	16	24
Bicycles	0	0	0
	1023	**524**	**1547**

William Halton Pkwy

			Totals
0	0	0	**0**
0	14	341	**355**
0	0	1	**1**

Peds: 0



Peds: 0

Peds: 0

William Halton Pkwy

	Totals			
	0	0	0	0
	889	882	7	0
	134	133	1	0

West Approach

	Out	In	Total
Cars	342	882	1224
Trucks	14	7	21
Bicycles	0	0	0
	356	**889**	**1245**

Totals	0	169	0
Cars	0	167	0
Trucks	0	2	0
Bicycles	0	0	0

Burnhamthorpe Rd

South Approach

	Out	In	Total
Cars	167	134	301
Trucks	2	1	3
Bicycles	0	0	0
	169	**135**	**304**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Burnhamthorpe Rd
Site Code: 2401100006
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach						South Approach Burnhamthorpe Rd						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45					0		0	38	0	0	38		27	238		0	0	265		97	0	0	0	97	400
17:00					0		0	28	0	0	28		33	217		0	0	250		80	0	0	0	80	358
17:15					0		0	46	0	0	46		42	220		0	0	262		96	1	0	0	97	405
17:30					0		0	57	0	0	57		32	214		0	0	246		82	0	0	0	82	385
Grand Total					**0**	**0**	**0**	**169**	**0**	**0**	**169**		**134**	**889**		**0**	**0**	**1023**		**355**	**1**	**0**	**0**	**356**	**1548**
Approach %						-	0	100	0		-		13.1	86.9		0		-		99.7	0.3	0		-	
Totals %						0	0	10.9	0		10.9		8.7	57.4		0		66.1		22.9	0.1	0		23	
PHF						**0**	**0**	**0.74**	**0**		**0.74**		**0.8**	**0.93**		**0**		**0.97**		**0.91**	**0.25**	**0**		**0.92**	**0.96**
Cars						0	0	167	0		167		133	882		0		1015		341	1	0		342	1524
% Cars						0	0	98.8	0		98.8		99.3	99.2		0		99.2		96.1	100	0		96.1	98.4
Trucks						0	0	2	0		2		1	7		0		8		14	0	0		14	24
% Trucks						0	0	1.2	0		1.2		0.7	0.8		0		0.8		3.9	0	0		3.9	1.6
Bicycles						0	0	0	0		0		0	0		0		0		0	0	0		0	0
% Bicycles						0	0	0	0		0		0	0		0		0		0	0	0		0	0
Peds					0	-				0	-						0	-					0	-	0
% Peds					0	-				0	-						0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-140 - CGH Transportation

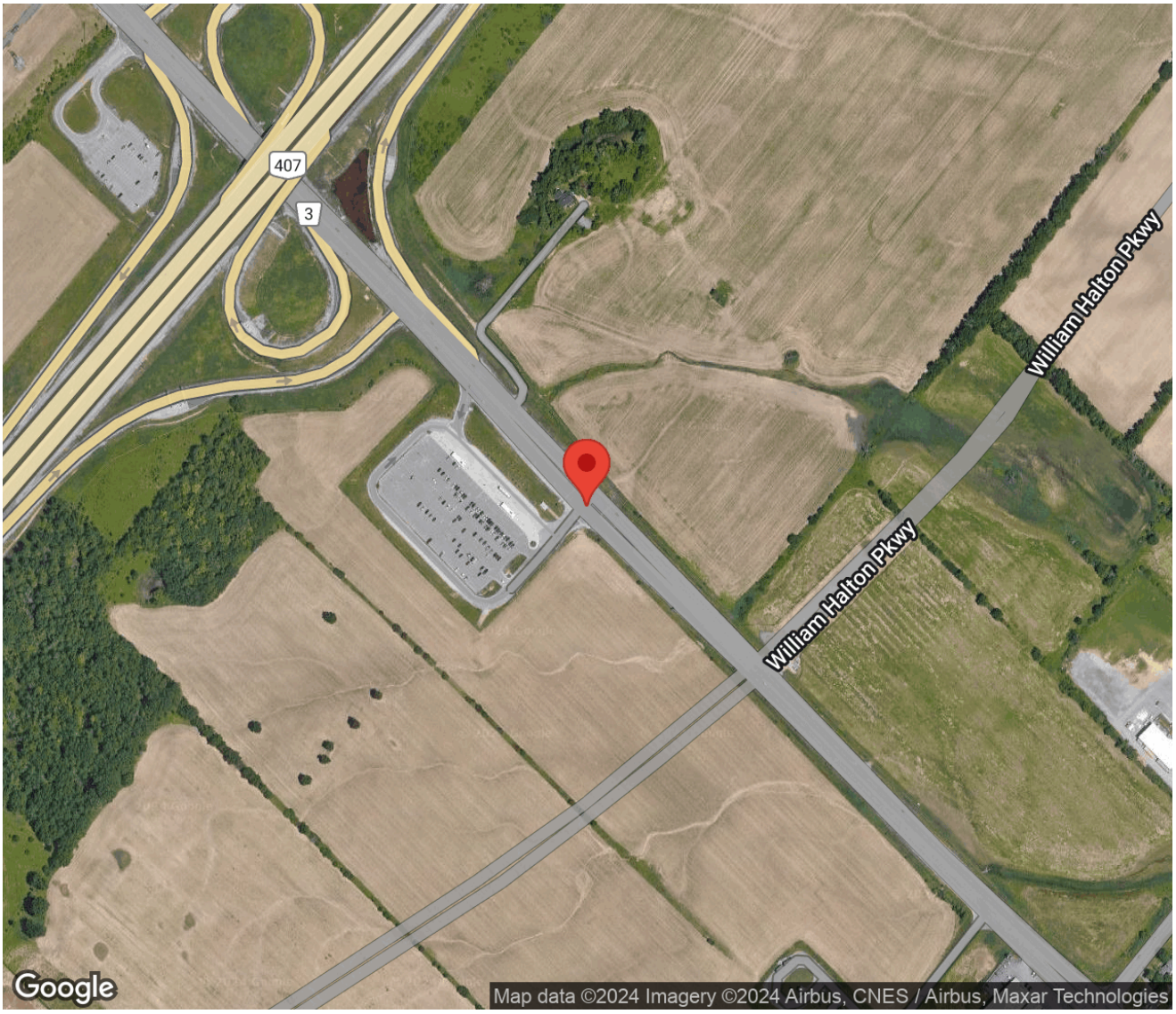
Intersection Count Report

Intersection:	Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Municipality:	Oakville
Count Date:	Thursday, Apr 04, 2024
Site Code:	2414000001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code:	2414000001
Municipality:	Oakville
Count Date:	Apr 04, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code:	2414000001
Municipality:	Oakville
Count Date:	Apr 04, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	812	29	1	842	0	38	757	0	0	795	0	1637
08:00 - 09:00	0	1074	20	0	1094	0	39	948	0	0	987	0	2081
09:00 - 10:00	0	809	21	1	831	0	35	612	0	1	648	0	1479
BREAK													
16:00 - 17:00	0	871	20	0	891	0	18	1373	0	0	1391	0	2282
17:00 - 18:00	0	1045	25	0	1070	0	42	1486	0	0	1528	0	2598
18:00 - 19:00	0	702	18	1	721	0	26	865	0	0	891	0	1612
GRAND TOTAL	**0**	**5313**	**133**	**3**	**5449**	**0**	**198**	**6041**	**0**	**1**	**6240**	**0**	**11689**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code:	2414000001
Municipality:	Oakville
Count Date:	Apr 04, 2024

4180 Trafalgar Rd Parking Lot (south access) - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	0	0	0	0	39	0	31	0	70	0	70
08:00 - 09:00	0	0	0	0	0	0	29	0	29	0	58	0	58
09:00 - 10:00	0	0	0	0	0	0	23	0	36	0	59	0	59
BREAK													
16:00 - 17:00	0	0	0	0	0	0	40	0	29	0	69	0	69
17:00 - 18:00	0	0	0	0	0	0	48	0	51	0	99	0	99
18:00 - 19:00	0	0	0	0	0	0	37	0	46	0	83	0	83
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**216**	**0**	**222**	**0**	**438**	**0**	**438**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	0	149	7	0	156	0	6	0	0	6	0	0	0	0	0	0
07:15	0	166	10	0	176	0	12	0	0	12	0	0	0	0	0	0
07:30	0	230	9	1	240	0	8	0	0	8	0	0	0	0	0	0
07:45	0	236	3	0	239	0	5	0	0	5	0	0	0	0	0	0
08:00	0	217	10	0	227	0	8	0	0	8	0	0	0	0	0	0
08:15	0	259	2	0	261	0	3	0	0	3	0	0	0	0	0	0
08:30	0	285	4	0	289	0	9	0	0	9	0	0	0	0	0	0
08:45	0	278	4	0	282	0	15	0	0	15	0	0	0	0	0	0
09:00	0	187	8	0	195	0	12	0	0	12	0	0	0	0	0	0
09:15	0	215	3	0	218	0	9	0	0	9	0	0	0	0	0	0
09:30	0	184	5	0	189	0	17	0	0	17	0	0	0	0	0	0
09:45	0	175	5	1	181	0	10	0	0	10	0	0	0	0	0	0
SUBTOTAL	0	2581	70	2	2653	0	114	0	0	114	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	176	6	0	182	0	10	0	0	10	0	0	0	0	0	0
16:15	0	217	5	0	222	0	9	0	0	9	0	0	0	0	0	0
16:30	0	203	4	0	207	0	7	0	0	7	0	0	0	0	0	0
16:45	0	243	5	0	248	0	6	0	0	6	0	0	0	0	0	0
17:00	0	244	7	0	251	0	3	0	0	3	0	0	0	0	0	0
17:15	0	275	5	0	280	0	7	0	0	7	0	0	0	0	0	0
17:30	0	262	8	0	270	0	10	0	0	10	0	0	0	0	0	0
17:45	0	235	5	0	240	0	9	0	0	9	0	0	0	0	0	0
18:00	0	199	3	1	203	0	7	0	0	7	0	0	0	0	0	0
18:15	0	165	4	0	169	0	2	0	0	2	0	0	0	0	0	0
18:30	0	160	6	0	166	0	3	0	0	3	0	0	0	0	0	0
18:45	0	164	4	0	168	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	0	2543	62	1	2606	0	75	1	0	76	0	0	0	0	0	0
GRAND TOTAL	0	5124	132	3	5259	0	189	1	0	190	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
07:00	4	127	0	0	131	0	4	0	0	4	0	0	0	0	0	0
07:15	10	178	0	0	188	2	10	0	0	12	0	0	0	0	0	0
07:30	11	194	0	0	205	2	14	0	0	16	0	0	0	0	0	0
07:45	8	225	0	0	233	1	5	0	0	6	0	0	0	0	0	0
08:00	11	223	0	0	234	0	11	0	0	11	0	0	0	0	0	0
08:15	14	231	0	0	245	1	12	0	0	13	0	0	0	0	0	0
08:30	8	247	0	0	255	2	12	0	0	14	0	0	0	0	0	0
08:45	3	202	0	0	205	0	10	0	0	10	0	0	0	0	0	0
09:00	10	174	0	0	184	1	10	0	0	11	0	0	0	0	0	0
09:15	8	140	0	1	149	1	9	0	0	10	0	0	0	0	0	0
09:30	6	150	0	0	156	2	6	0	0	8	0	0	0	0	0	0
09:45	7	116	0	0	123	0	7	0	0	7	0	0	0	0	0	0
SUBTOTAL	100	2207	0	1	2308	12	110	0	0	122	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	5	297	0	0	302	0	11	0	0	11	0	0	0	0	0	0
16:15	2	336	0	0	338	1	8	0	0	9	0	0	0	0	0	0
16:30	0	345	0	0	345	3	13	0	0	16	0	0	0	0	0	0
16:45	7	359	0	0	366	0	4	0	0	4	0	0	0	0	0	0
17:00	7	396	0	0	403	1	2	0	0	3	0	0	0	0	0	0
17:15	5	400	0	0	405	1	8	0	0	9	0	0	0	0	0	0
17:30	14	378	0	0	392	2	3	0	0	5	0	0	0	0	0	0
17:45	12	293	0	0	305	0	6	0	0	6	0	0	0	0	0	0
18:00	10	229	0	0	239	1	7	0	0	8	0	0	0	0	0	0
18:15	3	212	0	0	215	1	4	0	0	5	0	0	0	0	0	0
18:30	6	199	0	0	205	1	5	0	0	6	0	0	0	0	0	0
18:45	3	204	0	0	207	1	5	0	0	6	0	0	0	0	0	0
SUBTOTAL	74	3648	0	0	3722	12	76	0	0	88	0	0	0	0	0	0
GRAND TOTAL	174	5855	0	1	6030	24	186	0	0	210	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

West Approach - 4180 Trafalgar Rd Parking Lot (south access)

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	3	0	4	0	7	4	0	1	0	5	0	0	0	0	0	0
07:15	8	0	8	0	16	6	0	0	0	6	0	0	0	0	0	0
07:30	6	0	7	0	13	5	0	4	0	9	0	0	0	0	0	0
07:45	3	0	7	0	10	4	0	0	0	4	0	0	0	0	0	0
08:00	3	0	6	0	9	5	0	2	0	7	0	0	0	0	0	0
08:15	3	0	10	0	13	6	0	0	0	6	0	0	0	0	0	0
08:30	3	0	6	0	9	4	0	2	0	6	0	0	0	0	0	0
08:45	1	0	3	0	4	4	0	0	0	4	0	0	0	0	0	0
09:00	2	0	5	0	7	2	0	0	0	2	0	0	0	0	0	0
09:15	0	0	11	0	11	3	0	1	0	4	0	0	0	0	0	0
09:30	2	0	8	0	10	5	0	2	0	7	0	0	0	0	0	0
09:45	4	0	7	0	11	5	0	2	0	7	0	0	0	0	0	0
SUBTOTAL	38	0	82	0	120	53	0	14	0	67	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Municipality: Oakville
Count Date: Apr 04, 2024

West Approach - 4180 Trafalgar Rd Parking Lot (south access)

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	5	0	7	0	12	6	0	0	0	6	0	0	0	0	0	0
16:15	9	0	8	0	17	5	0	1	0	6	0	0	0	0	0	0
16:30	4	0	3	0	7	4	0	2	0	6	0	0	0	0	0	0
16:45	6	0	7	0	13	1	0	1	0	2	0	0	0	0	0	0
17:00	8	0	11	0	19	7	0	0	0	7	0	0	0	0	0	0
17:15	7	0	7	0	14	5	0	2	0	7	0	0	0	0	0	0
17:30	4	0	15	0	19	5	0	1	0	6	0	0	0	0	0	0
17:45	9	0	14	0	23	3	0	1	0	4	0	0	0	0	0	0
18:00	4	0	9	0	13	5	0	0	0	5	0	0	0	0	0	0
18:15	6	0	11	0	17	5	0	1	0	6	0	0	0	0	0	0
18:30	3	0	12	0	15	4	0	2	0	6	0	0	0	0	0	0
18:45	5	0	10	0	15	5	0	1	0	6	0	0	0	0	0	0
SUBTOTAL	70	0	114	0	184	55	0	12	0	67	0	0	0	0	0	0
GRAND TOTAL	108	0	196	0	304	108	0	26	0	134	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	10:00:00	To:	09:00:00

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)

Site Code: 2414000001

Count Date: Apr 04, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	1059	913	1972
Trucks	35	64	99
Bicycles	0	0	0
	1094	**977**	**2071**

Trafalgar Rd

Bicycles	0	0	0
Trucks	0	35	0
Cars	20	1039	0
Totals	**20**	**1074**	**0**

Peds: 0

4180 Trafalgar Rd Parking Lot (south access)

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	19	10	**29**
0	4	25	**29**

Peds: 0



Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	35	56	91
Trucks	23	3	26
Bicycles	0	0	0
	58	**59**	**117**

Totals	**39**	**948**	**0**
Cars	36	903	0
Trucks	3	45	0
Bicycles	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	939	1064	2003
Trucks	48	39	87
Bicycles	0	0	0
	987	**1103**	**2090**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Count Date: Apr 04, 2024
Period: 07:00 - 10:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach						West Approach 4180 Trafalgar Rd Parking Lot (south access)						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00		225	10	0	0	235	11	234		0	0	245					0		8		8	0	0	16	496
08:15		262	2	0	0	264	15	243		0	0	258					0		9		10	0	0	19	541
08:30		294	4	0	0	298	10	259		0	0	269					0		7		8	0	0	15	582
08:45		293	4	0	0	297	3	212		0	0	215					0		5		3	0	0	8	520
Grand Total		**1074**	**20**	**0**	**0**	**1094**	**39**	**948**		**0**	**0**	**987**					**0**	**0**	**29**		**29**	**0**	**0**	**58**	**2139**
Approach %		98.2	1.8	0		-	4	96		0		-						-	50		50	0		-	
Totals %		50.2	0.9	0		51.1	1.8	44.3		0		46.1						0	1.4		1.4	0		2.7	
PHF		**0.91**	**0.5**	**0**		**0.92**	**0.65**	**0.92**		**0**		**0.92**						**0**	**0.81**		**0.73**	**0**		**0.76**	**0.92**
Cars		1039	20	0		1059	36	903		0		939						0	10		25	0		35	2033
% Cars		96.7	100	0		96.8	92.3	95.3		0		95.1						0	34.5		86.2	0		60.3	95
Trucks		35	0	0		35	3	45		0		48						0	19		4	0		23	106
% Trucks		3.3	0	0		3.2	7.7	4.7		0		4.9						0	65.5		13.8	0		39.7	5
Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Count Date: Apr 04, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	1049	1558	2607
Trucks	26	35	61
Bicycles	0	0	0
	1075	**1593**	**2668**

Trafalgar Rd

Bicycles	0	0	0
Trucks	0	26	0
Cars	25	1024	0
Totals	**25**	**1050**	**0**

Peds: 0

4180 Trafalgar Rd Parking Lot (south access)

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	18	25	**43**
0	4	40	**44**

Peds: 0



Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	65	58	123
Trucks	22	4	26
Bicycles	0	0	0
	87	**62**	**149**

Totals	**37**	**1550**	**0**
Cars	33	1533	0
Trucks	4	17	0
Bicycles	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	1566	1064	2630
Trucks	21	30	51
Bicycles	0	0	0
	1587	**1094**	**2681**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & 4180 Trafalgar Rd Parking Lot (south access)
Site Code: 2414000001
Count Date: Apr 04, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach						West Approach 4180 Trafalgar Rd Parking Lot (south access)						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45		249	5	0	0	254	7	363		0	0	370					0		7		8	0	0	15	639
17:00		247	7	0	0	254	8	398		0	0	406					0		15		11	0	0	26	686
17:15		282	5	0	0	287	6	408		0	0	414					0		12		9	0	0	21	722
17:30		272	8	0	0	280	16	381		0	0	397					0		9		16	0	0	25	702
Grand Total		**1050**	**25**	**0**	**0**	**1075**	**37**	**1550**		**0**	**0**	**1587**					**0**	**0**	**43**		**44**	**0**	**0**	**87**	**2749**
Approach %		97.7	2.3	0		-	2.3	97.7		0		-						-	49.4		50.6	0		-	
Totals %		38.2	0.9	0		39.1	1.3	56.4		0		57.7						0	1.6		1.6	0		3.2	
PHF		**0.93**	**0.78**	**0**		**0.94**	**0.58**	**0.95**		**0**		**0.96**						**0**	**0.72**		**0.69**	**0**		**0.84**	**0.95**
Cars		1024	25	0		1049	33	1533		0		1566						0	25		40	0		65	2680
% Cars		97.5	100	0		97.6	89.2	98.9		0		98.7						0	58.1		90.9	0		74.7	97.5
Trucks		26	0	0		26	4	17		0		21						0	18		4	0		22	69
% Trucks		2.5	0	0		2.4	10.8	1.1		0		1.3						0	41.9		9.1	0		25.3	2.5
Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-099 - CGH Transportation

Intersection Count Report

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal
Municipality:	Oakville
Count Date:	Thursday, Mar 07, 2024
Site Code:	2409900001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code:	2409900001
Municipality:	Oakville
Count Date:	Mar 07, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code:	2409900001
Municipality:	Oakville
Count Date:	Mar 07, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	833	19	0	852	0	4	656	20	0	680	0	1532
08:00 - 09:00	0	955	35	0	990	0	1	786	30	0	817	0	1807
09:00 - 10:00	0	717	26	0	743	0	0	537	22	0	559	0	1302
BREAK													
16:00 - 17:00	0	750	49	0	799	0	7	1273	158	0	1438	0	2237
17:00 - 18:00	0	730	39	0	769	0	2	1362	135	0	1499	0	2268
18:00 - 19:00	0	596	23	0	619	0	2	879	46	1	928	0	1547
GRAND TOTAL	**0**	**4581**	**191**	**0**	**4772**	**0**	**16**	**5493**	**411**	**1**	**5921**	**0**	**10693**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code:	2409900001
Municipality:	Oakville
Count Date:	Mar 07, 2024

Hwy 407 North Ramp Terminal - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	76	0	5	0	81	0	1	0	2	1	4	0	85
08:00 - 09:00	112	0	3	0	115	0	1	0	0	0	1	0	116
09:00 - 10:00	62	1	7	0	70	0	3	0	1	1	5	0	75
BREAK													
16:00 - 17:00	135	3	13	0	151	0	0	0	6	0	6	0	157
17:00 - 18:00	168	0	15	0	183	0	3	0	3	3	9	0	192
18:00 - 19:00	122	0	7	0	129	0	1	0	2	0	3	0	132
GRAND TOTAL	**675**	**4**	**50**	**0**	**729**	**0**	**9**	**0**	**14**	**5**	**28**	**0**	**757**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	187	3	0	190	0	10	0	0	10	0	0	0	0	0	0
07:15	0	173	2	0	175	0	9	0	0	9	0	0	0	0	0	0
07:30	0	227	8	0	235	0	7	0	0	7	0	0	0	0	0	0
07:45	0	205	5	0	210	0	15	1	0	16	0	0	0	0	0	0
08:00	0	219	1	0	220	0	24	0	0	24	0	0	0	0	0	0
08:15	0	217	7	0	224	0	23	0	0	23	0	0	0	0	0	0
08:30	0	234	12	0	246	0	13	0	0	13	0	0	0	0	0	0
08:45	0	211	14	0	225	0	14	1	0	15	0	0	0	0	0	0
09:00	0	168	10	0	178	0	14	0	0	14	0	0	0	0	0	0
09:15	0	174	6	0	180	0	19	0	0	19	0	0	0	0	0	0
09:30	0	178	4	0	182	0	15	1	0	16	0	0	0	0	0	0
09:45	0	129	5	0	134	0	20	0	0	20	0	0	0	0	0	0
SUBTOTAL	0	2322	77	0	2399	0	183	3	0	186	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	0	171	13	0	184	0	10	0	0	10	0	0	0	0	0	0
16:15	0	207	12	0	219	0	9	0	0	9	0	0	0	0	0	0
16:30	0	181	13	0	194	0	7	0	0	7	0	0	0	0	0	0
16:45	0	161	11	0	172	0	4	0	0	4	0	0	0	0	0	0
17:00	0	163	9	0	172	0	4	1	0	5	0	0	0	0	0	0
17:15	0	173	9	0	182	0	10	1	0	11	0	0	0	0	0	0
17:30	0	187	8	0	195	0	4	0	0	4	0	0	0	0	0	0
17:45	0	184	11	0	195	0	5	0	0	5	0	0	0	0	0	0
18:00	0	154	4	0	158	0	4	0	0	4	0	0	0	0	0	0
18:15	0	167	7	0	174	0	2	0	0	2	0	0	0	0	0	0
18:30	0	135	5	0	140	0	8	0	0	8	0	0	0	0	0	0
18:45	0	122	7	0	129	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	0	2005	109	0	2114	0	71	2	0	73	0	0	0	0	0	0
GRAND TOTAL	0	4327	186	0	4513	0	254	5	0	259	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	116	0	0	116	0	11	1	0	12	0	0	0	0	0	0
07:15	0	152	1	0	153	0	13	3	0	16	0	0	0	0	0	0
07:30	3	149	3	0	155	0	14	3	0	17	0	0	0	0	0	0
07:45	0	187	6	0	193	1	14	3	0	18	0	0	0	0	0	0
08:00	0	179	5	0	184	0	10	2	0	12	0	0	0	0	0	0
08:15	0	173	7	0	180	0	11	2	0	13	0	0	0	0	0	0
08:30	1	211	5	0	217	0	29	3	0	32	0	0	0	0	0	0
08:45	0	162	5	0	167	0	11	1	0	12	0	0	0	0	0	0
09:00	0	112	3	0	115	0	20	2	0	22	0	0	0	0	0	0
09:15	0	110	3	0	113	0	19	3	0	22	0	0	0	0	0	0
09:30	0	123	3	0	126	0	17	2	0	19	0	0	0	0	0	0
09:45	0	114	3	0	117	0	22	3	0	25	0	0	0	0	0	0
SUBTOTAL	4	1788	44	0	1836	1	191	28	0	220	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	1	287	29	0	317	1	16	0	0	17	0	0	0	0	0	0
16:15	0	313	52	0	365	0	11	2	0	13	0	0	0	0	0	0
16:30	0	332	47	0	379	0	6	0	0	6	0	0	0	0	0	0
16:45	5	301	27	0	333	0	7	1	0	8	0	0	0	0	0	0
17:00	0	339	40	0	379	0	7	3	0	10	0	0	0	0	0	0
17:15	1	361	24	0	386	0	7	2	0	9	0	0	0	0	0	0
17:30	0	360	33	0	393	0	6	0	0	6	0	0	0	0	0	0
17:45	0	274	30	0	304	1	8	3	0	12	0	0	0	0	0	0
18:00	1	228	16	1	246	0	3	2	0	5	0	0	0	0	0	0
18:15	0	254	11	0	265	0	4	2	0	6	0	0	0	0	0	0
18:30	0	195	10	0	205	0	9	2	0	11	0	0	0	0	0	0
18:45	1	183	2	0	186	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	9	3427	321	1	3758	2	87	18	0	107	0	0	0	0	0	0
GRAND TOTAL	13	5215	365	1	5594	3	278	46	0	327	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Hwy 407 North Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	10	0	1	0	11	4	0	0	0	4	0	0	0	0	0	0
07:15	12	0	1	0	13	3	0	0	0	3	0	0	0	0	0	0
07:30	18	0	2	0	20	7	0	0	0	7	0	0	0	0	0	0
07:45	18	0	1	0	19	4	0	0	0	4	0	0	0	0	0	0
08:00	25	0	0	0	25	5	0	0	0	5	0	0	0	0	0	0
08:15	17	0	0	0	17	2	0	0	0	2	0	0	0	0	0	0
08:30	28	0	2	0	30	7	0	0	0	7	0	0	0	0	0	0
08:45	22	0	1	0	23	6	0	0	0	6	0	0	0	0	0	0
09:00	17	0	1	0	18	4	0	0	0	4	0	0	0	0	0	0
09:15	7	0	1	0	8	2	0	0	0	2	0	0	0	0	0	0
09:30	12	0	4	0	16	3	0	0	0	3	0	0	0	0	0	0
09:45	10	1	1	0	12	7	0	0	0	7	0	0	0	0	0	0
SUBTOTAL	196	1	15	0	212	54	0	0	0	54	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Hwy 407 North Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	27	0	4	0	31	0	0	0	0	0	0	0	0	0	0	0
16:15	36	0	2	0	38	5	1	0	0	6	0	0	0	0	0	0
16:30	29	0	3	0	32	1	0	0	0	1	0	0	0	0	0	0
16:45	36	0	4	0	40	1	2	0	0	3	0	0	0	0	0	0
17:00	42	0	4	0	46	3	0	0	0	3	0	0	0	0	0	0
17:15	44	0	3	0	47	3	0	1	0	4	0	0	0	0	0	0
17:30	36	0	4	0	40	2	0	0	0	2	0	0	0	0	0	0
17:45	35	0	3	0	38	3	0	0	0	3	0	0	0	0	0	0
18:00	37	0	4	0	41	2	0	0	0	2	0	0	0	0	0	0
18:15	31	0	0	0	31	2	0	0	0	2	0	0	0	0	0	0
18:30	31	0	2	0	33	2	0	0	0	2	0	0	0	0	0	0
18:45	14	0	1	0	15	3	0	0	0	3	0	0	0	0	0	0
SUBTOTAL	398	0	34	0	432	27	3	1	0	31	0	0	0	0	0	0
GRAND TOTAL	**594**	**1**	**49**	**0**	**644**	**81**	**3**	**1**	**0**	**85**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - Hwy 407 North Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	2	0	3	0	0	0	1	1	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
09:15	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	3	0	2	1	6	2	0	1	1	4	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - Hwy 407 North Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
16:45	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0
17:00	1	0	3	1	5	0	0	0	1	1	0	0	0	0	0	0
17:15	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
18:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	4	0	8	2	14	0	0	3	1	4	0	0	0	0	0	0
GRAND TOTAL	7	0	10	3	20	2	0	4	2	8	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	10:00:00	To:	08:45:00

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	900	754	1654
Trucks	76	65	141
Bicycles	0	0	0
	976	**819**	**1795**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	1	75	0	0
Cars	25	875	0	0
Totals	**26**	**950**	**0**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	91	23	114
Trucks	18	10	28
Bicycles	0	0	0
	109	**33**	**142**

Hwy 407 North Ramp Terminal

Bicycles	Trucks	Cars	Totals
0	1	0	**1**
0	1	1	**2**
0	0	0	**0**
0	0	2	**2**

Peds: 0

Peds: 0



Peds: 0

Hwy 407 North Ramp Terminal

Totals	Cars	Trucks	Bicycles
0	0	0	0
3	3	0	0
0	0	0	0
106	88	18	0

West Approach

	Out	In	Total
Cars	3	26	29
Trucks	2	3	5
Bicycles	0	0	0
	5	**29**	**34**

Trafalgar Rd

Totals	**2**	**814**	**33**	**0**
Cars	1	750	23	0
Trucks	1	64	10	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	774	965	1739
Trucks	75	93	168
Bicycles	0	0	0
	849	**1058**	**1907**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Count Date: Mar 07, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 North Ramp Terminal						West Approach Hwy 407 North Ramp Terminal						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	0	220	6	0	0	226	1	201	9	0	0	211	22	0	1	0	0	23	1	0	2	1	0	4	464
08:00	0	243	1	0	0	244	0	189	7	0	0	196	30	0	0	0	0	30	0	0	0	0	0	0	470
08:15	0	240	7	0	0	247	0	184	9	0	0	193	19	0	0	0	0	19	1	0	0	0	0	1	460
08:30	0	247	12	0	0	259	1	240	8	0	0	249	35	0	2	0	0	37	0	0	0	0	0	0	545
Grand Total	**0**	**950**	**26**	**0**	**0**	**976**	**2**	**814**	**33**	**0**	**0**	**849**	**106**	**0**	**3**	**0**	**0**	**109**	**2**	**0**	**2**	**1**	**0**	**5**	**1939**
Approach %	0	97.3	2.7	0		-	0.2	95.9	3.9	0		-	97.2	0	2.8	0		-	40	0	40	20		-	
Totals %	0	49	1.3	0		50.3	0.1	42	1.7	0		43.8	5.5	0	0.2	0		5.6	0.1	0	0.1	0.1		0.3	
PHF	**0**	**0.96**	**0.54**	**0**		**0.94**	**0.5**	**0.85**	**0.92**	**0**		**0.85**	**0.76**	**0**	**0.38**	**0**		**0.74**	**0.5**	**0**	**0.25**	**0.25**		**0.31**	**0.89**
Cars	0	875	25	0		900	1	750	23	0		774	88	0	3	0		91	1	0	2	0		3	1768
% Cars	0	92.1	96.2	0		92.2	50	92.1	69.7	0		91.2	83	0	100	0		83.5	50	0	100	0		60	91.2
Trucks	0	75	1	0		76	1	64	10	0		75	18	0	0	0		18	1	0	0	1		2	171
% Trucks	0	7.9	3.8	0		7.8	50	7.9	30.3	0		8.8	17	0	0	0		16.5	50	0	0	100		40	8.8
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	721	1379	2100
Trucks	24	28	52
Bicycles	0	0	0
	745	**1407**	**2152**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	2	22	0	0
Cars	37	684	0	0
Totals	**39**	**706**	**0**	**0**

East Approach

	Out	In	Total
Cars	173	124	297
Trucks	12	6	18
Bicycles	0	0	0
	185	**130**	**315**

Hwy 407 North Ramp Terminal

Bicycles	Trucks	Cars	Totals
0	1	2	**3**
0	0	3	**3**
0	0	0	**0**
0	1	4	**5**

Peds: 0

Peds: 0

Peds: 0

Hwy 407 North Ramp Terminal

Totals	Cars	Trucks	Bicycles
0	0	0	0
16	15	1	0
2	0	2	0
167	158	9	0

West Approach

	Out	In	Total
Cars	9	45	54
Trucks	2	5	7
Bicycles	0	0	0
	11	**50**	**61**

Trafalgar Rd

Totals	**6**	**1388**	**130**	**0**
Cars	6	1361	124	0
Trucks	0	27	6	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1491	846	2337
Trucks	33	32	65
Bicycles	0	0	0
	1524	**878**	**2402**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal
Site Code: 2409900001
Count Date: Mar 07, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 North Ramp Terminal						West Approach Hwy 407 North Ramp Terminal						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45	0	165	11	0	0	176	5	308	28	0	0	341	37	2	4	0	0	43	0	0	2	0	0	2	562
17:00	0	167	10	0	0	177	0	346	43	0	0	389	45	0	4	0	0	49	1	0	3	2	0	6	621
17:15	0	183	10	0	0	193	1	368	26	0	0	395	47	0	4	0	0	51	1	0	0	1	0	2	641
17:30	0	191	8	0	0	199	0	366	33	0	0	399	38	0	4	0	0	42	1	0	0	0	0	1	641
Grand Total	**0**	**706**	**39**	**0**	**0**	**745**	**6**	**1388**	**130**	**0**	**0**	**1524**	**167**	**2**	**16**	**0**	**0**	**185**	**3**	**0**	**5**	**3**	**0**	**11**	**2465**
Approach %	0	94.8	5.2	0		-	0.4	91.1	8.5	0		-	90.3	1.1	8.6	0		-	27.3	0	45.5	27.3		-	
Totals %	0	28.6	1.6	0		30.2	0.2	56.3	5.3	0		61.8	6.8	0.1	0.6	0		7.5	0.1	0	0.2	0.1		0.4	
PHF	**0**	**0.92**	**0.89**	**0**		**0.94**	**0.3**	**0.94**	**0.76**	**0**		**0.95**	**0.89**	**0.25**	**1**	**0**		**0.91**	**0.75**	**0**	**0.42**	**0.38**		**0.46**	**0.96**
Cars	0	684	37	0		721	6	1361	124	0		1491	158	0	15	0		173	3	0	4	2		9	2394
% Cars	0	96.9	94.9	0		96.8	100	98.1	95.4	0		97.8	94.6	0	93.8	0		93.5	100	0	80	66.7		81.8	97.1
Trucks	0	22	2	0		24	0	27	6	0		33	9	2	1	0		12	0	0	1	1		2	71
% Trucks	0	3.1	5.1	0		3.2	0	1.9	4.6	0		2.2	5.4	100	6.3	0		6.5	0	0	20	33.3		18.2	2.9
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-140 - CGH Transportation

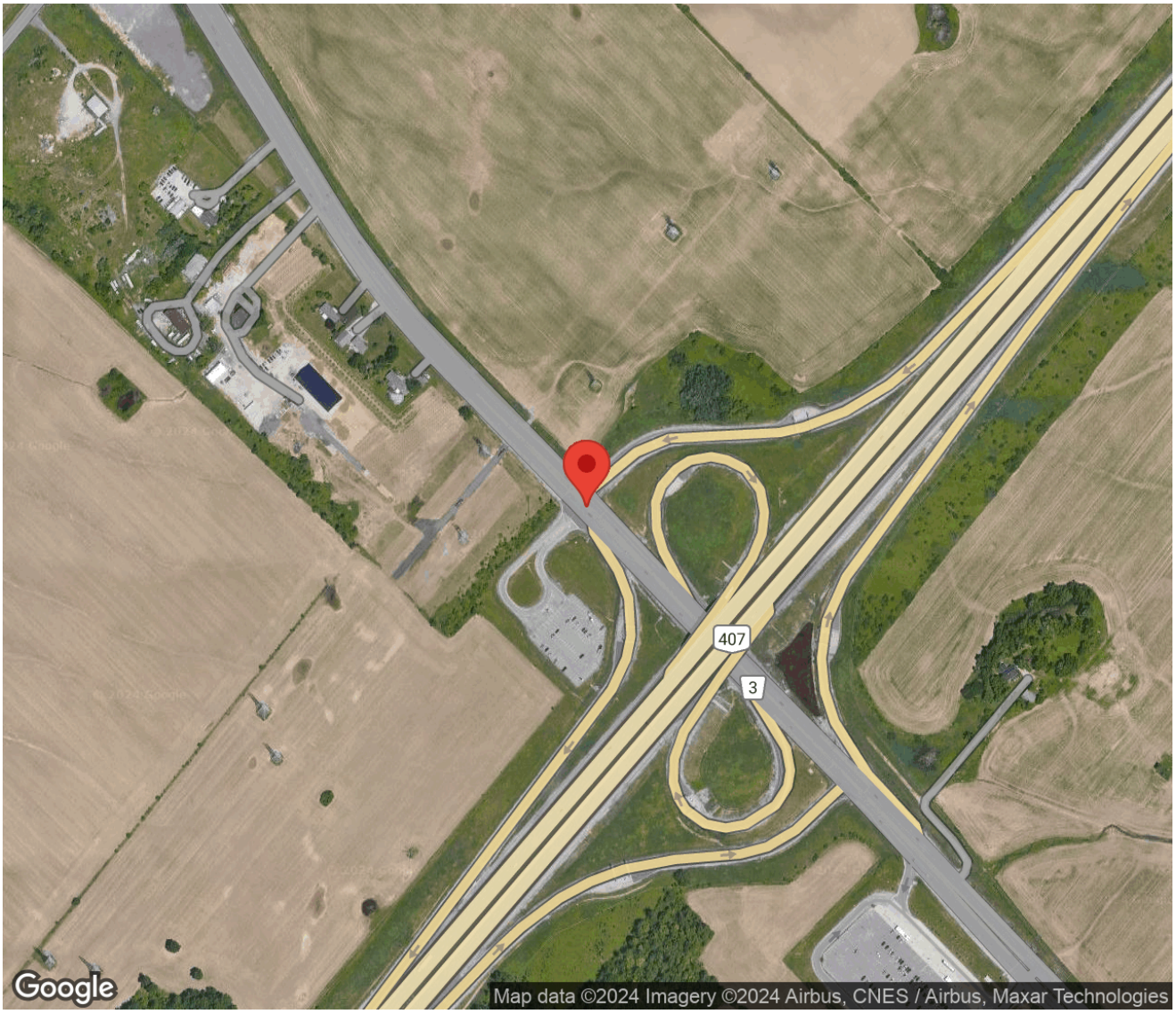
Intersection Count Report

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Municipality:	Oakville
Count Date:	Saturday, Apr 13, 2024
Site Code:	2414000002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	10:00-15:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code:	2414000002
Municipality:	Oakville
Count Date:	Apr 13, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code:	2414000002
Municipality:	Oakville
Count Date:	Apr 13, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
10:00 - 11:00	0	563	20	0	583	0	0	516	19	0	535	0	1118
11:00 - 12:00	0	650	21	0	671	0	2	634	19	0	655	0	1326
12:00 - 13:00	0	678	23	0	701	0	0	759	32	0	791	0	1492
13:00 - 14:00	0	684	27	0	711	0	1	801	26	0	828	0	1539
14:00 - 15:00	0	735	44	0	779	0	0	775	49	0	824	0	1603
GRAND TOTAL	**0**	**3310**	**135**	**0**	**3445**	**0**	**3**	**3485**	**145**	**0**	**3633**	**0**	**7078**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code:	2414000002
Municipality:	Oakville
Count Date:	Apr 13, 2024

Hwy 407 North Ramp Terminal - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
10:00 - 11:00	64	0	6	0	70	0	1	0	1	0	2	0	72
11:00 - 12:00	53	1	11	0	65	1	1	0	1	0	2	0	67
12:00 - 13:00	72	0	8	0	80	0	0	0	0	0	0	0	80
13:00 - 14:00	110	1	21	0	132	0	1	0	3	0	4	0	136
14:00 - 15:00	120	0	10	0	130	0	0	0	0	0	0	0	130
GRAND TOTAL	**419**	**2**	**56**	**0**	**477**	**1**	**3**	**0**	**5**	**0**	**8**	**0**	**485**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Municipality: Oakville
Count Date: Apr 13, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
10:00	0	116	6	0	122	0	2	0	0	2	0	0	0	0	0	0
10:15	0	148	2	0	150	0	1	1	0	2	0	0	0	0	0	0
10:30	0	149	3	0	152	0	5	0	0	5	0	0	0	0	0	0
10:45	0	140	8	0	148	0	2	0	0	2	0	0	0	0	0	0
11:00	0	153	4	0	157	0	3	0	0	3	0	0	0	0	0	0
11:15	0	146	5	0	151	0	1	0	0	1	0	0	0	0	0	0
11:30	0	167	9	0	176	0	3	0	0	3	0	0	0	0	0	0
11:45	0	171	3	0	174	0	6	0	0	6	0	0	0	0	0	0
12:00	0	144	6	0	150	0	5	0	0	5	0	0	0	0	0	0
12:15	0	170	5	0	175	0	4	1	0	5	0	0	0	0	0	0
12:30	0	180	5	0	185	0	1	0	0	1	0	0	0	0	0	0
12:45	0	169	6	0	175	0	4	0	0	4	0	1	0	0	1	0
13:00	0	183	6	0	189	0	1	0	0	1	0	0	0	0	0	0
13:15	0	167	10	0	177	0	2	0	0	2	0	0	0	0	0	0
13:30	0	156	8	0	164	0	1	0	0	1	0	0	0	0	0	0
13:45	0	171	3	0	174	0	3	0	0	3	0	0	0	0	0	0
14:00	0	178	11	0	189	0	2	0	0	2	0	0	0	0	0	0
14:15	0	211	12	0	223	0	0	0	0	0	0	0	0	0	0	0
14:30	0	164	12	0	176	0	2	0	0	2	0	0	0	0	0	0
14:45	0	177	9	0	186	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	0	3260	133	0	3393	0	49	2	0	51	0	1	0	0	1	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	0	3260	133	0	3393	0	49	2	0	51	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

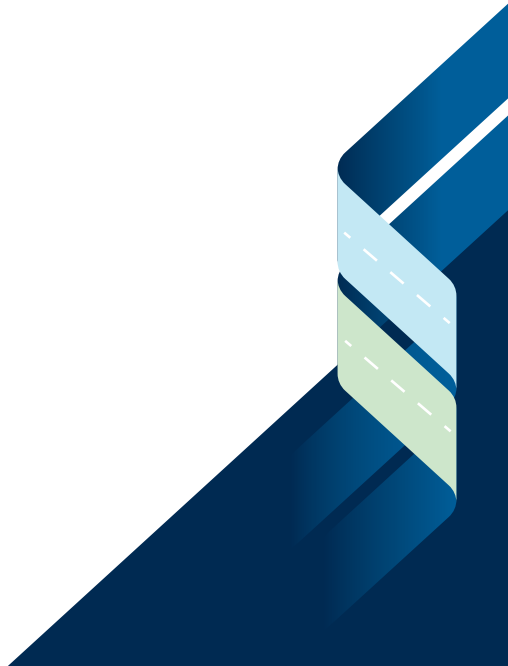
Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Municipality: Oakville
Count Date: Apr 13, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
10:00	0	113	3	0	116	0	1	1	0	2	0	0	0	0	0	0
10:15	0	117	3	0	120	0	3	1	0	4	0	0	0	0	0	0
10:30	0	133	2	0	135	0	1	1	0	2	0	0	0	0	0	0
10:45	0	146	7	0	153	0	2	1	0	3	0	0	0	0	0	0
11:00	2	121	3	0	126	0	6	1	0	7	0	0	0	0	0	0
11:15	0	153	4	0	157	0	1	1	0	2	0	1	0	0	1	0
11:30	0	152	2	0	154	0	5	1	0	6	0	0	0	0	0	0
11:45	0	192	6	0	198	0	3	1	0	4	0	0	0	0	0	0
12:00	0	178	6	0	184	0	3	1	0	4	0	0	0	0	0	0
12:15	0	183	6	0	189	0	0	1	0	1	0	0	0	0	0	0
12:30	0	174	9	0	183	0	4	0	0	4	0	0	0	0	0	0
12:45	0	214	7	0	221	0	3	2	0	5	0	0	0	0	0	0
13:00	0	196	2	0	198	0	4	1	0	5	0	0	0	0	0	0
13:15	0	173	7	0	180	0	3	1	0	4	0	0	0	0	0	0
13:30	0	208	7	0	215	0	2	0	0	2	0	0	0	0	0	0
13:45	1	214	6	0	221	0	1	2	0	3	0	0	0	0	0	0
14:00	0	194	7	0	201	0	5	0	0	5	0	0	0	0	0	0
14:15	0	202	19	0	221	0	2	2	0	4	0	0	0	0	0	0
14:30	0	182	9	0	191	0	5	0	0	5	0	0	0	0	0	0
14:45	0	179	10	0	189	0	6	2	0	8	0	0	0	0	0	0
SUBTOTAL	3	3424	125	0	3552	0	60	20	0	80	0	1	0	0	1	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	3	3424	125	0	3552	0	60	20	0	80	0	1	0	0	1	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

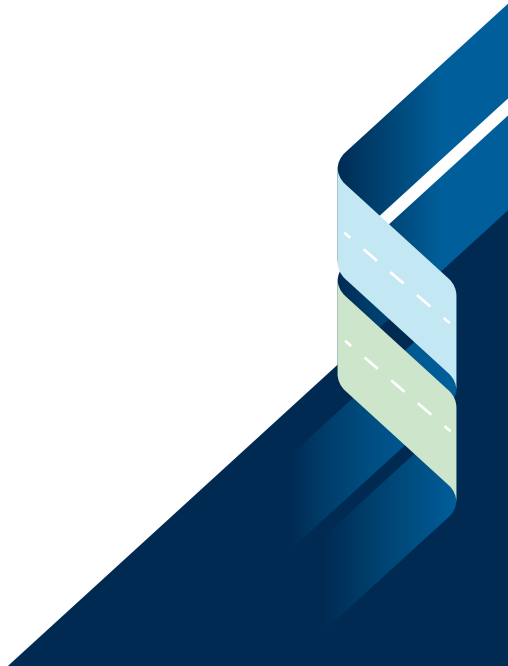
Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Municipality: Oakville
Count Date: Apr 13, 2024

East Approach - Hwy 407 North Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
10:00	11	0	3	0	14	1	0	0	0	1	0	0	0	0	0	0
10:15	17	0	0	0	17	1	0	0	0	1	0	0	0	0	0	0
10:30	18	0	2	0	20	2	0	0	0	2	0	0	0	0	0	0
10:45	14	0	1	0	15	0	0	0	0	0	0	0	0	0	0	0
11:00	12	0	3	0	15	1	0	0	0	1	0	0	0	0	0	0
11:15	7	0	4	0	11	2	0	0	0	2	0	0	0	0	0	0
11:30	18	1	4	0	23	1	0	0	0	1	0	0	0	0	0	1
11:45	11	0	0	0	11	1	0	0	0	1	0	0	0	0	0	0
12:00	13	0	2	0	15	1	0	0	0	1	0	0	0	0	0	0
12:15	22	0	1	0	23	1	0	0	0	1	0	0	0	0	0	0
12:30	21	0	2	0	23	2	0	0	0	2	0	0	0	0	0	0
12:45	11	0	3	0	14	1	0	0	0	1	0	0	0	0	0	0
13:00	27	0	4	0	31	1	0	0	0	1	0	0	0	0	0	0
13:15	34	1	4	0	39	1	0	0	0	1	0	0	0	0	0	0
13:30	26	0	6	0	32	2	0	0	0	2	0	0	0	0	0	0
13:45	19	0	7	0	26	0	0	0	0	0	0	0	0	0	0	0
14:00	36	0	4	0	40	1	0	0	0	1	0	0	0	0	0	0
14:15	28	0	2	0	30	1	0	0	0	1	0	0	0	0	0	0
14:30	27	0	4	0	31	2	0	0	0	2	0	0	0	0	0	0
14:45	23	0	0	0	23	2	0	0	0	2	0	0	0	0	0	0
SUBTOTAL	395	2	56	0	453	24	0	0	0	24	0	0	0	0	0	1

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	395	2	56	0	453	24	0	0	0	24	0	0	0	0	0	1



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

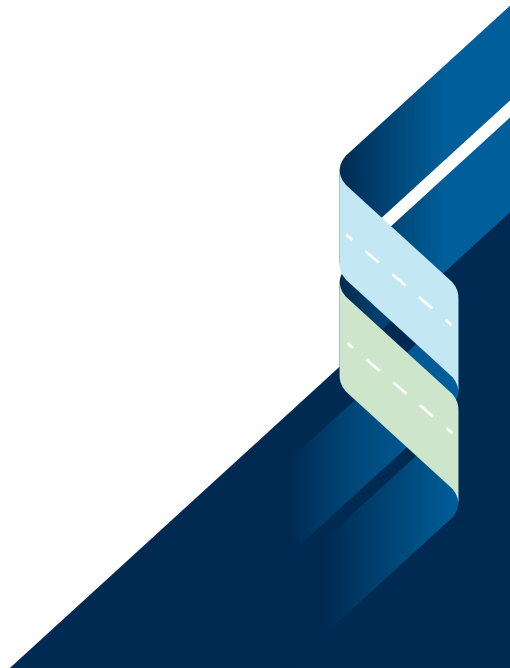
Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Municipality: Oakville
Count Date: Apr 13, 2024

West Approach - Trafalgar Car Pool Lot + Hwy 407 On-Ramp

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	2	0	5	0	7	1	0	0	0	1	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	2	0	5	0	7	1	0	0	0	1	0	0	0	0	0	0



Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	10:00:00	From:	13:30:00
To:	15:00:00	To:	14:30:00

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Count Date: Apr 13, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	750	837	1587
Trucks	6	11	17
Bicycles	0	0	0
	756	**848**	**1604**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	6	0	0
Cars	34	716	0	0
Totals	**34**	**722**	**0**	**0**

East Approach

	Out	In	Total
Cars	128	39	167
Trucks	4	4	8
Bicycles	0	0	0
	132	**43**	**175**

Trafalgar Car Pool Lot + Hwy 407 On-Ramp

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	0	**1**
0	0	0	**0**
0	0	3	**3**

Peds: 0

Peds: 0

Peds: 0

N
W
E
S

Hwy 407 North Ramp Terminal

Totals	Cars	Trucks	Bicycles
0	0	0	0
19	19	0	0
0	0	0	0
113	109	4	0

West Approach

	Out	In	Total
Cars	3	35	38
Trucks	1	0	1
Bicycles	0	0	0
	4	**35**	**39**

Totals	**1**	**828**	**43**	**0**
Cars	1	818	39	0
Trucks	0	10	4	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	858	828	1686
Trucks	14	10	24
Bicycles	0	0	0
	872	**838**	**1710**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 North Ramp Terminal - Trafalgar Car Pool Lot
Site Code: 2414000002
Count Date: Apr 13, 2024
Period: 10:00 - 15:00

Peak Hour Data (13:30 - 14:30)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 North Ramp Terminal						West Approach Trafalgar Car Pool Lot + Hwy 407 On-Ramp						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
13:30	0	157	8	0	0	165	0	210	7	0	0	217	28	0	6	0	0	34	0	0	1	0	0	1	417
13:45	0	174	3	0	0	177	1	215	8	0	0	224	19	0	7	0	0	26	1	0	2	0	0	3	430
14:00	0	180	11	0	0	191	0	199	7	0	0	206	37	0	4	0	0	41	0	0	0	0	0	0	438
14:15	0	211	12	0	0	223	0	204	21	0	0	225	29	0	2	0	0	31	0	0	0	0	0	0	479
Grand Total	**0**	**722**	**34**	**0**	**0**	**756**	**1**	**828**	**43**	**0**	**0**	**872**	**113**	**0**	**19**	**0**	**0**	**132**	**1**	**0**	**3**	**0**	**0**	**4**	**1764**
Approach %	0	95.5	4.5	0		-	0.1	95	4.9	0		-	85.6	0	14.4	0		-	25	0	75	0		-	
Totals %	0	40.9	1.9	0		42.9	0.1	46.9	2.4	0		49.4	6.4	0	1.1	0		7.5	0.1	0	0.2	0		0.2	
PHF	**0**	**0.86**	**0.71**	**0**		**0.85**	**0.25**	**0.96**	**0.51**	**0**		**0.97**	**0.76**	**0**	**0.68**	**0**		**0.8**	**0.25**	**0**	**0.38**	**0**		**0.33**	**0.92**
Cars	0	716	34	0		750	1	818	39	0		858	109	0	19	0		128	0	0	3	0		3	1739
% Cars	0	99.2	100	0		99.2	100	98.8	90.7	0		98.4	96.5	0	100	0		97	0	0	100	0		75	98.6
Trucks	0	6	0	0		6	0	10	4	0		14	4	0	0	0		4	1	0	0	0		1	25
% Trucks	0	0.8	0	0		0.8	0	1.2	9.3	0		1.6	3.5	0	0	0		3	100	0	0	0		25	1.4
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-099 - CGH Transportation

Intersection Count Report

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Municipality:	Oakville
Count Date:	Thursday, Mar 07, 2024
Site Code:	2409900002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2409900002
Municipality:	Oakville
Count Date:	Mar 07, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2409900002
Municipality:	Oakville
Count Date:	Mar 07, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	832	16	0	848	0	0	650	123	0	773	0	1621
08:00 - 09:00	0	927	25	0	952	0	0	777	210	0	987	0	1939
09:00 - 10:00	0	695	18	0	713	0	0	539	114	0	653	0	1366
BREAK													
16:00 - 17:00	0	743	18	0	761	0	0	1409	180	0	1589	0	2350
17:00 - 18:00	0	724	15	0	739	0	0	1467	164	0	1631	0	2370
18:00 - 19:00	0	582	16	0	598	0	0	917	118	0	1035	0	1633
GRAND TOTAL	**0**	**4503**	**108**	**0**	**4611**	**0**	**0**	**5759**	**909**	**0**	**6668**	**0**	**11279**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2409900002
Municipality:	Oakville
Count Date:	Mar 07, 2024

Hwy 407 South Ramp Terminal - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	0	0	0	0	30	0	59	0	89	0	89
08:00 - 09:00	0	0	0	0	0	0	35	0	68	0	103	0	103
09:00 - 10:00	0	0	0	0	0	0	25	0	45	0	70	0	70
BREAK													
16:00 - 17:00	0	0	0	0	0	0	20	0	34	0	54	0	54
17:00 - 18:00	0	0	0	0	0	0	32	0	46	0	78	0	78
18:00 - 19:00	0	0	0	0	0	0	20	0	21	0	41	0	41
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**162**	**0**	**273**	**0**	**435**	**0**	**435**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	186	4	0	190	0	10	1	0	11	0	0	0	0	0	0
07:15	0	177	3	0	180	0	8	0	0	8	0	0	0	0	0	0
07:30	0	224	5	0	229	0	5	0	0	5	0	0	0	0	0	0
07:45	0	207	3	0	210	0	15	0	0	15	0	0	0	0	0	0
08:00	0	213	4	0	217	0	26	0	0	26	0	0	0	0	0	0
08:15	0	206	10	0	216	0	20	1	0	21	0	0	0	0	0	0
08:30	0	228	4	0	232	0	13	1	0	14	0	0	0	0	0	0
08:45	0	206	5	0	211	0	15	0	0	15	0	0	0	0	0	0
09:00	0	159	6	0	165	0	15	0	0	15	0	0	0	0	0	0
09:15	0	174	2	0	176	0	18	0	0	18	0	0	0	0	0	0
09:30	0	171	5	0	176	0	14	0	0	14	0	0	0	0	0	0
09:45	0	121	5	0	126	0	23	0	0	23	0	0	0	0	0	0
SUBTOTAL	0	2272	56	0	2328	0	182	3	0	185	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	166	5	0	171	0	10	0	0	10	0	0	0	0	0	0
16:15	0	204	6	0	210	0	10	0	0	10	0	0	0	0	0	0
16:30	0	181	2	0	183	0	9	1	0	10	0	0	0	0	0	0
16:45	0	158	4	0	162	0	5	0	0	5	0	0	0	0	0	0
17:00	0	161	4	0	165	0	6	0	0	6	0	0	0	0	0	0
17:15	0	174	4	0	178	0	9	0	0	9	0	0	0	0	0	0
17:30	0	185	6	0	191	0	4	0	0	4	0	0	0	0	0	0
17:45	0	178	1	0	179	0	7	0	0	7	0	0	0	0	0	0
18:00	0	155	6	0	161	0	3	0	0	3	0	0	0	0	0	0
18:15	0	162	3	0	165	0	2	0	0	2	0	0	0	0	0	0
18:30	0	129	4	0	133	0	7	0	0	7	0	0	0	0	0	0
18:45	0	121	3	0	124	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	0	1974	48	0	2022	0	75	1	0	76	0	0	0	0	0	0
GRAND TOTAL	**0**	**4246**	**104**	**0**	**4350**	**0**	**257**	**4**	**0**	**261**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	108	30	0	138	0	13	2	0	15	0	0	0	0	0	0
07:15	0	155	27	0	182	0	15	3	0	18	0	0	0	0	0	0
07:30	0	145	27	0	172	0	17	4	0	21	0	0	0	0	0	0
07:45	0	180	28	0	208	0	17	2	0	19	0	0	0	0	0	0
08:00	0	171	51	0	222	0	12	3	0	15	0	0	0	0	0	0
08:15	0	170	48	0	218	0	13	4	0	17	0	0	0	0	0	0
08:30	0	205	63	0	268	0	32	1	0	33	0	0	0	0	0	0
08:45	0	162	38	0	200	0	12	2	0	14	0	0	0	0	0	0
09:00	0	115	37	0	152	0	20	2	0	22	0	0	0	0	0	0
09:15	0	109	26	0	135	0	22	1	0	23	0	0	0	0	0	0
09:30	0	121	25	0	146	0	19	2	0	21	0	0	0	0	0	0
09:45	0	110	18	0	128	0	23	3	0	26	0	0	0	0	0	0
SUBTOTAL	0	1751	418	0	2169	0	215	29	0	244	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	311	41	0	352	0	15	6	0	21	0	0	0	0	0	0
16:15	0	357	46	0	403	0	14	4	0	18	0	0	0	0	0	0
16:30	0	373	39	0	412	0	7	1	0	8	0	0	0	0	0	0
16:45	0	324	40	0	364	0	8	3	0	11	0	0	0	0	0	0
17:00	0	366	30	0	396	0	10	5	0	15	0	0	0	0	0	0
17:15	0	385	48	0	433	0	9	5	0	14	0	0	0	0	0	0
17:30	0	380	42	0	422	0	6	5	0	11	0	0	0	0	0	0
17:45	0	299	26	0	325	0	12	3	0	15	0	0	0	0	0	0
18:00	0	249	27	0	276	0	5	3	0	8	0	0	0	0	0	0
18:15	0	265	30	0	295	0	6	4	0	10	0	0	0	0	0	0
18:30	0	197	23	0	220	0	9	4	0	13	0	0	0	0	0	0
18:45	0	182	25	0	207	0	4	2	0	6	0	0	0	0	0	0
SUBTOTAL	0	3688	417	0	4105	0	105	45	0	150	0	0	0	0	0	0
GRAND TOTAL	0	5439	835	0	6274	0	320	74	0	394	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	6	0	8	0	14	0	0	3	0	3	0	0	0	0	0	0
07:15	3	0	10	0	13	0	0	3	0	3	0	0	0	0	0	0
07:30	8	0	14	0	22	0	0	1	0	1	0	0	0	0	0	0
07:45	12	0	18	0	30	1	0	2	0	3	0	0	0	0	0	0
08:00	10	0	13	0	23	1	0	2	0	3	0	0	0	0	0	0
08:15	11	0	19	0	30	0	0	4	0	4	0	0	0	0	0	0
08:30	10	0	12	0	22	0	0	2	0	2	0	0	0	0	0	0
08:45	3	0	13	0	16	0	0	3	0	3	0	0	0	0	0	0
09:00	3	0	17	0	20	2	0	0	0	2	0	0	0	0	0	0
09:15	5	0	7	0	12	0	0	1	0	1	0	0	0	0	0	0
09:30	6	0	9	0	15	1	0	1	0	2	0	0	0	0	0	0
09:45	8	0	8	0	16	0	0	2	0	2	0	0	0	0	0	0
SUBTOTAL	85	0	148	0	233	5	0	24	0	29	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	5	0	9	0	14	0	0	3	0	3	0	0	0	0	0	0
16:15	3	0	4	0	7	0	0	3	0	3	0	0	0	0	0	0
16:30	4	0	4	0	8	0	0	1	0	1	0	0	0	0	0	0
16:45	8	0	6	0	14	0	0	4	0	4	0	0	0	0	0	0
17:00	8	0	9	0	17	0	0	2	0	2	0	0	0	0	0	0
17:15	9	0	4	0	13	0	0	4	0	4	0	0	0	0	0	0
17:30	8	0	17	0	25	0	0	2	0	2	0	0	0	0	0	0
17:45	7	0	6	0	13	0	0	2	0	2	0	0	0	0	0	0
18:00	4	0	3	0	7	0	0	2	0	2	0	0	0	0	0	0
18:15	8	0	6	0	14	0	0	3	0	3	0	0	0	0	0	0
18:30	3	0	2	0	5	2	0	3	0	5	0	0	0	0	0	0
18:45	3	0	1	0	4	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	70	0	71	0	141	2	0	30	0	32	0	0	0	0	0	0
GRAND TOTAL	155	0	219	0	374	7	0	54	0	61	0	0	0	0	0	0

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 07:45:00
To: 08:45:00

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	875	769	1644
Trucks	76	76	152
Bicycles	0	0	0
	951	**845**	**1796**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	2	74	0	0
Cars	21	854	0	0
Totals	**23**	**928**	**0**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	0	190	190
Trucks	0	10	10
Bicycles	0	0	0
	0	**200**	**200**

Hwy 407 South Ramp Terminal

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	2	43	**45**
0	0	0	**0**
0	10	62	**72**

Peds: 0



Peds: 0

Hwy 407 South Ramp Terminal

Totals	Cars	Trucks	Bicycles

Peds: 0

West Approach

	Out	In	Total
Cars	105	21	126
Trucks	12	2	14
Bicycles	0	0	0
	117	**23**	**140**

Totals	**0**	**800**	**200**	**0**
Cars	0	726	190	0
Trucks	0	74	10	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	916	916	1832
Trucks	84	84	168
Bicycles	0	0	0
	1000	**1000**	**2000**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Count Date: Mar 07, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 South Ramp Terminal						West Approach Hwy 407 South Ramp Terminal						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	0	222	3	0	0	225	0	197	30	0	0	227					0	0	13	0	20	0	0	33	485
08:00	0	239	4	0	0	243	0	183	54	0	0	237					0	0	11	0	15	0	0	26	506
08:15	0	226	11	0	0	237	0	183	52	0	0	235					0	0	11	0	23	0	0	34	506
08:30	0	241	5	0	0	246	0	237	64	0	0	301					0	0	10	0	14	0	0	24	571
Grand Total	**0**	**928**	**23**	**0**	**0**	**951**	**0**	**800**	**200**	**0**	**0**	**1000**					**0**	**0**	**45**	**0**	**72**	**0**	**0**	**117**	**2068**
Approach %	0	97.6	2.4	0		-	0	80	20	0		-						-	38.5	0	61.5	0		-	
Totals %	0	44.9	1.1	0		46	0	38.7	9.7	0		48.4						0	2.2	0	3.5	0		5.7	
PHF	**0**	**0.96**	**0.52**	**0**		**0.97**	**0**	**0.84**	**0.78**	**0**		**0.83**						**0**	**0.87**	**0**	**0.78**	**0**		**0.86**	**0.91**
Cars	0	854	21	0		875	0	726	190	0		916						0	43	0	62	0		105	1896
% Cars	0	92	91.3	0		92	0	90.8	95	0		91.6						0	95.6	0	86.1	0		89.7	91.7
Trucks	0	74	2	0		76	0	74	10	0		84						0	2	0	10	0		12	172
% Trucks	0	8	8.7	0		8	0	9.3	5	0		8.4						0	4.4	0	13.9	0		10.3	8.3
Bicycles	0	0	0	0		0	0	0	0	0		0						0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0						0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	696	1488	2184
Trucks	24	33	57
Bicycles	0	0	0
	720	**1521**	**2241**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	24	0	0
Cars	18	678	0	0
Totals	**18**	**702**	**0**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	0	160	160
Trucks	0	18	18
Bicycles	0	0	0
	0	**178**	**178**

Hwy 407 South Ramp Terminal

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	33	**33**
0	0	0	**0**
0	12	36	**48**

Peds: 0



Peds: 0

Peds: 0

Hwy 407 South Ramp Terminal

Totals	Cars	Trucks	Bicycles

West Approach

	Out	In	Total
Cars	69	18	87
Trucks	12	0	12
Bicycles	0	0	0
	81	**18**	**99**

Trafalgar Rd

Totals	**0**	**1488**	**178**	**0**
Cars	0	1455	160	0
Trucks	0	33	18	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1615	714	2329
Trucks	51	36	87
Bicycles	0	0	0
	1666	**750**	**2416**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2409900002
Count Date: Mar 07, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 South Ramp Terminal						West Approach Hwy 407 South Ramp Terminal						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45	0	163	4	0	0	167	0	332	43	0	0	375					0	0	8	0	10	0	0	18	560
17:00	0	167	4	0	0	171	0	376	35	0	0	411					0	0	8	0	11	0	0	19	601
17:15	0	183	4	0	0	187	0	394	53	0	0	447					0	0	9	0	8	0	0	17	651
17:30	0	189	6	0	0	195	0	386	47	0	0	433					0	0	8	0	19	0	0	27	655
Grand Total	**0**	**702**	**18**	**0**	**0**	**720**	**0**	**1488**	**178**	**0**	**0**	**1666**					**0**	**0**	**33**	**0**	**48**	**0**	**0**	**81**	**2467**
Approach %	0	97.5	2.5	0		-	0	89.3	10.7	0		-						-	40.7	0	59.3	0		-	
Totals %	0	28.5	0.7	0		29.2	0	60.3	7.2	0		67.5						0	1.3	0	1.9	0		3.3	
PHF	**0**	**0.93**	**0.75**	**0**		**0.92**	**0**	**0.94**	**0.84**	**0**		**0.93**						**0**	**0.92**	**0**	**0.63**	**0**		**0.75**	**0.94**
Cars	0	678	18	0		696	0	1455	160	0		1615						0	33	0	36	0		69	2380
% Cars	0	96.6	100	0		96.7	0	97.8	89.9	0		96.9						0	100	0	75	0		85.2	96.5
Trucks	0	24	0	0		24	0	33	18	0		51						0	0	0	12	0		12	87
% Trucks	0	3.4	0	0		3.3	0	2.2	10.1	0		3.1						0	0	0	25	0		14.8	3.5
Bicycles	0	0	0	0		0	0	0	0	0		0						0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0						0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-099 - CGH Transportation

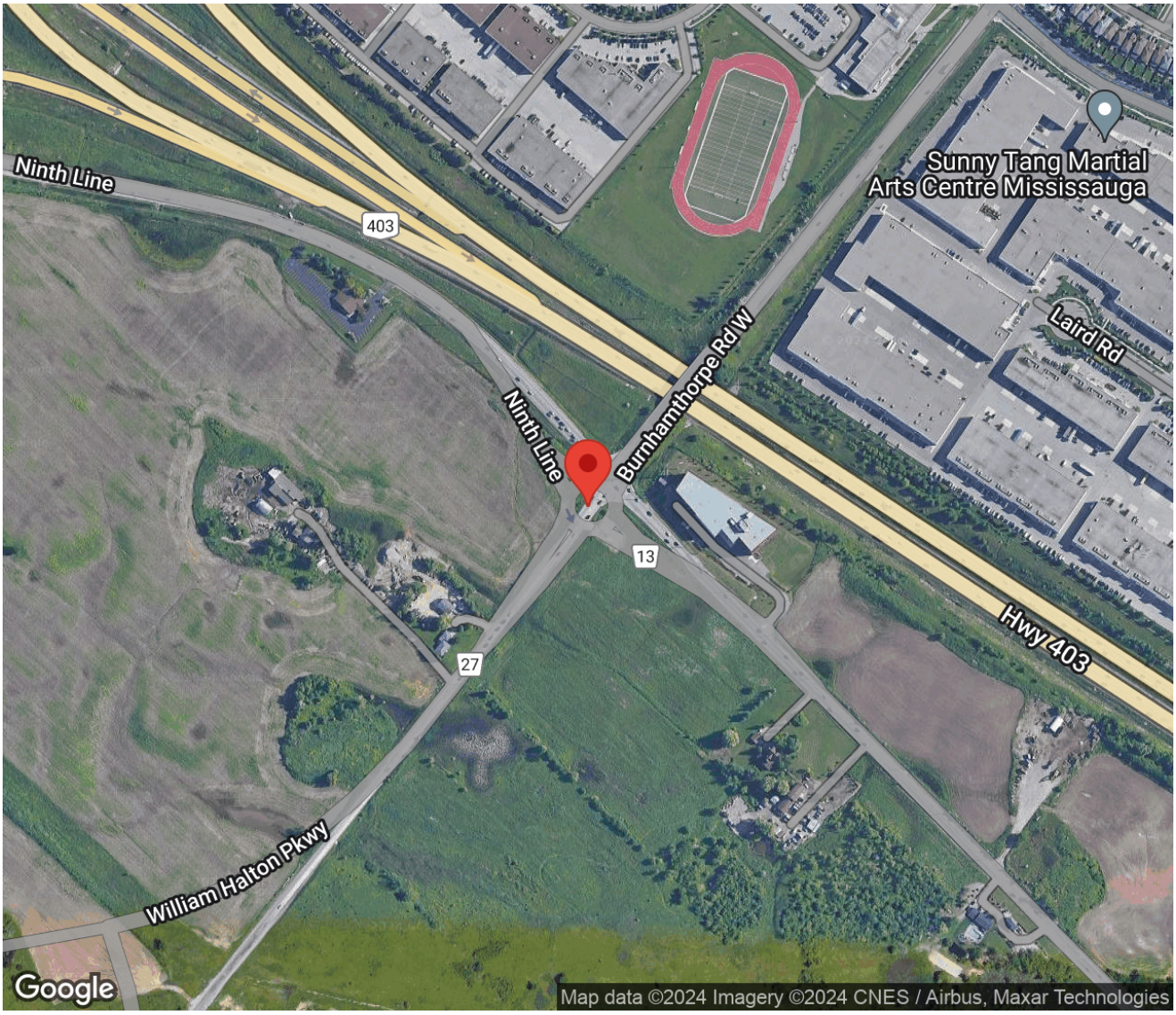
Intersection Count Report

Intersection:	Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Municipality:	Oakville
Count Date:	Thursday, Mar 07, 2024
Site Code:	2409900003
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code:	2409900003
Municipality:	Oakville
Count Date:	Mar 07, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code:	2409900003
Municipality:	Oakville
Count Date:	Mar 07, 2024

Ninth Line - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	136	476	26	0	638	0	93	231	61	0	385	0	1023
08:00 - 09:00	173	547	63	0	783	0	100	304	86	0	490	0	1273
09:00 - 10:00	130	398	43	0	571	0	116	246	67	0	429	0	1000
BREAK													
16:00 - 17:00	103	298	86	0	487	0	287	558	182	0	1027	0	1514
17:00 - 18:00	86	308	61	0	455	0	250	622	229	0	1101	0	1556
18:00 - 19:00	125	288	48	0	461	0	151	443	163	0	757	0	1218
GRAND TOTAL	**753**	**2315**	**327**	**0**	**3395**	**0**	**997**	**2404**	**788**	**0**	**4189**	**0**	**7584**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code:	2409900003
Municipality:	Oakville
Count Date:	Mar 07, 2024

Burnhamthorpe Rd W - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	80	189	60	0	329	0	33	427	200	0	660	0	989
08:00 - 09:00	90	287	83	2	462	0	74	550	258	0	882	0	1344
09:00 - 10:00	59	184	60	0	303	0	56	422	162	0	640	0	943
BREAK													
16:00 - 17:00	121	639	132	1	893	0	25	465	116	0	606	0	1499
17:00 - 18:00	104	599	82	0	785	0	34	462	103	0	599	0	1384
18:00 - 19:00	114	489	117	0	720	0	34	396	97	0	527	0	1247
GRAND TOTAL	**568**	**2387**	**534**	**3**	**3492**	**0**	**256**	**2722**	**936**	**0**	**3914**	**0**	**7406**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	32	72	2	0	106	0	2	0	0	2	0	0	0	0	0	0
07:15	34	102	10	0	146	0	1	0	0	1	0	0	0	0	0	0
07:30	33	136	7	0	176	0	1	0	0	1	0	0	0	0	0	0
07:45	37	160	7	0	204	0	2	0	0	2	0	0	0	0	0	0
08:00	33	148	5	0	186	0	2	0	0	2	0	0	0	0	0	0
08:15	37	105	10	0	152	1	2	0	0	3	0	0	0	0	0	0
08:30	42	139	19	0	200	1	5	0	0	6	0	0	0	0	0	0
08:45	59	146	28	0	233	0	0	1	0	1	0	0	0	0	0	0
09:00	38	97	14	0	149	0	3	0	0	3	0	0	0	0	0	0
09:15	34	96	8	0	138	2	2	0	0	4	0	0	0	0	0	0
09:30	36	95	10	0	141	2	4	0	0	6	0	0	0	0	0	0
09:45	18	98	11	0	127	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	433	1394	131	0	1958	6	27	1	0	34	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	20	67	27	0	114	2	2	0	0	4	0	0	0	0	0	0
16:15	25	81	27	0	133	0	1	0	0	1	0	0	0	0	0	0
16:30	23	77	13	0	113	1	0	0	0	1	0	0	0	0	0	0
16:45	32	70	19	0	121	0	0	0	0	0	0	0	0	0	0	0
17:00	20	72	20	0	112	1	1	0	0	2	0	0	0	0	0	0
17:15	24	70	13	0	107	0	0	0	0	0	0	0	0	0	0	0
17:30	23	88	19	0	130	0	1	0	0	1	0	0	0	0	0	0
17:45	18	76	9	0	103	0	0	0	0	0	0	0	0	0	0	0
18:00	30	66	12	0	108	0	2	0	0	2	0	0	0	0	0	0
18:15	32	75	16	0	123	0	0	0	0	0	0	0	0	0	0	0
18:30	33	67	10	0	110	2	0	0	0	2	0	0	0	0	0	0
18:45	26	78	10	0	114	2	0	0	0	2	0	0	0	0	0	0
SUBTOTAL	306	887	195	0	1388	8	7	0	0	15	0	0	0	0	0	0
GRAND TOTAL	739	2281	326	0	3346	14	34	1	0	49	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	17	40	13	0	70	9	1	0	0	10	0	0	0	0	0	0
07:15	18	49	14	0	81	9	1	0	0	10	0	0	0	0	0	0
07:30	11	65	12	0	88	8	3	0	0	11	0	0	0	0	0	0
07:45	16	70	22	0	108	5	2	0	0	7	0	0	0	0	0	0
08:00	13	65	14	0	92	1	1	0	0	2	0	0	0	0	0	0
08:15	19	71	21	0	111	9	0	0	0	9	0	0	0	0	0	0
08:30	20	73	21	0	114	6	1	0	0	7	0	0	0	0	0	0
08:45	25	92	27	0	144	7	1	3	0	11	0	0	0	0	0	0
09:00	23	66	25	0	114	6	6	0	0	12	0	0	0	0	0	0
09:15	22	54	16	0	92	10	3	3	0	16	0	0	0	0	0	0
09:30	25	59	11	0	95	10	6	0	0	16	0	0	0	0	0	0
09:45	11	46	12	0	69	9	6	0	0	15	0	0	0	0	0	0
SUBTOTAL	220	750	208	0	1178	89	31	6	0	126	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	69	140	46	0	255	6	2	1	0	9	0	0	0	0	0	0
16:15	81	134	38	0	253	3	3	0	0	6	0	0	0	0	0	0
16:30	63	135	47	0	245	3	0	0	0	3	0	0	0	0	0	0
16:45	60	142	49	0	251	2	2	1	0	5	0	0	0	0	0	0
17:00	69	169	72	0	310	1	1	2	0	4	0	0	0	0	0	0
17:15	68	156	52	0	276	4	1	0	0	5	0	0	0	0	0	0
17:30	66	148	41	0	255	1	1	1	0	3	0	0	0	0	0	0
17:45	40	145	61	0	246	1	1	0	0	2	0	0	0	0	0	0
18:00	35	114	46	0	195	2	0	2	0	4	0	0	0	0	0	0
18:15	46	134	54	0	234	1	0	0	0	1	0	0	0	0	0	0
18:30	33	96	27	0	156	2	0	0	0	2	0	0	0	0	0	0
18:45	31	98	33	0	162	1	1	1	0	3	0	0	0	0	0	0
SUBTOTAL	661	1611	566	0	2838	27	12	8	0	47	0	0	0	0	0	0
GRAND TOTAL	881	2361	774	0	4016	116	43	14	0	173	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	15	27	9	0	51	1	0	0	0	1	0	0	0	0	0	0
07:15	12	46	15	0	73	0	3	0	0	3	0	0	0	0	0	0
07:30	25	54	15	0	94	0	0	1	0	1	0	0	0	0	0	0
07:45	27	59	18	0	104	0	0	2	0	2	0	0	0	0	0	0
08:00	26	60	19	2	107	1	2	0	0	3	0	0	0	0	0	0
08:15	23	72	16	0	111	0	1	0	0	1	0	0	0	0	0	0
08:30	19	87	29	0	135	0	4	1	0	5	0	0	0	0	0	0
08:45	21	60	16	0	97	0	1	2	0	3	0	0	0	0	0	0
09:00	14	50	17	0	81	3	2	2	0	7	0	0	0	0	0	0
09:15	12	46	14	0	72	1	1	0	0	2	0	0	0	0	0	0
09:30	12	43	15	0	70	4	1	1	0	6	0	1	0	0	1	0
09:45	11	37	11	0	59	2	3	0	0	5	0	0	0	0	0	0
SUBTOTAL	217	641	194	2	1054	12	18	9	0	39	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	29	175	32	0	236	0	5	1	0	6	0	0	0	0	0	0
16:15	29	148	43	1	221	0	1	0	0	1	0	0	0	0	0	0
16:30	34	161	31	0	226	0	0	0	0	0	0	0	0	0	0	0
16:45	29	148	25	0	202	0	1	0	0	1	0	0	0	0	0	0
17:00	35	161	18	0	214	0	2	2	0	4	0	0	0	0	0	0
17:15	24	175	17	0	216	0	0	1	0	1	0	0	0	0	0	0
17:30	20	145	21	0	186	0	1	0	0	1	0	0	0	0	0	0
17:45	25	114	23	0	162	0	1	0	0	1	0	0	0	0	0	0
18:00	24	137	22	0	183	0	1	1	0	2	0	0	0	0	0	0
18:15	28	141	31	0	200	0	1	0	0	1	0	0	0	0	0	0
18:30	31	106	28	0	165	0	1	0	0	1	0	0	0	0	0	0
18:45	31	102	35	0	168	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	339	1713	326	1	2379	0	14	5	0	19	0	0	0	0	0	0
GRAND TOTAL	556	2354	520	3	3433	12	32	14	0	58	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	2	76	27	0	105	0	2	1	0	3	0	0	0	0	0	0
07:15	9	93	34	0	136	0	1	1	0	2	0	0	0	0	0	0
07:30	8	106	56	0	170	1	0	1	0	2	0	0	0	0	0	0
07:45	13	148	71	0	232	0	1	9	0	10	0	0	0	0	0	0
08:00	15	136	59	0	210	2	1	10	0	13	0	0	0	0	0	0
08:15	18	136	62	0	216	1	2	6	0	9	0	0	0	0	0	0
08:30	16	117	50	0	183	0	3	5	0	8	0	0	0	0	0	0
08:45	22	154	55	0	231	0	1	11	0	12	0	0	0	0	0	0
09:00	15	137	43	0	195	0	2	3	0	5	0	0	0	0	0	0
09:15	18	106	36	0	160	0	1	13	0	14	0	0	0	0	0	0
09:30	9	88	31	0	128	0	0	3	0	3	0	0	0	0	0	0
09:45	14	87	24	0	125	0	1	9	0	10	0	0	0	0	0	0
SUBTOTAL	159	1384	548	0	2091	4	15	72	0	91	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Municipality: Oakville
Count Date: Mar 07, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	10	104	21	0	135	0	2	2	0	4	0	0	0	0	0	0
16:15	6	104	29	0	139	0	4	2	0	6	0	1	0	0	1	0
16:30	5	124	24	0	153	0	1	4	0	5	0	0	0	0	0	0
16:45	3	122	30	0	155	1	3	4	0	8	0	0	0	0	0	0
17:00	9	100	29	0	138	0	0	3	0	3	0	1	0	0	1	0
17:15	6	111	22	0	139	0	0	1	0	1	0	0	0	0	0	0
17:30	8	142	20	0	170	0	1	5	0	6	0	1	0	0	1	0
17:45	11	105	20	0	136	0	1	3	0	4	0	0	0	0	0	0
18:00	6	97	24	0	127	0	3	1	0	4	0	0	0	0	0	0
18:15	9	112	21	0	142	0	1	2	0	3	0	0	0	0	0	0
18:30	12	90	33	0	135	0	1	2	0	3	0	0	0	0	0	0
18:45	7	90	13	0	110	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	92	1301	286	0	1679	1	19	30	0	50	0	3	0	0	3	0
GRAND TOTAL	251	2685	834	0	3770	5	34	102	0	141	0	3	0	0	3	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	10:00:00	To:	09:00:00

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Ninth Line runs N/S

North Approach

	Out	In	Total
Cars	771	452	1223
Trucks	12	9	21
Bicycles	0	0	0
	783	**461**	**1244**

Ninth Line

Bicycles	0	0	0	0
Trucks	1	9	2	0
Cars	62	538	171	0
Totals	**63**	**547**	**173**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	450	799	1249
Trucks	12	12	24
Bicycles	0	0	0
	462	**811**	**1273**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	3	71	**74**
0	7	543	**550**
0	32	226	**258**

Peds: 0



Peds: 0

Burnhamthorpe Rd W

Totals	Cars	Trucks	Bicycles
2	2	0	0
83	80	3	0
287	279	8	0
90	89	1	0

Peds: 0

West Approach

	Out	In	Total
Cars	840	418	1258
Trucks	42	32	74
Bicycles	0	0	0
	882	**450**	**1332**

Totals	**100**	**304**	**86**	**0**
Cars	77	301	83	0
Trucks	23	3	3	0
Bicycles	0	0	0	0

Ninth Line

South Approach

	Out	In	Total
Cars	461	853	1314
Trucks	29	42	71
Bicycles	0	0	0
	490	**895**	**1385**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Count Date: Mar 07, 2024
Period: 07:00 - 10:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach Burnhamthorpe Rd W						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	33	150	5	0	0	188	14	66	14	0	0	94	27	62	19	2	0	110	17	137	69	0	0	223	615
08:15	38	107	10	0	0	155	28	71	21	0	0	120	23	73	16	0	0	112	19	138	68	0	0	225	612
08:30	43	144	19	0	0	206	26	74	21	0	0	121	19	91	30	0	0	140	16	120	55	0	0	191	658
08:45	59	146	29	0	0	234	32	93	30	0	0	155	21	61	18	0	0	100	22	155	66	0	0	243	732
Grand Total	**173**	**547**	**63**	**0**	**0**	**783**	**100**	**304**	**86**	**0**	**0**	**490**	**90**	**287**	**83**	**2**	**0**	**462**	**74**	**550**	**258**	**0**	**0**	**882**	**2617**
Approach %	22.1	69.9	8	0		-	20.4	62	17.6	0		-	19.5	62.1	18	0.4		-	8.4	62.4	29.3	0		-	
Totals %	6.6	20.9	2.4	0		29.9	3.8	11.6	3.3	0		18.7	3.4	11	3.2	0.1		17.7	2.8	21	9.9	0		33.7	
PHF	**0.73**	**0.91**	**0.54**	**0**		**0.84**	**0.78**	**0.82**	**0.72**	**0**		**0.79**	**0.83**	**0.79**	**0.69**	**0.25**		**0.83**	**0.84**	**0.89**	**0.93**	**0**		**0.91**	**0.89**
Cars	171	538	62	0		771	77	301	83	0		461	89	279	80	2		450	71	543	226	0		840	2522
% Cars	98.8	98.4	98.4	0		98.5	77	99	96.5	0		94.1	98.9	97.2	96.4	100		97.4	95.9	98.7	87.6	0		95.2	96.4
Trucks	2	9	1	0		12	23	3	3	0		29	1	8	3	0		12	3	7	32	0		42	95
% Trucks	1.2	1.6	1.6	0		1.5	23	1	3.5	0		5.9	1.1	2.8	3.6	0		2.6	4.1	1.3	12.4	0		4.8	3.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:15:00
To:	19:00:00	To:	17:15:00

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Count Date: Mar 07, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Ninth Line runs N/S

North Approach

	Out	In	Total
Cars	479	720	1199
Trucks	4	9	13
Bicycles	0	0	0
	483	**729**	**1212**

Ninth Line

Bicycles	0	0	0	0
Trucks	0	2	2	0
Cars	79	300	100	0
Totals	**79**	**302**	**102**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	863	757	1620
Trucks	6	13	19
Bicycles	0	2	2
	869	**772**	**1641**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	23	**24**
2	8	450	**460**
0	13	112	**125**

Peds: 0

Peds: 0

Burnhamthorpe Rd W

Totals	Cars	Trucks	Bicycles
1	1	0	0
119	117	2	0
622	618	4	0
127	127	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	585	970	1555
Trucks	22	13	35
Bicycles	2	0	2
	609	**983**	**1592**

Totals	**282**	**586**	**209**	**0**
Cars	273	580	206	0
Trucks	9	6	3	0
Bicycles	0	0	0	0

Ninth Line

South Approach

	Out	In	Total
Cars	1059	539	1598
Trucks	18	15	33
Bicycles	0	0	0
	1077	**554**	**1631**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Ninth Line & Burnhamthorpe Rd W - William Halton Pkwy
Site Code: 2409900003
Count Date: Mar 07, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:15 - 17:15)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach Burnhamthorpe Rd W						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:15	25	82	27	0	0	134	84	137	38	0	0	259	29	149	43	1	0	222	6	109	31	0	0	146	761
16:30	24	77	13	0	0	114	66	135	47	0	0	248	34	161	31	0	0	226	5	125	28	0	0	158	746
16:45	32	70	19	0	0	121	62	144	50	0	0	256	29	149	25	0	0	203	4	125	34	0	0	163	743
17:00	21	73	20	0	0	114	70	170	74	0	0	314	35	163	20	0	0	218	9	101	32	0	0	142	788
Grand Total	**102**	**302**	**79**	**0**	**0**	**483**	**282**	**586**	**209**	**0**	**0**	**1077**	**127**	**622**	**119**	**1**	**0**	**869**	**24**	**460**	**125**	**0**	**0**	**609**	**3038**
Approach %	21.1	62.5	16.4	0		-	26.2	54.4	19.4	0		-	14.6	71.6	13.7	0.1		-	3.9	75.5	20.5	0		-	
Totals %	3.4	9.9	2.6	0		15.9	9.3	19.3	6.9	0		35.5	4.2	20.5	3.9	0		28.6	0.8	15.1	4.1	0		20	
PHF	**0.8**	**0.92**	**0.73**	**0**		**0.9**	**0.84**	**0.86**	**0.71**	**0**		**0.86**	**0.91**	**0.95**	**0.69**	**0.25**		**0.96**	**0.67**	**0.92**	**0.92**	**0**		**0.93**	**0.96**
Cars	100	300	79	0		479	273	580	206	0		1059	127	618	117	1		863	23	450	112	0		585	2986
% Cars	98	99.3	100	0		99.2	96.8	99	98.6	0		98.3	100	99.4	98.3	100		99.3	95.8	97.8	89.6	0		96.1	98.3
Trucks	2	2	0	0		4	9	6	3	0		18	0	4	2	0		6	1	8	13	0		22	50
% Trucks	2	0.7	0	0		0.8	3.2	1	1.4	0		1.7	0	0.6	1.7	0		0.7	4.2	1.7	10.4	0		3.6	1.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	2
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0.4	0	0		0.3	0.1
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-140 - CGH Transportation

Intersection Count Report

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Municipality:	Oakville
Count Date:	Saturday, Apr 13, 2024
Site Code:	2414000003
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	10:00-15:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
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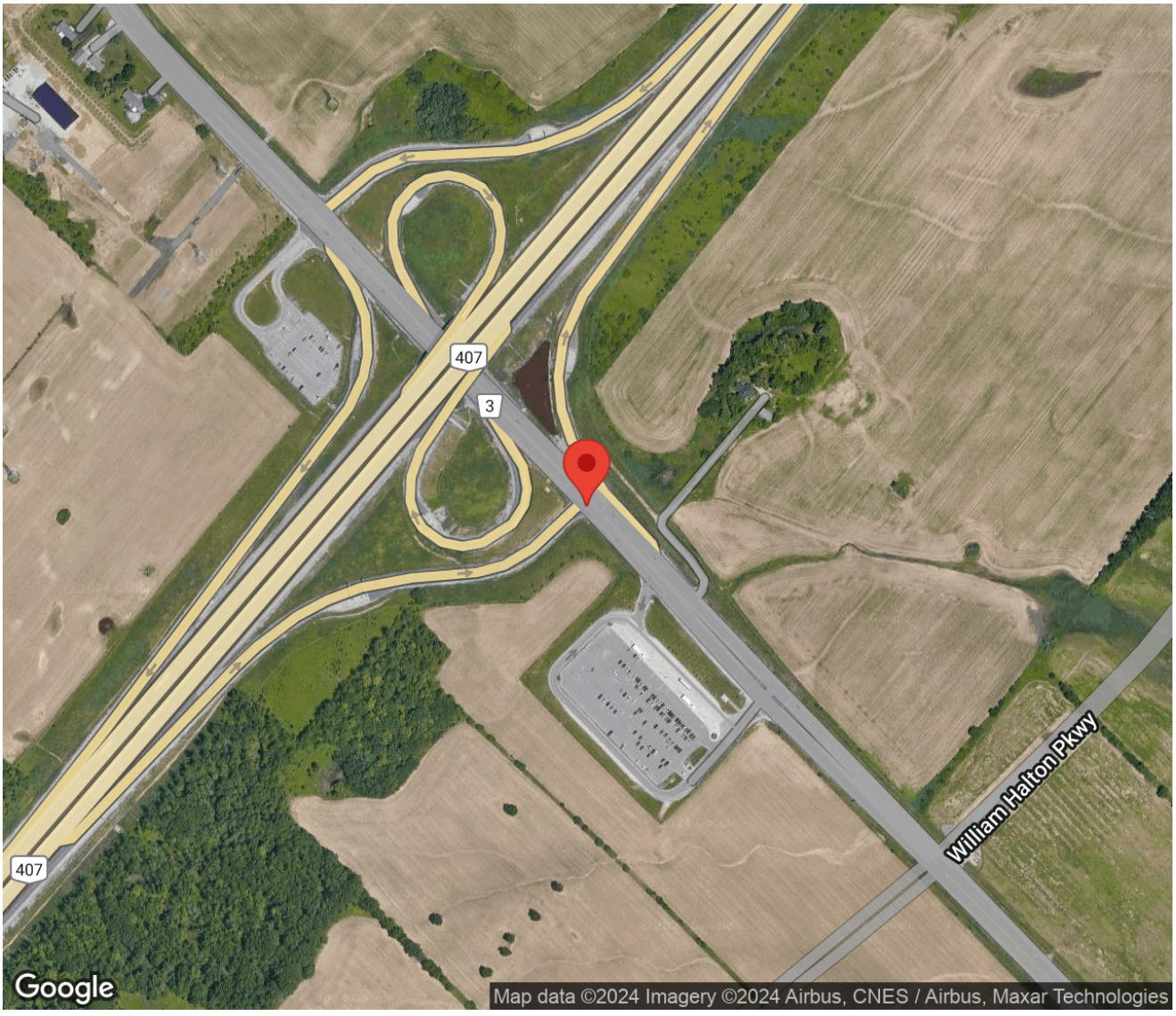
Traffic Count Map

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2414000003
Municipality:	Oakville
Count Date:	Apr 13, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2414000003
Municipality:	Oakville
Count Date:	Apr 13, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
10:00 - 11:00	0	622	12	0	634	0	0	513	57	0	570	0	1204
11:00 - 12:00	0	677	21	0	698	0	0	626	84	1	711	0	1409
12:00 - 13:00	0	741	14	0	755	0	0	750	90	1	841	0	1596
13:00 - 14:00	0	772	20	0	792	0	0	809	85	0	894	0	1686
14:00 - 15:00	0	843	12	0	855	0	0	796	86	0	882	0	1737
GRAND TOTAL	**0**	**3655**	**79**	**0**	**3734**	**0**	**0**	**3494**	**402**	**2**	**3898**	**0**	**7632**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code:	2414000003
Municipality:	Oakville
Count Date:	Apr 13, 2024

Hwy 407 South Ramp Terminal - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
10:00 - 11:00	0	0	0	0	0	0	22	0	13	0	35	0	35
11:00 - 12:00	0	0	0	0	0	0	26	0	25	0	51	0	51
12:00 - 13:00	0	0	0	0	0	0	29	0	20	0	49	0	49
13:00 - 14:00	0	0	0	0	0	0	31	0	22	0	53	0	53
14:00 - 15:00	0	0	0	0	0	0	31	0	34	0	65	0	65
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**139**	**0**	**114**	**0**	**253**	**0**	**253**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Municipality: Oakville
Count Date: Apr 13, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
10:00	0	133	0	0	133	0	3	0	0	3	0	0	0	0	0	0
10:15	0	155	5	0	160	0	2	0	0	2	0	0	0	0	0	0
10:30	0	172	4	0	176	0	7	0	0	7	0	0	0	0	0	0
10:45	0	148	3	0	151	0	2	0	0	2	0	0	0	0	0	0
11:00	0	144	5	0	149	0	4	0	0	4	0	0	0	0	0	0
11:15	0	163	6	0	169	0	3	0	0	3	0	0	0	0	0	0
11:30	0	179	2	0	181	0	4	0	0	4	0	0	0	0	0	0
11:45	0	173	8	0	181	0	7	0	0	7	0	0	0	0	0	0
12:00	0	156	1	0	157	0	6	0	0	6	0	0	0	0	0	0
12:15	0	190	6	0	196	0	5	0	0	5	0	0	0	0	0	0
12:30	0	192	6	0	198	0	3	0	0	3	0	0	0	0	0	0
12:45	0	183	1	0	184	0	5	0	0	5	0	1	0	0	1	0
13:00	0	195	8	0	203	0	2	0	0	2	0	0	0	0	0	0
13:15	0	195	5	0	200	0	3	0	0	3	0	0	0	0	0	0
13:30	0	181	3	0	184	0	2	0	0	2	0	0	0	0	0	0
13:45	0	190	4	0	194	0	4	0	0	4	0	0	0	0	0	0
14:00	0	210	5	0	215	0	3	0	0	3	0	0	0	0	0	0
14:15	0	226	3	0	229	0	1	0	0	1	0	0	0	0	0	0
14:30	0	196	1	0	197	0	4	0	0	4	0	0	0	0	0	0
14:45	0	200	3	0	203	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	0	3581	79	0	3660	0	73	0	0	73	0	1	0	0	1	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	0	3581	79	0	3660	0	73	0	0	73	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

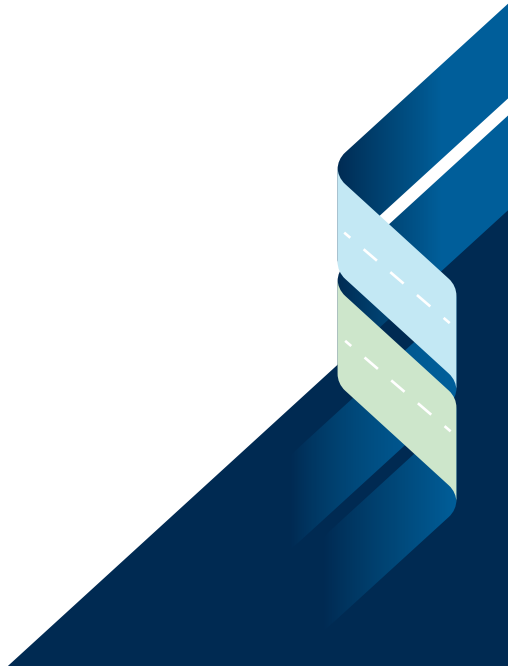
Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Municipality: Oakville
Count Date: Apr 13, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
10:00	0	109	14	0	123	0	2	2	0	4	0	0	0	0	0	0
10:15	0	117	10	0	127	0	4	1	0	5	0	0	0	0	0	0
10:30	0	133	12	0	145	0	2	0	0	2	0	0	0	0	0	0
10:45	0	143	16	0	159	0	3	2	0	5	0	0	0	0	0	0
11:00	0	119	20	0	139	0	7	0	0	7	0	0	0	0	0	0
11:15	0	148	17	1	166	0	2	2	0	4	0	1	0	0	1	0
11:30	0	150	21	0	171	0	6	0	0	6	0	0	0	0	0	0
11:45	0	189	22	0	211	0	4	2	0	6	0	0	0	0	0	0
12:00	0	178	20	0	198	0	4	0	0	4	0	0	0	0	0	0
12:15	0	163	18	1	182	0	1	1	0	2	0	0	0	0	0	0
12:30	0	190	20	0	210	0	4	1	0	5	0	0	0	0	0	0
12:45	0	205	28	0	233	0	5	2	0	7	0	0	0	0	0	0
13:00	0	193	24	0	217	0	5	0	0	5	0	0	0	0	0	0
13:15	0	192	16	0	208	0	5	3	0	8	0	0	0	0	0	0
13:30	0	194	17	0	211	0	1	0	0	1	0	0	0	0	0	0
13:45	0	216	22	0	238	0	3	3	0	6	0	0	0	0	0	0
14:00	0	192	19	0	211	0	5	0	0	5	0	0	0	0	0	0
14:15	0	217	19	0	236	0	4	2	0	6	0	0	0	0	0	0
14:30	0	184	25	0	209	0	5	0	0	5	0	0	0	0	0	0
14:45	0	181	19	0	200	0	8	2	0	10	0	0	0	0	0	0
SUBTOTAL	0	3413	379	2	3794	0	80	23	0	103	0	1	0	0	1	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	0	3413	379	2	3794	0	80	23	0	103	0	1	0	0	1	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

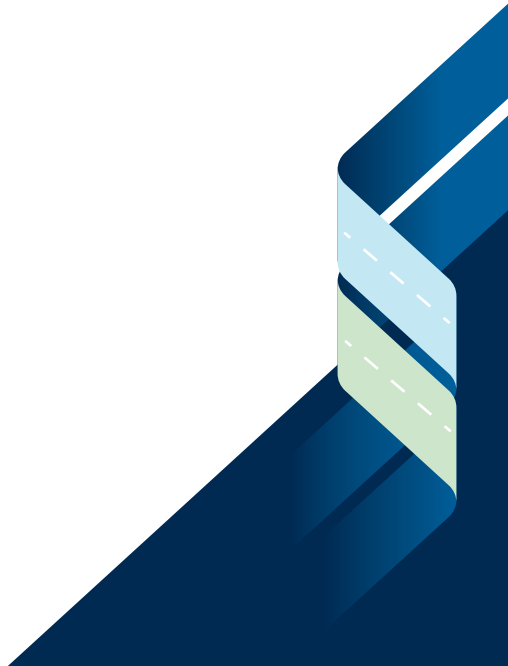
Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Municipality: Oakville
Count Date: Apr 13, 2024

East Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
GRAND TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Municipality: Oakville
Count Date: Apr 13, 2024

West Approach - Hwy 407 South Ramp Terminal

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
10:00	6	0	0	0	6	0	0	2	0	2	0	0	0	0	0	0
10:15	2	0	2	0	4	0	0	1	0	1	0	0	0	0	0	0
10:30	6	0	1	0	7	0	0	0	0	0	0	0	0	0	0	0
10:45	8	0	5	0	13	0	0	2	0	2	0	0	0	0	0	0
11:00	6	0	4	0	10	0	0	0	0	0	0	0	0	0	0	0
11:15	7	0	2	0	9	0	0	2	0	2	0	0	0	0	0	0
11:30	7	0	6	0	13	0	0	0	0	0	0	0	0	0	0	0
11:45	6	0	9	0	15	0	0	2	0	2	0	0	0	0	0	0
12:00	8	0	6	0	14	0	0	1	0	1	0	0	0	0	0	0
12:15	10	0	2	0	12	0	0	0	0	0	0	0	0	0	0	0
12:30	7	0	3	0	10	0	0	1	0	1	0	0	0	0	0	0
12:45	4	0	5	0	9	0	0	2	0	2	0	0	0	0	0	0
13:00	8	0	8	0	16	0	0	0	0	0	0	0	0	0	0	0
13:15	1	0	2	0	3	0	0	2	0	2	0	0	0	0	0	0
13:30	11	0	3	0	14	0	0	0	0	0	0	0	0	0	0	0
13:45	11	0	5	0	16	0	0	2	0	2	0	0	0	0	0	0
14:00	7	0	6	0	13	0	0	0	0	0	0	0	0	0	0	0
14:15	6	0	9	0	15	0	0	3	0	3	0	0	0	0	0	0
14:30	10	0	6	0	16	0	0	0	0	0	0	0	0	0	0	0
14:45	8	0	8	0	16	0	0	2	0	2	0	0	0	0	0	0
SUBTOTAL	139	0	92	0	231	0	0	22	0	22	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
GRAND TOTAL	139	0	92	0	231	0	0	22	0	22	0	0	0	0	0	0

Peak Hour Diagram

Specified Period
From: 10:00:00
To: 15:00:00

One Hour Peak
From: 13:45:00
To: 14:45:00

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Count Date: Apr 13, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	835	843	1678
Trucks	12	17	29
Bicycles	0	0	0
	847	**860**	**1707**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	12	0	0
Cars	13	822	0	0
Totals	**13**	**834**	**0**	**0**

East Approach

	Out	In	Total
Cars	0	85	85
Trucks	0	5	5
Bicycles	0	0	0
	0	**90**	**90**

Hwy 407 South Ramp Terminal

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	34	**34**
0	0	0	**0**
0	5	26	**31**

Peds: 0

Peds: 0

Peds: 0

Hwy 407 South Ramp Terminal

Totals	Cars	Trucks	Bicycles
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

West Approach

	Out	In	Total
Cars	60	13	73
Trucks	5	0	5
Bicycles	0	0	0
	65	**13**	**78**

Totals	**0**	**826**	**90**	**0**
Cars	0	809	85	0
Trucks	0	17	5	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	894	848	1742
Trucks	22	17	39
Bicycles	0	0	0
	916	**865**	**1781**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Trafalgar Rd & Hwy 407 South Ramp Terminal
Site Code: 2414000003
Count Date: Apr 13, 2024
Period: 10:00 - 15:00

Peak Hour Data (13:45 - 14:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Hwy 407 South Ramp Terminal						West Approach Hwy 407 South Ramp Terminal						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
13:45	0	194	4	0	0	198	0	219	25	0	0	244	0	0	0	0	0	0	11	0	7	0	0	18	460
14:00	0	213	5	0	0	218	0	197	19	0	0	216	0	0	0	0	0	0	7	0	6	0	0	13	447
14:15	0	227	3	0	0	230	0	221	21	0	0	242	0	0	0	0	0	0	6	0	12	0	0	18	490
14:30	0	200	1	0	0	201	0	189	25	0	0	214	0	0	0	0	0	0	10	0	6	0	0	16	431
Grand Total	**0**	**834**	**13**	**0**	**0**	**847**	**0**	**826**	**90**	**0**	**0**	**916**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**0**	**31**	**0**	**0**	**65**	**1828**
Approach %	0	98.5	1.5	0		-	0	90.2	9.8	0		-	0	0	0	0		-	52.3	0	47.7	0		-	
Totals %	0	45.6	0.7	0		46.3	0	45.2	4.9	0		50.1	0	0	0	0		0	1.9	0	1.7	0		3.6	
PHF	**0**	**0.92**	**0.65**	**0**		**0.92**	**0**	**0.93**	**0.9**	**0**		**0.94**	**0**	**0**	**0**	**0**		**0**	**0.77**	**0**	**0.65**	**0**		**0.9**	**0.93**
Cars	0	822	13	0		835	0	809	85	0		894	0	0	0	0		0	34	0	26	0		60	1789
% Cars	0	98.6	100	0		98.6	0	97.9	94.4	0		97.6	0	0	0	0		0	100	0	83.9	0		92.3	97.9
Trucks	0	12	0	0		12	0	17	5	0		22	0	0	0	0		0	0	0	5	0		5	39
% Trucks	0	1.4	0	0		1.4	0	2.1	5.6	0		2.4	0	0	0	0		0	0	0	16.1	0		7.7	2.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Appendix C

Signal Timing Plans

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Configuration Controller Sequence

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

Hardware Alternate Sequence Enable: No

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

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

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

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

Phase Compatibility (MM) 1-1-2

Phase	
n/a	Barrier Mode

Phase and Overlap Descriptions

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Approach	S	N	W	E	N	S	E	W	N	N	N	N	N	N	N	N
Movement	L	TR	L	TR	L	TR	L	TR								
Associated PED		X		X		X		X								
Overlap	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
Approach	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Movement																

Administration (MM) 1-7-1

Enable Controller/Cabinet Interlock CRC	No
CRC (16 bit)	8C50
Enable Automatic Backup to Datakey	No

Backup Prevent (MM) 1-1-3

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

Simultaneous Gap (MM) 1-1-4

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

Load Switch Assignments (MM) 1-3

	Phase / Overlap	Type	Dimming				Power Up	Auto		Flash Together
			Red	Yellow	Green	Dark		Red	Yellow	
1	1	V				-	Auto	X		
2	2	V				-	Auto	X		X
3	3	V				-	Auto	X		
4	4	V				-	Auto	X		X
5	5	V				+	Auto	X		
6	6	V				+	Auto	X		X
7	7	V				+	Auto	X		
8	8	V				+	Auto	X		X
9	2	P				-	Auto			
10	4	P				-	Auto			
11	6	P				+	Auto			
12	8	P				+	Auto			
13	0	O				-	Auto	X		

14	0	O				+	Auto	X		X
15	0	O				-	Auto	X		
16	0	O				+	Auto	X		X

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Configuration Port 1 (SDLC)

Port 1 SDLC (MM) 1-4-1

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

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

MMU Program (MM) 1-4-2

Channel Can Serve With Channel	
Channel 1	**Channel 2**

Color Check Enable (MM) 1-4-3

Enable Color Check: No

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

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

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

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

Enable SDLC Diagnostic Test: No

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REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Configuration Logging / Display

Event Logging (MM) 1-6-1

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

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

Display Options (MM) 1-7-2

Key Click Enable:	No
Switch to Graphics Mode:	No
LED Mode:	Auto
Display Mode:	Basic
Trans Mode Pop-Up Disable:	No

Sign On (MM) 8-5

Sign On Message Line 1: Dual Walk Term & Call Next Thru
Sign On Message Line 2:

Software Modules (MM) 8-7

Application Version: 32.67.20
OS (Boot) Version: 06.12.00

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REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Logic Processor Page 1

Logic Statement Control (MM) 1-8-1

Logic #	Statement Control

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REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Direction	**S-L**	**N-TR**	**W-L**	**E-TR**	**N-L**	**S-TR**	**E-L**	**W-TR**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Min Green	7	20	7	20	7	20	7	20	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	29	0	24	0	29	0	24	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max1	15	60	12	40	15	60	12	40	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	4.6	3.0	3.7	3.0	4.6	3.0	3.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	0.0	2.3	0.0	3.3	0.0	2.3	0.0	3.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Overlap	Type	Lag Green	Yellow	Red	Adv. Green

Phases

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

PPLT FYA

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

Guaranteed Minimum Time Data (MM) 2-4

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

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Controller Start / Flash Data (MM) 2-5

Start Up

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

Overlap

Flash Thru Mon: No
Flash Time: 0
All Red: 3
Power Start Seq: 1
MUTCD Enabled: No
Y->G: n/a

Automatic Flash

Entry
2
6

Exit
2
6

Overlap Exit

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

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Controller Options

Controller Options (MM) 2-6-1

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

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

Pre-Timed Mode (MM) 2-7

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

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

Phase Recall Options (MM) 2-8

Plan # 1

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

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Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Percent	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lead	Use Ped Time	Yes
Ped Recall	Yes	Ped Reservice	Yes
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	3	Multisync	No

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

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

Split Demand (MM) 3-5

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

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

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REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

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

Coordinator Pattern # 1

Split Pattern	1	TS2 (Pat-Off)	0-1	Splits In	Percent
Cycle	140	Std (COS)	9	Offsets In	Seconds
Offset Value	0s	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	1		
Actuated Walk Rest	No	Sequence	1		
Phase Reservice	No	Action Plan	1		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Splits (Split Pat 1)	10	50	9	31	10	50	9	31	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 2

Split Pattern	2	TS2 (Pat-Off)	0-2	Splits In	Percent
Cycle	120	Std (COS)	17	Offsets In	Seconds
Offset Value	0s	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	1		
Actuated Walk Rest	No	Sequence	1		
Phase Reservice	No	Action Plan	2		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Splits (Split Pat 2)	10	48	10	32	10	48	10	32	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 3

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

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Splits (Split Pat 3)	12	48	9	31	12	48	9	31	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Special Funciton Outputs								

Coordinator Pattern # 4

Split Pattern	4	TS2 (Pat-Off)	1-1	Splits In	Percent
Cycle	120	Std (COS)	33	Offsets In	Seconds
Offset Value	0s	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	1		
Actuated Walk Rest	No	Sequence	1		
Phase Reservice	No	Action Plan	4		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Splits (Split Pat 4)	10	45	10	35	10	45	10	35	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

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MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

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

Split Pattern # 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Split (percent)	10	50	9	31	10	50	9	31	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Split (percent)	10	48	10	32	10	48	10	32	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N
Split (percent)	12	48	9	31	12	48	9	31	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	S-L	N-TR	W-L	E-TR	N-L	S-TR	E-L	W-TR	N	N	N	N	N	N	N	N

Split (percent)	10	45	10	35	10	45	10	35	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	**1**	**2**	**3**	**4**
Split Sum	100%	100%	0%	0%

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Preempt Plan

Preempt Plan (MM) 4-1

Preempt Plan 3

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	2.0
	Min Grn	Ext Grn	Max Grn	Yellow	Red
Track Clear	0	0	0	4.0	1.0
	Min Dwell	Pmt Ext	Max Time	Yellow	Red
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Preempt Plan 4

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	2.0
	Min Grn	Ext Grn	Max Grn	Yellow	Red
Track Clear	0	0	0	4.0	1.0
	Min Dwell	Pmt Ext	Max Time	Yellow	Red
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

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

Manual Action Plan:	0
SYNC Reference Time:	00:00
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

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

Action Plan - 1 - "1"

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

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

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

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

Action Plan - 2 - "2"

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

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

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

Action Plan - 3 - "3"

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

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

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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

Action Plan - 4 - "4"

Pattern	4	Override Sys	No
Timing Plan	1	Sequence	1
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

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

Spec Func (1-8)								

Aux Func (1-3)			

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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

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

Day Plan #1 - "1"

Event	Action Plan	Start Time
1	1	06:00
2	2	10:00
3	3	15:15
4	4	20:00
5	5	22:00

Day Plan #2 - "2"

Event	Action Plan	Start Time
1	99	00:00
2	2	09:00
3	3	15:00
4	99	19:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

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

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

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

Schedule Number - 2

Day Plan No.: 2

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

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5107 - Trafalgar Rd @ William Halton Pkwy - Econolite Type - Cobalt

Detectors

Detectors - Pg 1

Veh Det Phase Assignment (MM) 6-1

Vehicle Detector Plan Number - 1

Veh Detector	Assigned Phase	Called Phase	Type
17	1		N
18	2		N
19	3		N
20	4	8	N
21	5		N
22	6		N
23	7		N
24	8	4	N
26	2		N
27	8	4	N
28	4	8	N
30	6		N
31	4	8	N
32	8	4	N

Vehicle Detector Plan Number - 2

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

Vehicle Detector Setup (MM) 6-2

Veh Detector	Type	TS2 Detector	Description
1	N-NTCIP	Yes	
2	N-NTCIP	Yes	
3	N-NTCIP	Yes	
4	N-NTCIP	Yes	
5	N-NTCIP	Yes	

6	N-NTCIP	Yes	
7	N-NTCIP	Yes	
8	N-NTCIP	Yes	
9	N-NTCIP	Yes	
10	N-NTCIP	Yes	
11	N-NTCIP	Yes	
12	N-NTCIP	Yes	
13	N-NTCIP	Yes	
14	N-NTCIP	Yes	
15	N-NTCIP	Yes	
16	N-NTCIP	Yes	
17	N-NTCIP	Yes	
18	N-NTCIP	Yes	
19	N-NTCIP	Yes	
20	N-NTCIP	Yes	
21	N-NTCIP	Yes	
22	N-NTCIP	Yes	
23	N-NTCIP	Yes	
24	N-NTCIP	Yes	
25	N-NTCIP	Yes	
26	N-NTCIP	Yes	
27	N-NTCIP	Yes	
28	N-NTCIP	Yes	
29	N-NTCIP	Yes	
30	N-NTCIP	Yes	
31	N-NTCIP	Yes	
32	N-NTCIP	Yes	
33	N-NTCIP	Yes	
34	N-NTCIP	Yes	
35	N-NTCIP	Yes	
36	N-NTCIP	Yes	
37	N-NTCIP	Yes	
38	N-NTCIP	Yes	
39	N-NTCIP	Yes	
40	N-NTCIP	Yes	
41	N-NTCIP	Yes	
42	N-NTCIP	Yes	
43	N-NTCIP	Yes	
44	N-NTCIP	Yes	
45	N-NTCIP	Yes	
46	N-NTCIP	Yes	
47	N-NTCIP	Yes	
48	N-NTCIP	Yes	
49	N-NTCIP	Yes	
50	N-NTCIP	Yes	
51	N-NTCIP	Yes	
52	N-NTCIP	Yes	
53	N-NTCIP	Yes	
54	N-NTCIP	Yes	
55	N-NTCIP	Yes	
56	N-NTCIP	Yes	
57	N-NTCIP	Yes	
58	N-NTCIP	Yes	
59	N-NTCIP	Yes	
60	N-NTCIP	Yes	
61	N-NTCIP	Yes	

62	N-NTCIP	Yes	
63	N-NTCIP	Yes	
64	N-NTCIP	Yes	

Vehicle Detector Plan Number - 1

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
2	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
17	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
18	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
19	3	No	Yes	0.0	Passage	0.0	0	No	8	Red	No	No	No
20	4	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No
21	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
22	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
23	7	No	Yes	0.0	Passage	0.0	0	No	4	Red	No	No	No
24	8	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No
25	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
26	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
27	8	No	Yes	15.0	Passage	0.0	0	No	0	None	No	No	No
28	4	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No
29	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
30	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
31	4	No	Yes	15.0	Passage	0.0	0	No	0	None	No	No	No
32	8	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No

Vehicle Detector Plan Number - 2

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
2	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	11	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	12	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	13	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Ped Detector Phase Assignment
(MM) 6-3

Mode: NTCIP

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

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REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Configuration Controller Sequence

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

Hardware Alternate Sequence Enable: No

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

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

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

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

Phase Compatibility (MM) 1-1-2

Phase	
n/a	Barrier Mode

Phase and Overlap Descriptions

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

Administration (MM) 1-7-1

Enable Controller/Cabinet Interlock CRC	No
CRC (16 bit)	D6E9
Enable Automatic Backup to Datakey	No

Backup Prevent (MM) 1-1-3

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

Simultaneous Gap (MM) 1-1-4

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

Load Switch Assignments (MM) 1-3

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

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Configuration Port 1 (SDLC)

Port 1 SDLC (MM) 1-4-1

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

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

MMU Program (MM) 1-4-2

Channel Can Serve With Channel	
Channel 1	**Channel 2**
1	5
1	6
1	11
1	15
2	5
2	6
2	9
2	11
2	13
2	15
3	7
3	8
3	12
3	16
4	7
4	8
4	10
4	12
4	14
4	16
5	9
5	13
6	9
6	11
6	13
6	15
7	10
7	14
8	10
8	12
8	14
8	16
9	11
9	13
9	15
10	12
10	14
10	16
11	13
11	15

12	14
12	16
13	15
14	16

Color Check Enable (MM) 1-4-3
Enable Color Check: No

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

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

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

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

Enable SDLC Diagnostic Test: No

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REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Configuration Communications 1 (SDLC)

Ethernet Port Configuration (MM) 1-5-1

DHCP Enable:	No
Controller IP:	172.16.2.114
Subnet Mask:	255.255.0.0
Default Gateway IP:	10.104.0.1
Server IP:	172.16.0.254

NTCIP (MM) 1-5-5

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

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

Port	2 (C50S)	3A (C21S)	3B (C22S)
Protocol	GPS NMEA	NTCIP	ECPIP
Enable	No	Yes	No
Data Rate (BPS)	4800	9600	1200
Data, Parity, Stop	8 N 1	8 N 1	8 O 1
Address	0	1	5
Telemetry Response Delay	0.0	1.0	1.0
Duplex - Half or Full	Half	Full	Full
Flow Control	No	No	Yes
Group Address	0	0	0
Single Flag Enable	Yes	No	Yes
RTS to CTS Delay	n/a	n/a	3.0
RTS Turn Off Delay	n/a	n/a	2.0
Dropout Time	10	10	300
Early RTS	n/a	n/a	No
Telemetry Mode	n/a	n/a	FSK
ATCS Railroad	0	n/a	n/a
ATCS Railroad Line	0	n/a	n/a
ATCS Group	0	n/a	n/a
Wayside Device	0	n/a	n/a
ATC Device	0	n/a	n/a
Wayside Subnode	0	n/a	n/a
ATC Subnode	0	n/a	n/a

ECPIP (MM) 1-5-6

Controller Address:	5
Expanded System Detector Address:	0

System Detector Assignment

System Detector	Local Detector

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REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Configuration Logging / Display

Event Logging (MM) 1-6-1

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

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

Display Options (MM) 1-7-2

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

Sign On (MM) 8-5

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

Software Modules (MM) 8-7

Application Version: 02.66.10
OS (Boot) Version: 01.14.03

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Logic Processor Page 1

Logic Statement Control (MM) 1-8-1

Logic #	Statement Control

Town of Oakville, ON

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Logic Processor Page 2

Logic Statements (MM) 1-8-2

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Controller Timing Plan (MM) 2-1

Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction																
Min Green	7	20	7	10	7	20	7	10	5	5	5	5	0	0	0	0
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	0	0	0
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	27	0	27	0	27	0	27	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.5	5.5	3.5	3.5	3.5	5.5	3.5	3.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max1	20	55	20	35	20	55	20	35	35	35	35	35	35	35	35	35
Max2	20	60	20	40	20	60	20	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.7	3.0	3.7	3.0	3.7	3.0	3.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.7	1.0	2.8	2.0	2.7	1.0	2.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Plan 2

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

Plan 3

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

Plan 4

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

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REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Overlap	Type	Lag Green	Yellow	Red	Adv. Green

Phases

Overlap	Phase	Included	Protect	Ped Protect	Not Overlap	Modifier	Lag X Phases	Lag 2 Phases	Flash Green
A	2	Yes	No	No	No		No	No	.
B	4	Yes	No	No	No		No	No	.
C	6	Yes	No	No	No		No	No	.
D	8	Yes	No	No	No		No	No	.

PPLT FYA

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

Guaranteed Minimum Time Data (MM) 2-4

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

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

Included	Pedestrian Overlaps

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Controller Start / Flash Data (MM) 2-5

Start Up

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

Overlap
A
B
C
D

Flash Thru Mon: No
Flash Time: 3
All Red: 9
Power Start Seq: 1
MUTCD Enabled: No
Y->G: n/a

Automatic Flash

Entry
2
6

Exit
2
6

Overlap Exit
A
B
C
D

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

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Controller Options

Controller Options (MM) 2-6-1

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

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

Pre-Timed Mode (MM) 2-7

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

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

Phase Recall Options (MM) 2-8

Plan # 1

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

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Coordination Options

Options (MM) 3-1

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

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

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

Split Demand (MM) 3-5

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

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

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MOVING TRAFFIC FORWARD

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

Coordinator Pattern # 1

Split Pattern	1	TS2 (Pat-Off)	0-1	Splits In	Percent
Cycle	130	Std (COS)	9	Offsets In	Percent
Offset Value	14%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	Yes	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Splits (Split Pat 1)	11	39	14	36	17	33	10	40	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 2

Split Pattern	2	TS2 (Pat-Off)	0-2	Splits In	Percent
Cycle	120	Std (COS)	17	Offsets In	Percent
Offset Value	6%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	Yes	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Splits (Split Pat 2)	14	36	12	38	12	38	15	35	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 3

Split Pattern	3	TS2 (Pat-Off)	0-3	Splits In	Percent
Cycle	130	Std (COS)	25	Offsets In	Percent
Offset Value	31%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	Yes	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Splits (Split Pat 3)	16	36	12	36	16	36	12	36	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 4

Split Pattern	4	TS2 (Pat-Off)	1-1	Splits In	Percent
Cycle	120	Std (COS)	33	Offsets In	Percent
Offset Value	14%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	Yes	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Splits (Split Pat 4)	13	38	12	37	13	38	12	37	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

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

Split Pattern # 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Split (percent)	11	39	14	36	17	33	10	40	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Split (percent)	14	36	12	38	12	38	15	35	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Split (percent)	16	36	12	36	16	36	12	36	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description																
Split (percent)	13	38	12	37	13	38	12	37	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

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Preempt Plan

Preempt Plan (MM) 4-1

Preempt Plan 3

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	1.0
	Min Grn	Ext Grn	Max Grn	Yellow	Red
Track Clear	0	0	0	4.0	1.0
	Min Dwell	Pmt Ext	Max Time	Yellow	Red
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Preempt Plan 4

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

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	1.0
	Min Grn	**Ext Grn**	**Max Grn**	**Yellow**	**Red**
Track Clear	0	0	0	4.0	1.0
	Min Dwell	**Pmt Ext**	**Max Time**	**Yellow**	**Red**
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Preempt Plan 5

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	1.0
	Min Grn	**Ext Grn**	**Max Grn**	**Yellow**	**Red**
Track Clear	0	0	0	4.0	1.0
	Min Dwell	**Pmt Ext**	**Max Time**	**Yellow**	**Red**
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Preempt Plan 6

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	No	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	7	5	4.0	1.0
	Min Grn	**Ext Grn**	**Max Grn**	**Yellow**	**Red**
Track Clear	0	0	0	4.0	1.0
	Min Dwell	**Pmt Ext**	**Max Time**	**Yellow**	**Red**
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

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

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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Preempt TSP/SCP Plan and Split

TSP / SCP Plan (MM) 4-3

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

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

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

TSP / SCP Split Pattern (MM) 4-4

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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

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

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	No
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

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

Action Plan - 1

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

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

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

Action Plan - 2

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

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

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

Action Plan - 3

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

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

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

Action Plan - 4

Pattern	4	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

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

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

Action Plan - 5

Pattern	5	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

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

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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

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

Day Plan #1

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

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

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

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

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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

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

Excep Day	Float/Fixed	Mon/Mon	DOW/DOM	WOM/Year	Day Plan

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Detectors

Detectors - Pg 1

Veh Det Phase Assignment (MM) 6-1

Vehicle Detector Plan Number - 1

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

Vehicle Detector Plan Number - 2

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

Vehicle Detector Plan Number - 3

Veh Detector	Assigned Phase	Called Phase	Type
1	1		N
2	2		N
3	3		N
4	4		N
5	5		N
6	6		N
7	7		N
8	8		N
9	9		N
10	10		N
11	11		N
12	12		N

13	13		N
14	14		N
15	15		N
16	16		N

Vehicle Detector Plan Number - 4

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

Vehicle Detector Setup (MM) 6-2

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

40	N-NTCIP	Yes	
41	N-NTCIP	Yes	
42	N-NTCIP	Yes	
43	N-NTCIP	Yes	
44	N-NTCIP	Yes	
45	N-NTCIP	Yes	
46	N-NTCIP	Yes	
47	N-NTCIP	Yes	
48	N-NTCIP	Yes	
49	N-NTCIP	Yes	
50	N-NTCIP	Yes	
51	N-NTCIP	Yes	
52	N-NTCIP	Yes	
53	N-NTCIP	Yes	
54	N-NTCIP	Yes	
55	N-NTCIP	Yes	
56	N-NTCIP	Yes	
57	N-NTCIP	Yes	
58	N-NTCIP	Yes	
59	N-NTCIP	Yes	
60	N-NTCIP	Yes	
61	N-NTCIP	Yes	
62	N-NTCIP	Yes	
63	N-NTCIP	Yes	
64	N-NTCIP	Yes	

Vehicle Detector Plan Number - 1

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	0.0	Passage	0.0	0	No	6	None	No	No	No
2	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	10.0	Passage	0.0	0	No	0	Red	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	11	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	12	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	5	No	Yes	0.0	Passage	0.0	0	No	0	Red	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Vehicle Detector Plan Number - 2

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

13	13	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Vehicle Detector Plan Number - 3

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

Vehicle Detector Plan Number - 4

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

Ped Detector Phase Assignment (MM) 6-3

Mode: NTCIP

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

Called Phase	Detector
14	14
15	15
16	16

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

REG1105 - Dundas St @ Trafalgar Rd - Econolite Type - ASC/3

Detectors

Detectors - Pg 2

Log - Speed Detector Setup (MM) 6-4

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

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

Vehicle Detector Diagnostics (MM) 6-5

Veh Diagnostic Plan Number - 1

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 2

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 3

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 4

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Pedestrian Detector Diagnostics (MM) 6-6

Ped Diagnostic Plan Number - 1

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 2

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 3

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 4

Det	Counts	Act	Pres	Multiplier

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Configuration Controller Sequence

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

Hardware Alternate Sequence Enable: No

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

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

Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 15																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 16																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.

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

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

Phase Compatibility (MM) 1-1-2

Phase	
n/a	Barrier Mode

Phase and Overlap Descriptions

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

Administration (MM) 1-7-1

Enable Controller/Cabinet Interlock CRC	No
CRC (16 bit)	F0D6
Enable Automatic Backup to Datakey	No

Backup Prevent (MM) 1-1-3

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

Simultaneous Gap (MM) 1-1-4

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

Load Switch Assignments (MM) 1-3

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

14	2	O				+	Auto	X		X
15	3	O				-	Auto	X		
16	4	O				+	Auto	X		X

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Configuration Port 1 (SDLC)

Port 1 SDLC (MM) 1-4-1

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

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

MMU Program (MM) 1-4-2

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

Color Check Enable (MM) 1-4-3

Enable Color Check: No

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

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

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

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

Enable SDLC Diagnostic Test: No

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Configuration Logging / Display

Event Logging (MM) 1-6-1

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

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

Display Options (MM) 1-7-2

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

Sign On (MM) 8-5

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

Software Modules (MM) 8-7

Application Version: 02.49.00
OS (Boot) Version: 01.12.05

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Logic Processor Page 1

Logic Statement Control (MM) 1-8-1

Logic #	Statement Control

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Controller Timing Plan (MM) 2-1

Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	SBLT	NB	WBLT	EB		SB		WB								
Min Green	7	20	7	10	0	20	0	10	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	7	0	7	0	7	0	7	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	5.0	3.0	3.0	0.0	5.0	0.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max1	15	45	0	30	0	60	0	30	35	35	35	35	35	35	35	35
Max2	15	45	15	35	0	60	0	50	40	40	40	40	40	40	40	40
Max3	15	45	0	55	0	60	0	55	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	4.6	3.0	3.7	3.0	4.6	3.0	3.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	1.4	1.0	2.3	1.0	1.4	1.0	2.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Overlap	Type	Lag Green	Yellow	Red	Adv. Green

Phases

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

PPLT FYA

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

Guaranteed Minimum Time Data (MM) 2-4

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

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Controller Start / Flash Data (MM) 2-5

Start Up

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

Overlap

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

Automatic Flash

Entry
2
6

Exit
2
6

Overlap Exit
A
B
C
D

Flash Thru Mon: Yes
Exit Flash: W
Minimum Flash: 8

Mimimum Recall: No
Cycle Through Phase: No

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REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Controller Options

Controller Options (MM) 2-6-1

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

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

Pre-Timed Mode (MM) 2-7

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

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

Phase Recall Options (MM) 2-8

Plan # 1

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

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REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Coordination Options

Options (MM) 3-1

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

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

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

Split Demand (MM) 3-5

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

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

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REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

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

Coordinator Pattern # 1

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

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Splits (Split Pat 1)	17	41	0	42	0	58	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 2

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

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Splits (Split Pat 2)	10	60	0	30	0	70	0	30	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Coordinator Pattern # 3

Split Pattern	3	TS2 (Pat-Off)	0-3	Splits In	Percent
Cycle	120	Std (COS)	25	Offsets In	Percent
Offset Value	0%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Splits (Split Pat 3)	13	55	0	32	0	68	0	32	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

Special Funciton Outputs								

Coordinator Pattern # 4

Split Pattern	4	TS2 (Pat-Off)	1-1	Splits In	Percent
Cycle	110	Std (COS)	33	Offsets In	Percent
Offset Value	0%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Splits (Split Pat 4)	13	42	13	32	0	55	0	45	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

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

Split Pattern

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

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MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

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

Split Pattern # 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Split (percent)	17	41	0	42	0	58	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall		X				X										
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Split (percent)	10	60	0	30	0	70	0	30	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall		X				X										
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								
Split (percent)	13	55	0	32	0	68	0	32	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall		X				X										
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB	WBLT	EB		SB		WB								

Split (percent)	13	42	13	32	0	55	0	45	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall		X				X										
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	**1**	**2**	**3**	**4**
Split Sum	100%	100%	0%	0%

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REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Preempt Plan

Preempt Plan (MM) 4-1

Preempt Plan 3

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

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	Yes	Duration	10	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	Yes	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

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

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	0	3	4.0	1.0
	Min Grn	Ext Grn	Max Grn	Yellow	Red
Track Clear	0	0	0	4.0	1.0
	Min Dwell	Pmt Ext	Max Time	Yellow	Red
Dwell / Cycle-Exit	0	0.0	0	4.0	1.0

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

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

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REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

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

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

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MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

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

Action Plan - 1

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

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

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

Action Plan - 2

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

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

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

Action Plan - 3

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

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

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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

Action Plan - 4

Pattern	4	Override Sys	Yes
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

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

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

Action Plan - 5

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

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

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

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

Day Plan #1

Event	Action Plan	Start Time
1	1	06:00
2	2	10:00
3	3	15:00
5	5	22:00

Day Plan #2

Event	Action Plan	Start Time
1	1	06:00
2	2	10:00
3	4	13:00
4	3	15:45
5	5	22:00

Day Plan #3

Event	Action Plan	Start Time
1	3	06:00
2	5	22:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

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

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

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

Schedule Number - 2

Day Plan No.: 2

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

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

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

Schedule Number - 3

Day Plan No.: 3

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

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

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22

	X	X	X	X	X	X	X	X	X	X	X
	23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**		
	X	X	X	X	X	X	X	X	X		

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

REG5101 - Trafalgar Rd @ Burnhamthorpe Rd - Econolite Type - ASC/3

Detectors

Detectors - Pg 1

Veh Det Phase Assignment (MM) 6-1

Vehicle Detector Plan Number - 1

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

Vehicle Detector Plan Number - 2

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

Vehicle Detector Setup (MM) 6-2

Veh Detector	Type	TS2 Detector	Description
1	S-STANDARD	Yes	
2	S-STANDARD	Yes	
3	S-STANDARD	Yes	

4	S-STANDARD	Yes	
5	S-STANDARD	Yes	
6	S-STANDARD	Yes	
7	S-STANDARD	Yes	
8	S-STANDARD	Yes	
9	S-STANDARD	Yes	
10	S-STANDARD	Yes	
11	S-STANDARD	Yes	
12	S-STANDARD	Yes	
13	S-STANDARD	Yes	
14	S-STANDARD	Yes	
15	S-STANDARD	Yes	
16	S-STANDARD	Yes	
17	S-STANDARD	Yes	
18	S-STANDARD	Yes	
19	S-STANDARD	Yes	
20	S-STANDARD	Yes	
21	C-CALLING	Yes	
22	S-STANDARD	Yes	
23	S-STANDARD	Yes	
24	S-STANDARD	Yes	
25	S-STANDARD	Yes	
26	S-STANDARD	Yes	
27	S-STANDARD	Yes	
28	S-STANDARD	Yes	
29	S-STANDARD	Yes	
30	S-STANDARD	Yes	
31	S-STANDARD	Yes	
32	S-STANDARD	Yes	
33	S-STANDARD	Yes	
34	S-STANDARD	Yes	
35	S-STANDARD	Yes	
36	S-STANDARD	Yes	
37	S-STANDARD	Yes	
38	S-STANDARD	Yes	
39	S-STANDARD	Yes	
40	S-STANDARD	Yes	
41	S-STANDARD	Yes	
42	S-STANDARD	Yes	
43	S-STANDARD	Yes	
44	S-STANDARD	Yes	
45	S-STANDARD	Yes	
46	S-STANDARD	Yes	
47	S-STANDARD	Yes	
48	S-STANDARD	Yes	
49	S-STANDARD	Yes	
50	S-STANDARD	Yes	
51	S-STANDARD	Yes	
52	S-STANDARD	Yes	
53	S-STANDARD	Yes	
54	S-STANDARD	Yes	
55	S-STANDARD	Yes	
56	S-STANDARD	Yes	
57	S-STANDARD	Yes	
58	S-STANDARD	Yes	
59	S-STANDARD	Yes	

60	S-STANDARD	Yes	
61	S-STANDARD	Yes	
62	S-STANDARD	Yes	
63	S-STANDARD	Yes	
64	S-STANDARD	Yes	

Vehicle Detector Plan Number - 1

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

Vehicle Detector Plan Number - 2

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

Ped Detector Phase Assignment
(MM) 6-3

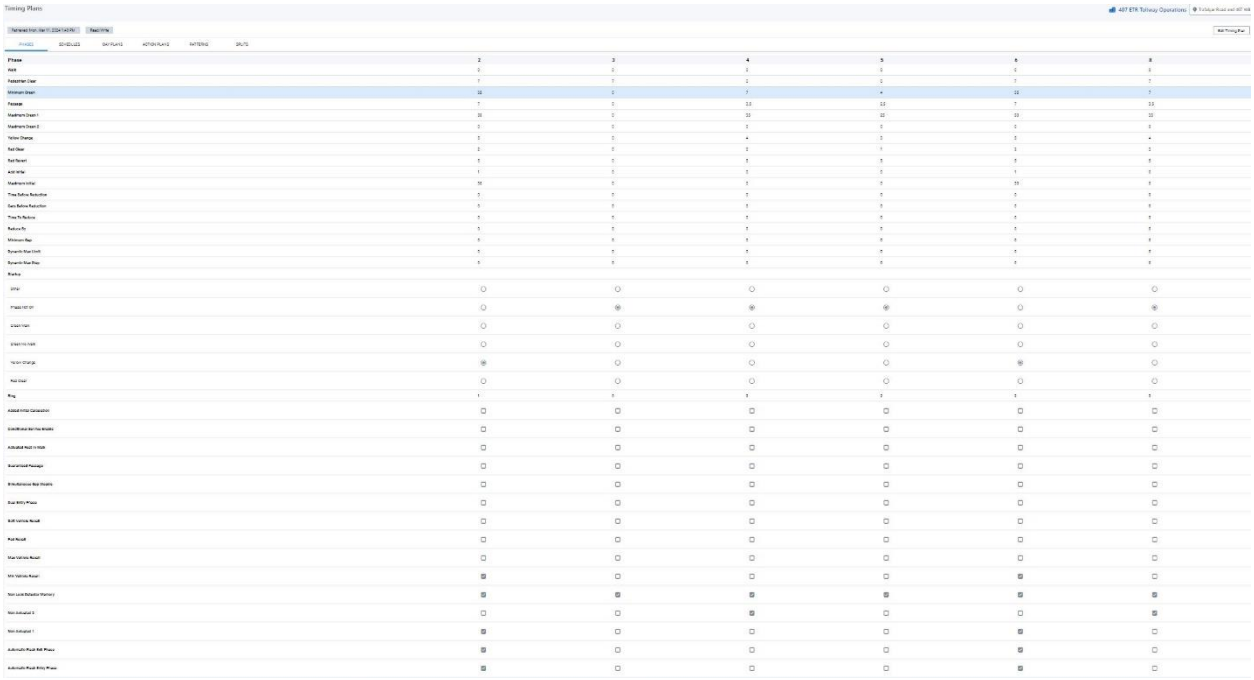
Mode: NTCIP

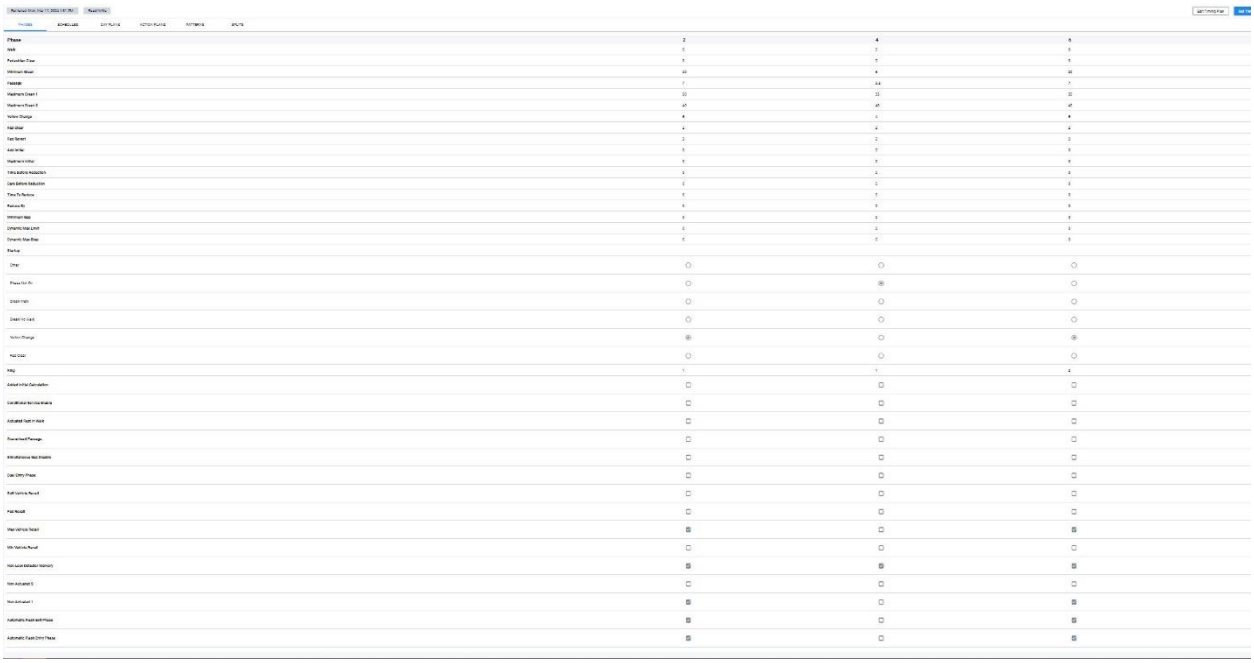
Called Phase	Detector
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

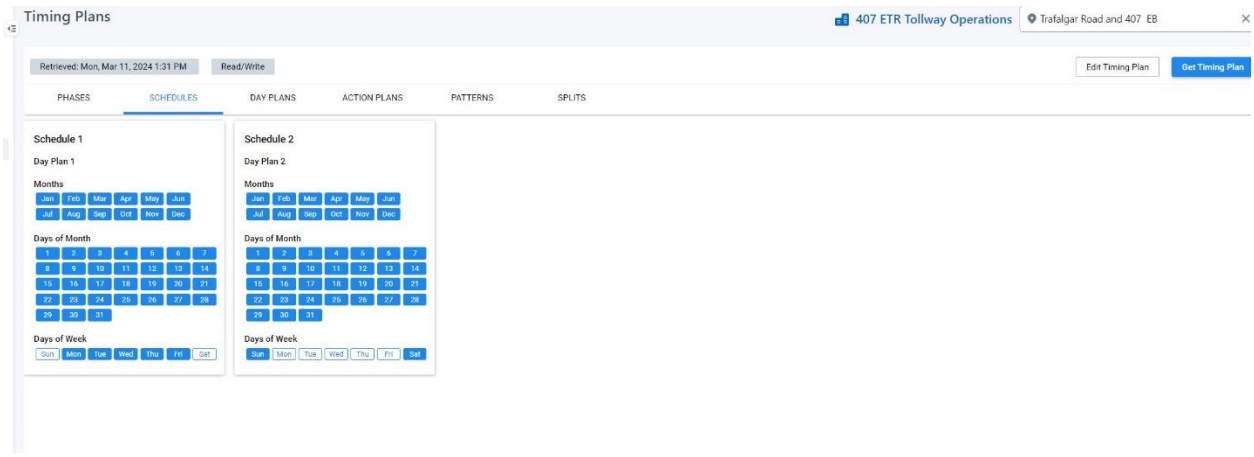
Retrieved: Mon, Mar 11, 2024 1:31 PM | Read/Write | Edit Timing Plan | Get Tim

PHASES | SCHEDULES | DAY PLANS | ACTION PLANS | PATTERNS | SPLITS

Action Plan	Pattern	Auxiliary Functions	Special Functions
1	1	No Auxiliary Functions	No Special Functions
2	2	No Auxiliary Functions	No Special Functions
3	3	No Auxiliary Functions	No Special Functions
98	254	No Auxiliary Functions	No Special Functions
99	254	No Auxiliary Functions	No Special Functions






Timing Plans
407 ETR Tollway Operations
Trafalgar Road and 407 EB
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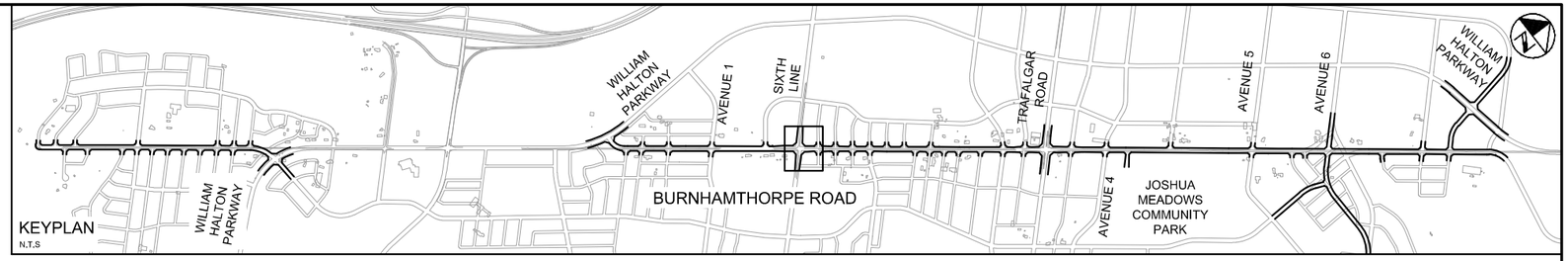
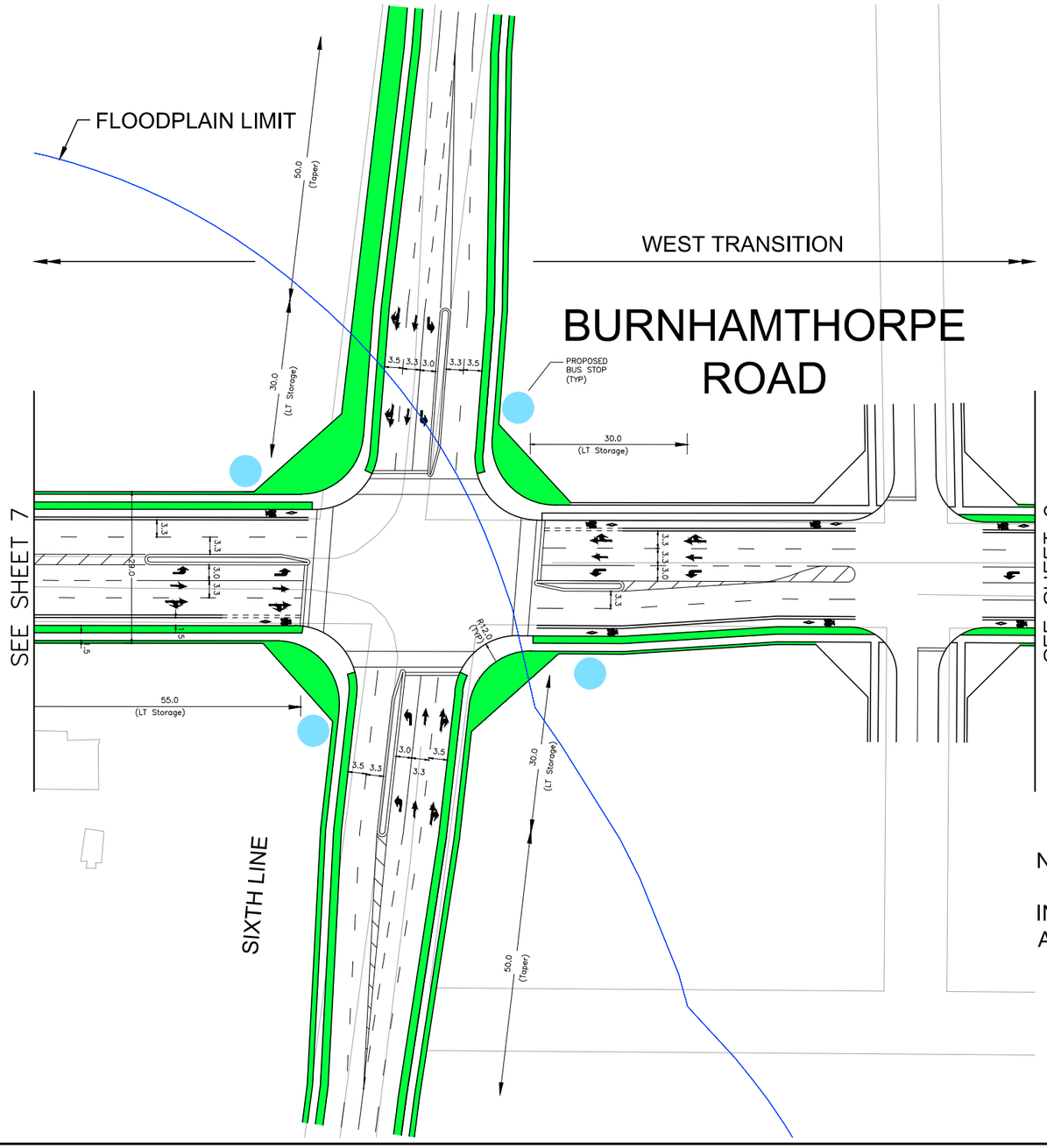
PHASES
SCHEDULES
DAY PLANS
ACTION PLANS
PATTERNS
SPLITS
Schedule 1
Day Plan 1
Months
Jan Feb Mar Apr May Jun
Jul Aug Sep Oct Nov Dec
Days of Month
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Days of Week
Sun Mon Tue Wed Thu Fri Sat
Schedule 2
Day Plan 2
Months
Jan Feb Mar Apr May Jun
Jul Aug Sep Oct Nov Dec
Days of Month
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Days of Week
Sun Mon Tue Wed Thu Fri Sat

Appendix D

Preliminary Design Drawings





NOTE:

INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

MMM GROUP

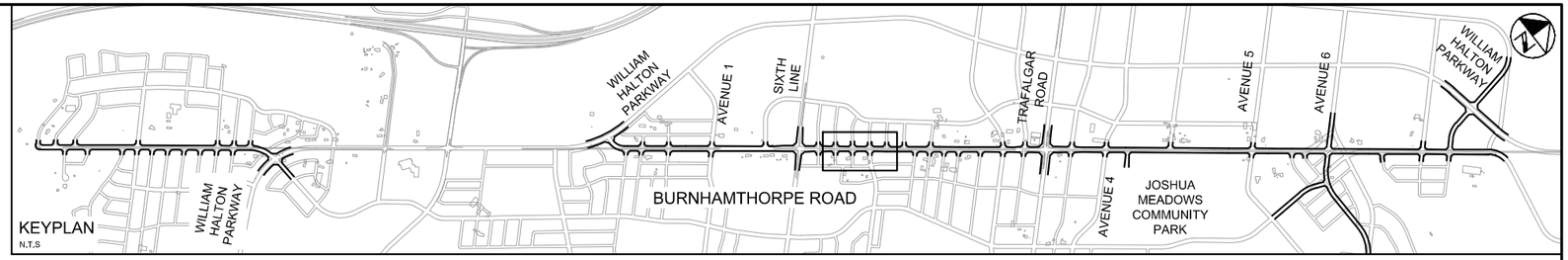
OAKVILLE

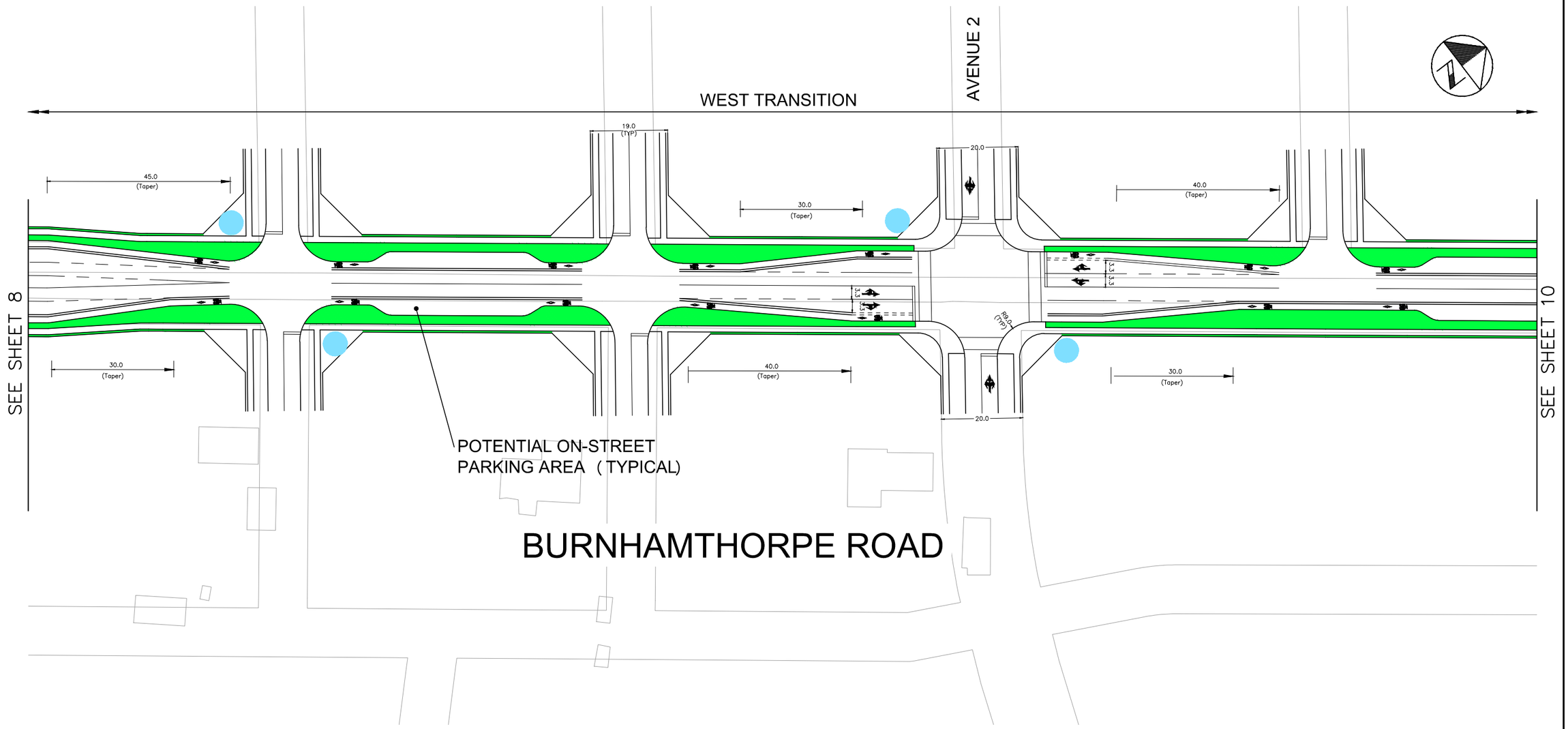
TITLE

LAYOUT PLAN

BURNHAMTHORPE ROAD
CHARACTER STUDY

Consultant File № 16-13055	SCALE 1 : 1000
CONTRACT № R-2369B-14	Drawing № SHEET 8 OF 20





NOTE:

INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

MMM GROUP

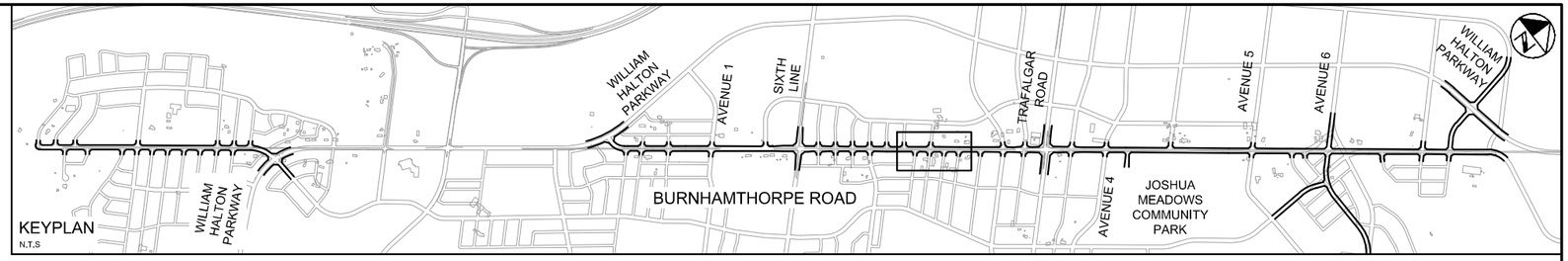
OAKVILLE

TITLE

LAYOUT PLAN

BURNHAMTHORPE ROAD
CHARACTER STUDY

Consultant File № 16–13055	SCALE 1 : 1000
CONTRACT № R–2369B–14	Drawing № SHEET 9 OF 20



WEST TRANSITION

CORE

POTENTIAL ON-STREET PARKING AREA (TYPICAL)

SEE SHEET 9

SEE SHEET 11

4.0 (TYP.)

4.0 (TYP.)

R9.0

R9.0

24.0

3.3

3.3

R9.0 (TYP.)

4.0

4.0

50.0 (Taper)

BURNHAMTHORPE ROAD

NOTES:

1. INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

2. PARKING PERMITTED ON BOTH SIDES OF BURNHAMTHORPE ROAD IN CORE AREA DURING OFF-PEAK PERIODS.

MMM GROUP

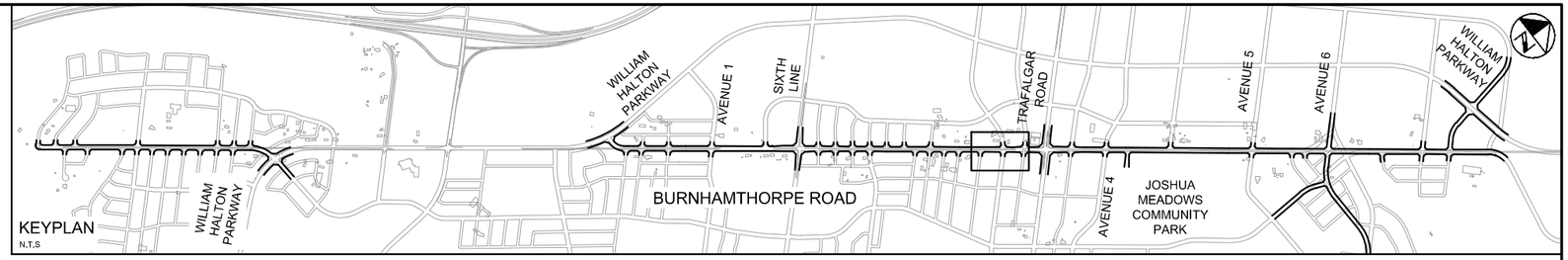
OAKVILLE

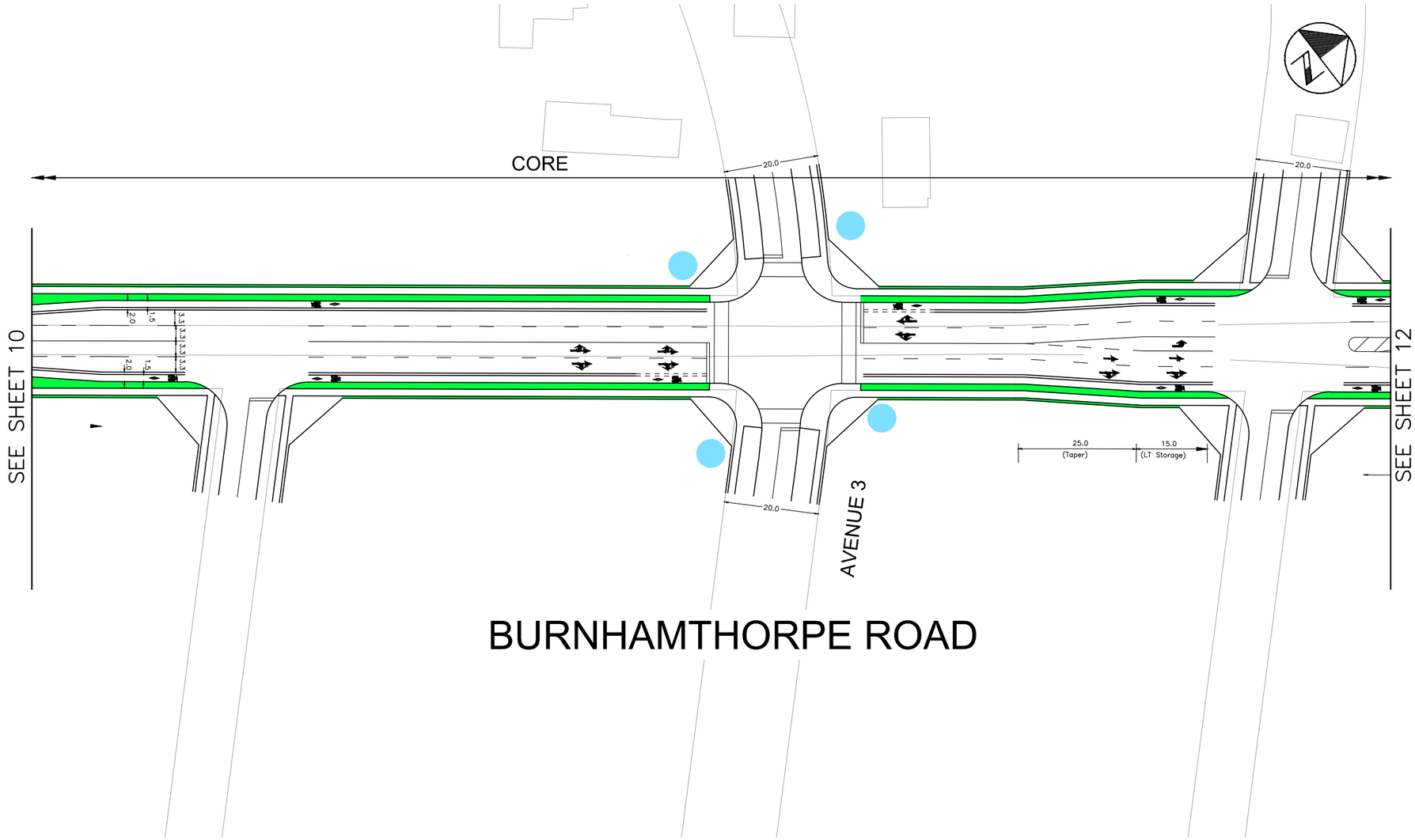
TITLE

LAYOUT PLAN

BURNHAMTHORPE ROAD CHARACTER STUDY

Consultant File № 16–13055	SCALE 1 : 1000
CONTRACT № R–2369B–14	Drawing № SHEET 10 OF 20





BURNHAMTHORPE ROAD

NOTES:

1. INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

2. PARKING PERMITTED ON BOTH SIDES OF BURNHAMTHORPE ROAD IN CORE AREA DURING OFF-PEAK PERIODS.

MMM GROUP

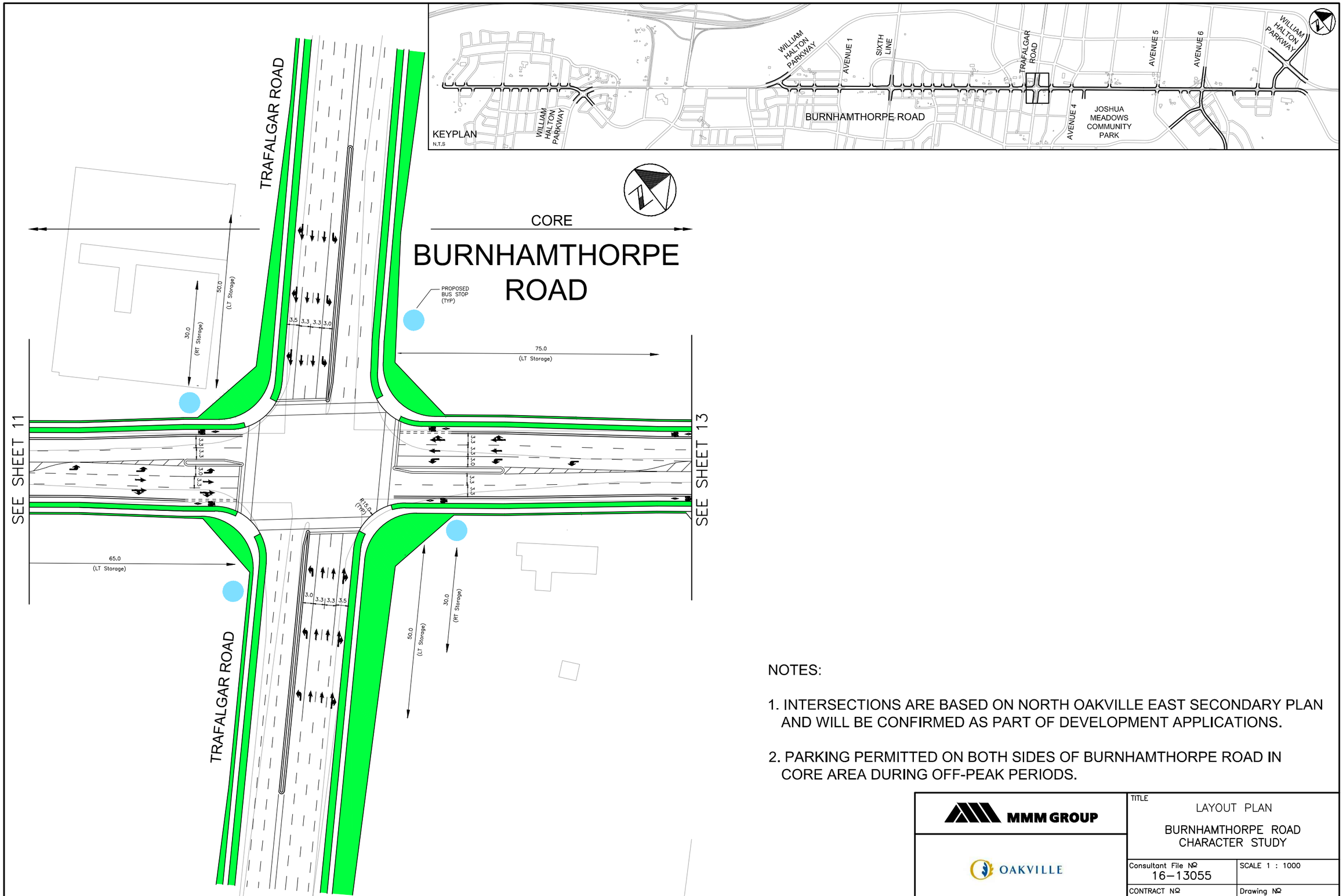
OAKVILLE

TITLE

LAYOUT PLAN

BURNHAMTHORPE ROAD
CHARACTER STUDY

Consultant File № 16–13055	SCALE 1 : 1000
CONTRACT № R–2369B–14	Drawing № SHEET 11 OF 20



NOTES:

1. INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

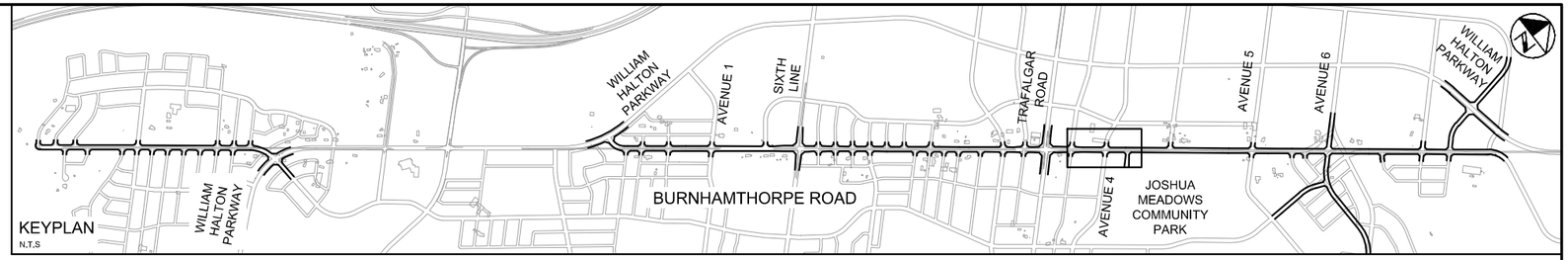
2. PARKING PERMITTED ON BOTH SIDES OF BURNHAMTHORPE ROAD IN CORE AREA DURING OFF-PEAK PERIODS.

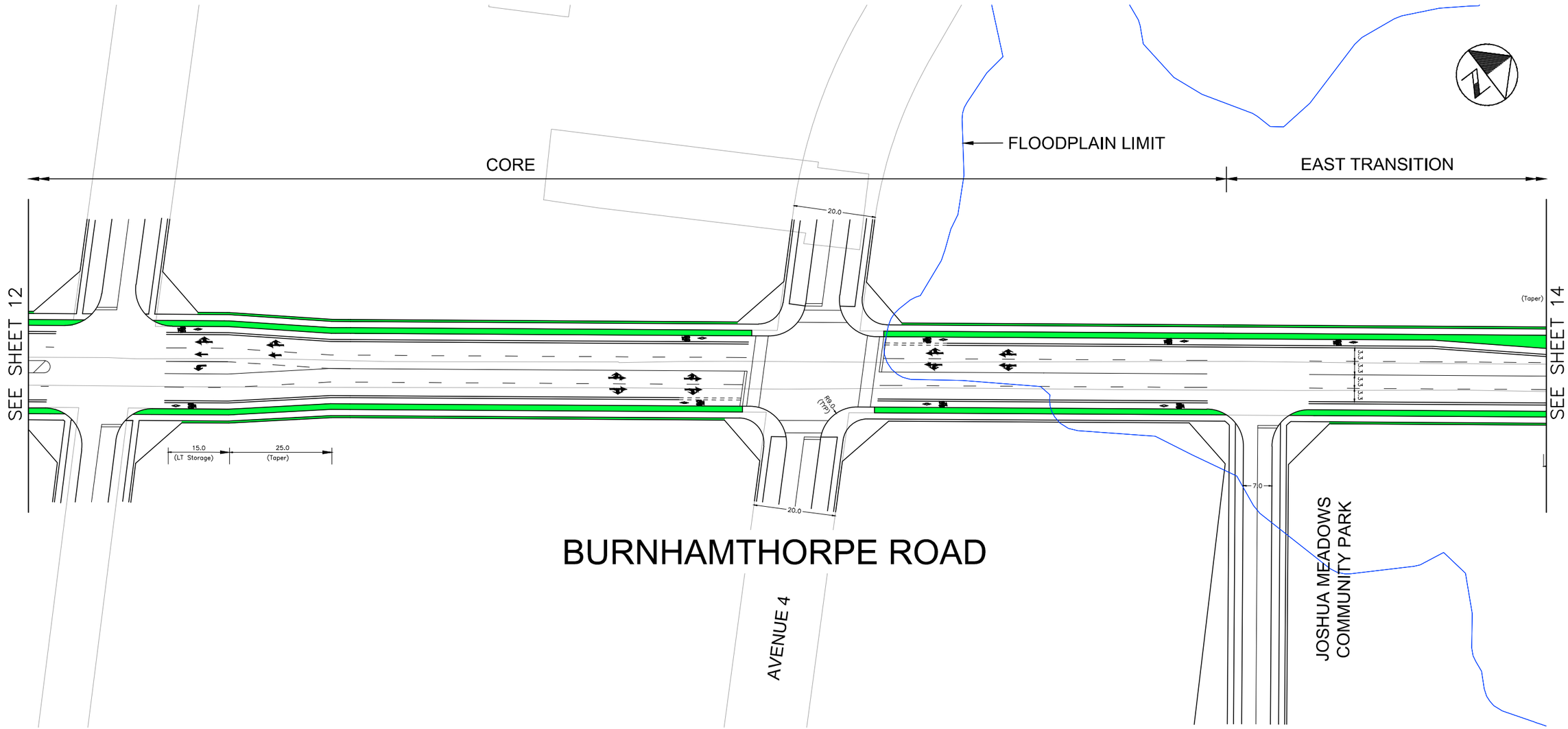
MMM GROUP

OAKVILLE

TITLE
LAYOUT PLAN
BURNHAMTHORPE ROAD
CHARACTER STUDY

Consultant File № 16–13055	SCALE 1 : 1000
CONTRACT № R–2369B–14	Drawing № SHEET 12 OF 20





NOTES:

1. INTERSECTIONS ARE BASED ON NORTH OAKVILLE EAST SECONDARY PLAN AND WILL BE CONFIRMED AS PART OF DEVELOPMENT APPLICATIONS.

2. PARKING PERMITTED ON BOTH SIDES OF BURNHAMTHORPE ROAD IN CORE AREA DURING OFF-PEAK PERIODS.

MMM GROUP

OAKVILLE

TITLE

LAYOUT PLAN

BURNHAMTHORPE ROAD
CHARACTER STUDY

Consultant File № 16–13055	SCALE 1 : 1000
CONTRACT № R–2369B–14	Drawing № SHEET 13 OF 20

Project Management Initials: Designer: ZM Checked: JN Approved: _____ TABLOID 279mm x 432mm

SHOULD THE HERITAGE PROPERTIES ON THE WEST SIDE OF TRAFALGAR ROAD REDEVELOP, HALTON REGION WILL WORK TOWARDS ULTIMATE PLAN INCLUDING DUAL LEFT TURN LANES ON ALL APPROACHES.

SHOULD THE HERITAGE PROPERTIES BE REDEVELOPED IN THE FUTURE, THE SOUTHBOUND RIGHT TURN LANE COULD BE EXTENDED AS SHOWN

DUNDAS STREET – REGIONAL ROAD NO. 5

FUTURE PROPERTY LINE

278

305

3024

3030

3040

3048

3064

320

325

15+300

15+400

15+500

15+600

15+7

PASSENGER PLATFORM

BUS BAY

C6, ME–T1
03–1182530CU02

DUNDAS STREET – REGIONAL ROAD NO. 5

CLIENT: Halton REGION

AECOM

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED BUS BAY/PLATFORM
- PROPOSED MEDIAN
- PROPOSED SIDEWALK / MULTI-USE PATH
- PROPOSED RETAINING WALL
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- NEWLY UPGRADED NOISE WALL
- EXISTING NOISE WALLS TO BE UPGRADED UP TO MAXIMUM OF 3.5m
- PROPOSED CULVERT
- HERITAGE PROPERTY

0 20 40

SCALE: 1:1000

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PROJECT:
HALTON REGION
TRAFALGAR ROAD
ENVIRONMENTAL ASSESSEMENT STUDY

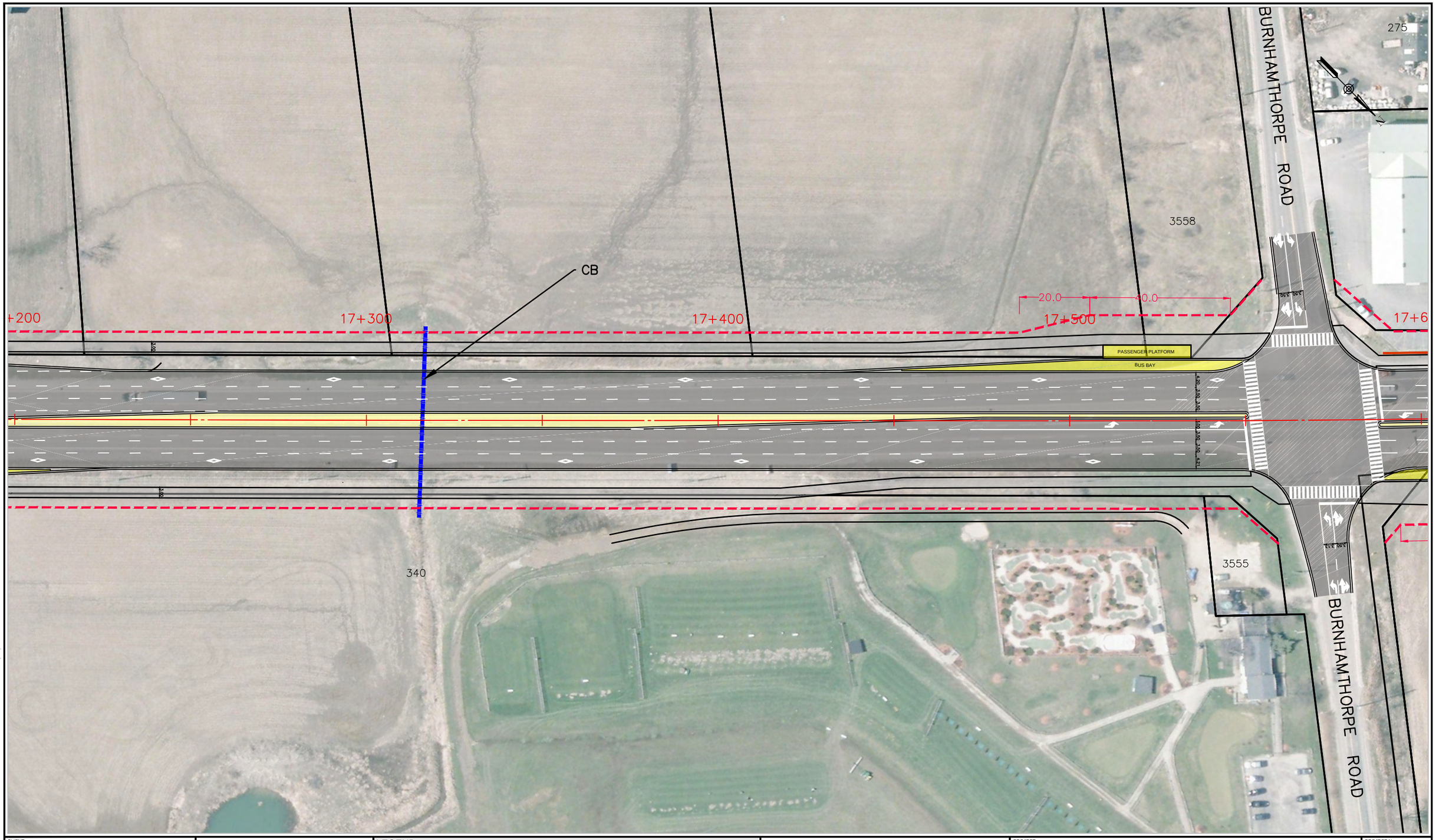
DRAWING:
RECOMMENDED PLAN - EXTENDED SOUTHBOUND RIGHT
STA: 15+310 TO 15+690

PROJECT No. : 60119993

DRAWING No. 14A

Last saved by: MUACEVICZ (2015-04-13) Last Plotted: 2015-04-13
Filename: P:\60119993\000-CAD\000-CADD-BIM WIP\SHEETS\11 BY 17\PLATE- (14A).DWG

Project Management Initials: Designer: ZM Checked: JN Approved: _____ TABLOID 279mm x 432mm



CLIENT:

Halton REGION

AECOM

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED BUS BAY/PLATFORM
- PROPOSED MEDIAN
- PROPOSED SIDEWALK / MULTI-USE PATH
- PROPOSED RETAINING WALL
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- NEWLY UPGRADED NOISE WALL
- EXISTING NOISE WALLS TO BE UPGRADED UP TO MAXIMUM OF 3.5m
- PROPOSED CULVERT
- HERITAGE PROPERTY

0 20 40

SCALE: 1:1000

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PROJECT:

HALTON REGION
TRAFALGAR ROAD
ENVIRONMENTAL ASSESSEMENT STUDY

DRAWING:

RECOMMENDED PLAN
STA: 17+210 TO 17+5908

PROJECT No. :
60119993

DRAWING No.
19

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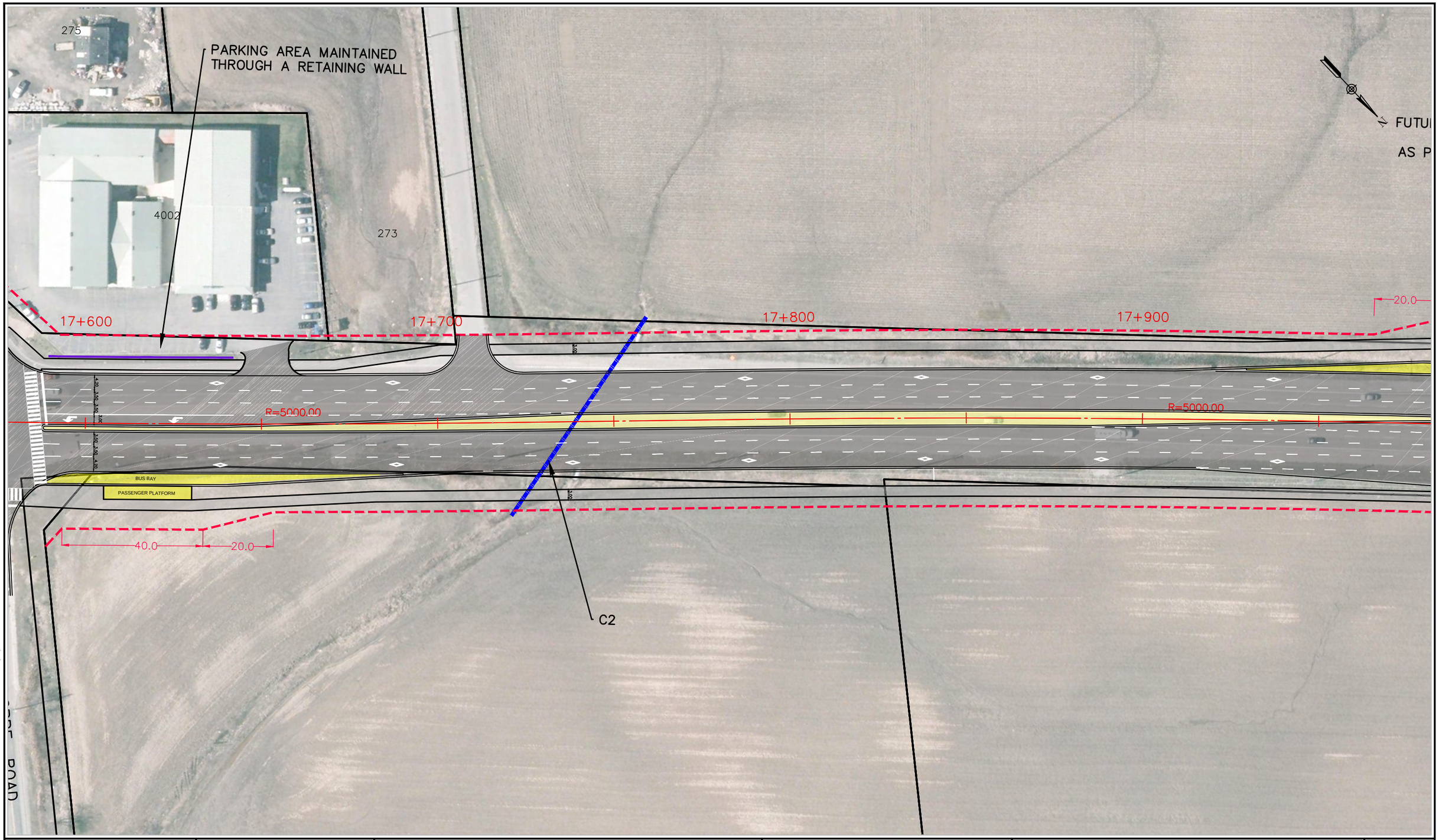
Project Management Initials: Designer: ZM Checked: JN Approved: _____ TABLOID 279mm x 432mm



CLIENT: Halton REGION

AECOM

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED BUS BAY/PLATFORM
- PROPOSED MEDIAN
- PROPOSED SIDEWALK / MULTI-USE PATH
- PROPOSED RETAINING WALL
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- NEWLY UPGRADED NOISE WALL
- EXISTING NOISE WALLS TO BE UPGRADED UP TO MAXIMUM OF 3.5m
- PROPOSED CULVERT
- HERITAGE PROPERTY

0 20 40

SCALE: 1:1000

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PROJECT:

HALTON REGION
TRAFALGAR ROAD
ENVIRONMENTAL ASSESSEMENT STUDY

DRAWING:

RECOMMENDED PLAN
STA: 17+590 TO 17+970

PROJECT No. : 60119993

DRAWING No. 20

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Project Management Initials: Designer: ZM Checked: JN Approved: _____ TABLOID 279mm x 432mm

FUTURE SIGNALIZED INTERSECTION
UNDERGOING DETAIL DESIGN
AS PART OF A SEPARATE STUDY

WILLIAM HALTON PARKWAY

CA

PEDESTRIAN LINKAGE WITHIN THE GO TRANSIT
FACILITY TO BE DEFINED AT DETAILED DESIGN.

20.0
40.0
18+000
18+100
18+200
18+300

PASSENGER PLATFORM
BUS BAY
BUS BAY
PASSENGER PLATFORM

40.0
20.0

WILLIAM HALTON PARKWAY

LIMITS OF THE MULTI-USE PATH
TO BE CONFIRMED AT DETAIL DESIGN

CLIENT:

Halton REGION

AECOM

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED BUS BAY/PLATFORM
- PROPOSED MEDIAN
- PROPOSED SIDEWALK / MULTI-USE PATH
- PROPOSED RETAINING WALL
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- NEWLY UPGRADED NOISE WALL
- EXISTING NOISE WALLS TO BE UPGRADED UP TO MAXIMUM OF 3.5m
- PROPOSED CULVERT
- HERITAGE PROPERTY

0 20 40

SCALE:
1:1000

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PROJECT:

HALTON REGION
TRAFALGAR ROAD
ENVIRONMENTAL ASSESSEMENT STUDY

DRAWING:

RECOMMENDED PLAN
STA: 17+970 TO 18+350

PROJECT No. :
60119993

DRAWING No.
21

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Project Management Initials: Designer: ZM Checked: JN Approved: _____ TABLOID 279mm x 432mm
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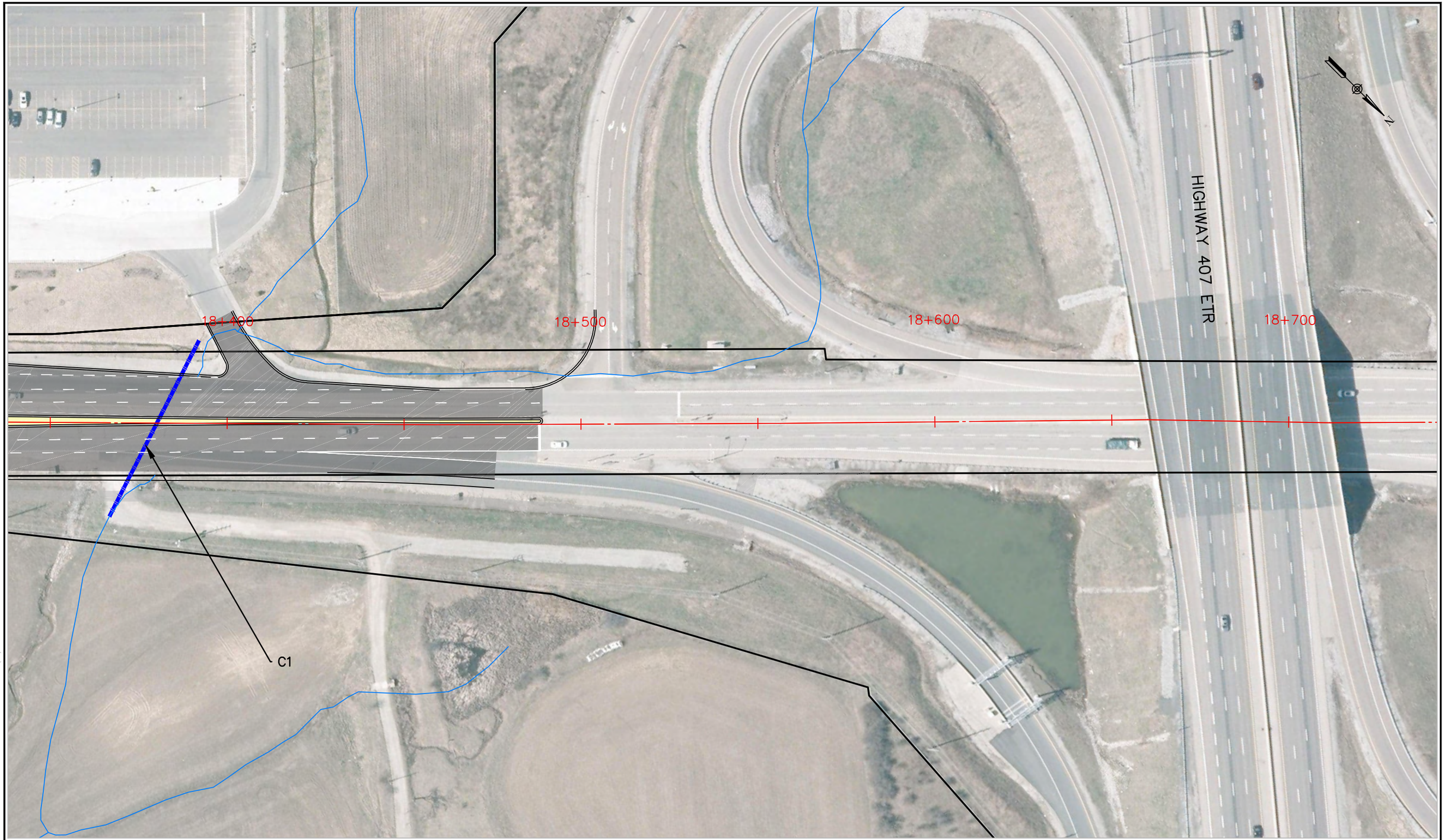

CLIENT: Halton Region

AECOM

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED BUS BAY/PLATFORM
- PROPOSED MEDIAN
- PROPOSED SIDEWALK / MULTI-USE PATH
- PROPOSED RETAINING WALL
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- NEWLY UPGRADED NOISE WALL
- EXISTING NOISE WALLS TO BE UPGRADED UP TO MAXIMUM OF 3.5m
- PROPOSED CULVERT
- HERITAGE PROPERTY

0 20 40

SCALE: 1:1000

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PROJECT:

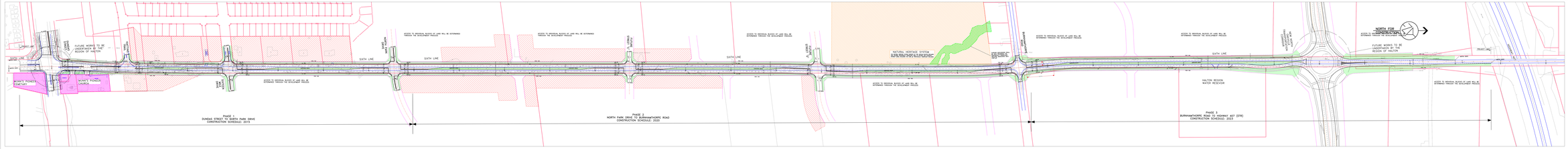
HALTON REGION
TRAFALGAR ROAD
ENVIRONMENTAL ASSESSEMENT STUDY

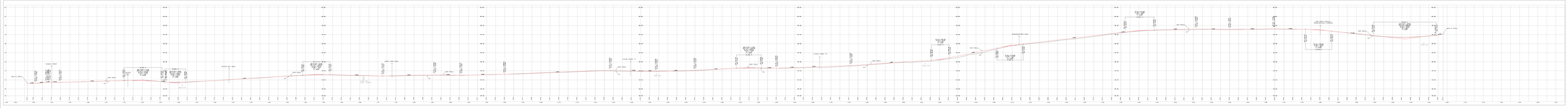
DRAWING:

RECOMMENDED PLAN
STA: 18+350 TO 18+730

PROJECT No. : 60119993

DRAWING No. 22





LEGEND

- EXISTING EDGE OF PAVEMENT
- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPOSED ALIGNMENT
- LANDSCAPED MEDIAN
- NEIGHBOURHOOD CENTRE AREA
- CULTURAL HERITAGE RESOURCE
- NATURAL HERITAGE SYSTEM
- PROVINCIALLY SIGNIFICANT WETLANDS

SIXTH LINE ENVIRONMENTAL ASSESSMENT (DUNDAS STREET TO HIGHWAY 407) – PRELIMINARY RECOMMENDED PLAN AND PROFILE DESIGN

MORRISON HERSHFIELD

OAKVILLE

SCALE

DATE: APRIL 30 2014

Appendix E

EMME Model Projection Correspondence with Halton Region

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: February 28, 2023 9:15 AM
To: May Lai
Cc: Mark Crockford; ebayley@ptsl.com; Krusto, Matt
Subject: RE: ARGMark Crockford <mark.crockford@cghtransportation.com>O Trafalgar (OPA1212.01) - TIS Comments

Good morning May,

Apologies for the delay on our end. We have now received the volume projections from our Modeler; these came from a thorough internal study conducted to support the Region's new road project. Using the Halton EMME Model at the time (which included all 2031 TMP recommendations), the Study determined the 2031 future year traffic forecast along William Halton Parkway and major intersecting roads based on screen-line growth rate and diversion factors derived from the study. You will note that these are significantly lower than the 2100 vehicles per hour in each direction (4200 total) that was previously used for the last iteration of the traffic impact study.

Therefore, here are the volume projection from the internal study along William Halton Parkway:

- 2031 PM peak hour volume west of Trafalgar: 2100 (800 east and 1300 west)
- 2031 PM Peak hour volume east of Trafalgar: 2400 (800 east and 1600 west)

With regards to the model's assumptions for the population and employment in the development area to help calculate the difference and avoid double-counting trips, our Modeler noted "that the model's traffic zone is much larger than the subject site and we do not have information from the model on how many trips are generated from the site. The consultant will need to make some assumption/engineering judgement."

Please let me know if you require any further clarifications.

Thanks,
Ayesha

From: May Lai <may.lai@cghtransportation.com>
Sent: Friday, February 17, 2023 3:38 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: ARGMark Crockford <mark.crockford@cghtransportation.com>O Trafalgar (OPA1212.01) - TIS Comments

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk.

Hi Ayesha,

Regarding the discussion we had last week, we just wonder whether you have received updated volume projections for the section of William Haton Parkway between Sixth Line and Ninth Line from the

modelling group. This information would help us proceed with the TIS revision. Can you provide us with the volumes when it is convenient for you?

Best regards,

May Lai, E.I.T.
CGH Transportation Inc.
P:289-834-0646
E:May.Lai@CGHTransportation.com

From: Mark Crockford <mark.crockford@cghtransportation.com>
Sent: February 3, 2023 1:26 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; May Lai <may.lai@cghtransportation.com>
Subject: RE: ARGO Trafalgar (OPA1212.01) - TIS Comments

Thanks perfect. Thanks for being so accommodating Ayesha!

Mark

Mark Crockford, P.Eng.
CGH Transportation Inc.
P:905-251-4070
E:Mark.Crockford@CGHTransportation.com

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: February 3, 2023 1:25 PM
To: Mark Crockford <mark.crockford@cghtransportation.com>; May Lai <may.lai@cghtransportation.com>
Subject: RE: ARGO Trafalgar (OPA1212.01) - TIS Comments

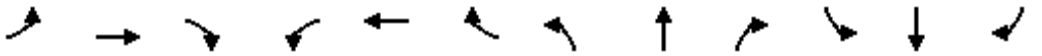
No worries! Moved it to 1:30pm – hope that works better?

Ayesha Khan
Transportation Planning Coordination PM1
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866

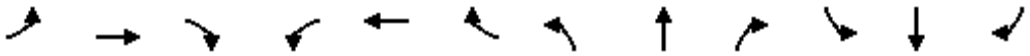


Appendix F

2024 Existing Conditions Synchro and Sidra Worksheets



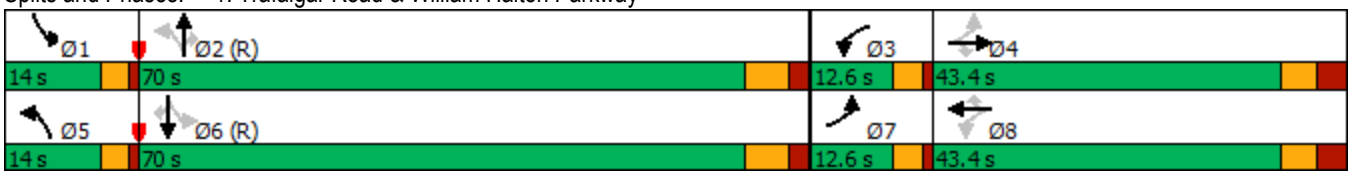
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	531	163	15	145	93	55	801	14	230	801	80
Future Volume (vph)	131	531	163	15	145	93	55	801	14	230	801	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	210.0		60.0	160.0		150.0	180.0		60.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			15.0		
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3500	1452	1750	5029	1493	1733	4980	1566
Flt Permitted	0.571			0.300			0.304			0.262		
Satd. Flow (perm)	1052	3500	1566	553	3500	1452	560	5029	1493	478	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			177			101			94			94
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		1235.4			397.7			276.7			224.9	
Travel Time (s)		74.1			23.9			12.5			10.1	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	142	577	177	16	158	101	60	871	15	250	871	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	577	177	16	158	101	60	871	15	250	871	87
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	

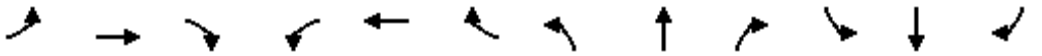


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	38.0	38.0	11.0	38.0	38.0	11.0	42.9	42.9	11.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
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	C-Max	C-Max	None	C-Max	C-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)	40.6	34.1	34.1	36.2	26.1	26.1	82.8	72.2	72.2	89.6	77.9	77.9
Actuated g/C Ratio	0.29	0.24	0.24	0.26	0.19	0.19	0.59	0.52	0.52	0.64	0.56	0.56
v/c Ratio	0.41	0.68	0.34	0.08	0.24	0.29	0.15	0.34	0.02	0.62	0.31	0.10
Control Delay	40.3	52.2	7.3	32.1	47.9	9.4	11.9	21.3	0.1	20.2	18.6	3.7
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	40.3	52.2	7.3	32.1	47.9	9.4	11.9	21.3	0.1	20.2	18.6	3.7
LOS	D	D	A	C	D	A	B	C	A	C	B	A
Approach Delay		41.5			32.9			20.4			17.9	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	32.1	77.8	0.0	3.4	20.9	0.0	5.0	46.7	0.0	23.2	42.0	0.0
Queue Length 95th (m)	42.9	93.7	17.6	7.8	27.5	14.3	13.8	68.9	0.0	49.0	68.6	8.5
Internal Link Dist (m)		1211.4			373.7			252.7			200.9	
Turn Bay Length (m)	210.0		60.0	160.0		150.0	180.0		60.0			
Base Capacity (vph)	347	915	540	222	910	452	425	2593	815	407	2770	913
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	0.41	0.63	0.33	0.07	0.17	0.22	0.14	0.34	0.02	0.61	0.31	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

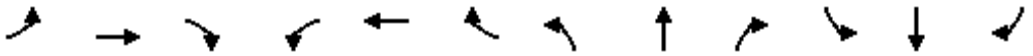
Splits and Phases: 1: Trafalgar Road & William Halton Parkway



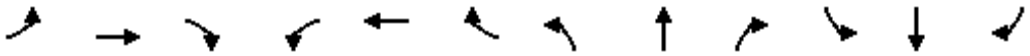


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	531	163	15	145	93	55	801	14	230	801	80
Future Volume (vph)	131	531	163	15	145	93	55	801	14	230	801	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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
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)	1750	3500	1566	1750	3500	1452	1750	5029	1493	1733	4980	1566
Flt Permitted	0.57	1.00	1.00	0.30	1.00	1.00	0.30	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	1053	3500	1566	553	3500	1452	559	5029	1493	478	4980	1566
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)	142	577	177	16	158	101	60	871	15	250	871	87
RTOR Reduction (vph)	0	0	134	0	0	81	0	0	8	0	0	41
Lane Group Flow (vph)	142	577	43	16	158	20	60	871	7	250	871	46
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
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)	41.0	34.1	34.1	31.3	28.4	28.4	76.2	69.9	69.9	85.1	74.8	74.8
Effective Green, g (s)	41.0	34.1	34.1	31.3	28.4	28.4	76.2	69.9	69.9	85.1	74.8	74.8
Actuated g/C Ratio	0.29	0.24	0.24	0.22	0.20	0.20	0.54	0.50	0.50	0.61	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)	351	852	381	148	710	294	357	2510	745	390	2660	836
v/s Ratio Prot	c0.02	c0.16		0.00	0.05		0.01	0.17		c0.05	0.17	
v/s Ratio Perm	0.09		0.03	0.02		0.01	0.08		0.01	c0.34		0.03
v/c Ratio	0.40	0.68	0.11	0.11	0.22	0.07	0.17	0.35	0.01	0.64	0.33	0.06
Uniform Delay, d1	38.2	48.0	41.2	42.9	46.6	45.1	15.1	21.2	17.6	13.5	18.4	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	2.8	0.3	0.3	0.3	0.2	0.2	0.4	0.0	3.6	0.3	0.1
Delay (s)	39.0	50.8	41.5	43.2	46.9	45.3	15.3	21.6	17.7	17.1	18.7	15.8
Level of Service	D	D	D	D	D	D	B	C	B	B	B	B
Approach Delay (s)		47.1			46.1			21.1			18.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



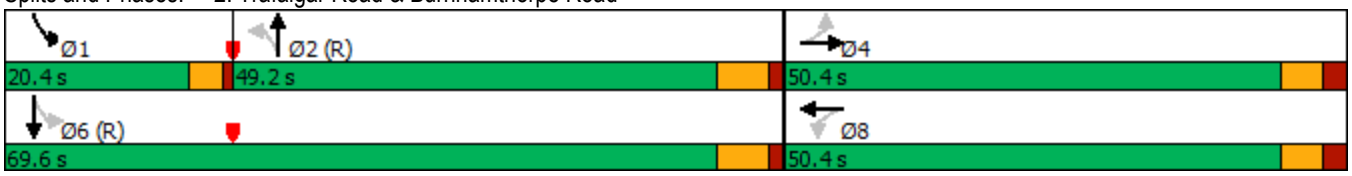
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	114	75	68	65	29	59	729	90	56	916	28
Future Volume (vph)	71	114	75	68	65	29	59	729	90	56	916	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	30.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			30.0			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
Ped Bike Factor		0.99		1.00								
Frt		0.941			0.954			0.984			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1725	0	1750	1711	0	1700	3437	0	1750	3446	0
Flt Permitted	0.681			0.370			0.273			0.267		
Satd. Flow (perm)	1254	1725	0	681	1711	0	489	3437	0	492	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			21			12			4	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		1234.4			2091.4			2139.5			186.3	
Travel Time (s)		74.1			125.5			96.3			8.4	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	79	127	83	76	72	32	66	810	100	62	1018	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	210	0	76	104	0	66	910	0	62	1049	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
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)	50.4	50.4		50.4	50.4		49.2	49.2		20.4	69.6	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		41.0%	41.0%		17.0%	58.0%	
Maximum Green (s)	44.4	44.4		44.4	44.4		43.2	43.2		16.4	63.6	
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)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Act Effct Green (s)	18.2	18.2		18.2	18.2		80.8	80.8		91.8	89.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.67	0.67		0.76	0.75	
v/c Ratio	0.42	0.73		0.74	0.38		0.20	0.39		0.14	0.41	
Control Delay	51.2	55.4		85.4	38.6		11.7	10.4		5.0	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.2	55.4		85.4	38.6		11.7	10.4		5.0	6.5	
LOS	D	E		F	D		B	B		A	A	
Approach Delay		54.3			58.4			10.5			6.4	
Approach LOS		D			E			B			A	
Queue Length 50th (m)	17.1	40.8		17.3	17.6		5.7	47.7		3.0	40.3	
Queue Length 95th (m)	30.1	62.2		32.9	31.9		15.5	73.6		8.1	65.1	
Internal Link Dist (m)		1210.4			2067.4			2115.5			162.3	
Turn Bay Length (m)	40.0			30.0			130.0			170.0		
Base Capacity (vph)	463	657		251	646		329	2318		548	2580	
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	0.17	0.32		0.30	0.16		0.20	0.39		0.11	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	114	75	68	65	29	59	729	90	56	916	28
Future Volume (vph)	71	114	75	68	65	29	59	729	90	56	916	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1723		1748	1711		1700	3435		1750	3445	
Flt Permitted	0.68	1.00		0.37	1.00		0.27	1.00		0.27	1.00	
Satd. Flow (perm)	1254	1723		681	1711		488	3435		491	3445	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	79	127	83	76	72	32	66	810	100	62	1018	31
RTOR Reduction (vph)	0	26	0	0	18	0	0	4	0	0	1	0
Lane Group Flow (vph)	79	184	0	76	86	0	66	906	0	62	1048	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.2	18.2		18.2	18.2		80.0	80.0		89.8	89.8	
Effective Green, g (s)	18.2	18.2		18.2	18.2		80.0	80.0		89.8	89.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.67	0.67		0.75	0.75	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	190	261		103	259		325	2290		428	2578	
v/s Ratio Prot		0.11			0.05			0.26		0.01	c0.30	
v/s Ratio Perm	0.06			c0.11			0.14			0.10		
v/c Ratio	0.42	0.70		0.74	0.33		0.20	0.40		0.14	0.41	
Uniform Delay, d1	46.1	48.3		48.6	45.5		7.7	9.1		4.7	5.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	8.3		23.8	0.8		1.4	0.5		0.2	0.5	
Delay (s)	47.6	56.7		72.4	46.2		9.1	9.6		4.8	5.9	
Level of Service	D	E		E	D		A	A		A	A	
Approach Delay (s)		54.2			57.3			9.5			5.9	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	752	1	124	277	0	198
Future Volume (vph)	752	1	124	277	0	198
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				0.985		
Satd. Flow (prot)	1842	0	0	1791	1593	0
Flt Permitted				0.985		
Satd. Flow (perm)	1842	0	0	1791	1593	0
Link Speed (k/h)	60			60	60	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	13.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	817	1	135	301	0	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	818	0	0	436	215	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	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

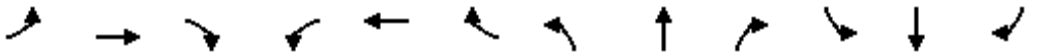
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			



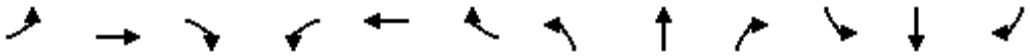
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	752	1	124	277	0	198
Future Volume (Veh/h)	752	1	124	277	0	198
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	817	1	135	301	0	215
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			818		1388	818
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			818		1388	818
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			83		100	43
cM capacity (veh/h)			802		131	376

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	818	436	215
Volume Left	0	135	0
Volume Right	1	0	215
cSH	1700	802	376
Volume to Capacity	0.48	0.17	0.57
Queue Length 95th (m)	0.0	4.6	26.0
Control Delay (s)	0.0	4.7	26.6
Lane LOS		A	D
Approach Delay (s)	0.0	4.7	26.6
Approach LOS			D

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	1678	203	155	732	134	163	486	93	176	739	145
Future Volume (vph)	262	1678	203	155	732	134	163	486	93	176	739	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	165.0		85.0	120.0		0.0	45.0		55.0
Storage Lanes	2		1	1		1	1		0	1		1
Taper Length (m)	45.0			65.0			100.0			75.0		
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00	1.00		1.00		0.98
Frt			0.850			0.850		0.976				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	5029	1551	1700	4794	1536	1716	3380	0	1716	3466	1551
Flt Permitted	0.950			0.085			0.177			0.205		
Satd. Flow (perm)	3386	5029	1528	152	4794	1510	319	3380	0	370	3466	1521
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			172		18				138
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			2139.5	
Travel Time (s)		28.8			31.0			36.1			128.4	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	273	1748	211	161	763	140	170	506	97	183	770	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	1748	211	161	763	140	170	603	0	183	770	151
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		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
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
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
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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4			8		8
Detector Phase	5	2	2	1	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	12.0	40.4	40.4	11.5	40.4	40.4	11.5	40.5		11.5	40.5	40.5
Total Split (s)	22.1	50.7	50.7	14.3	42.9	42.9	13.0	46.8		18.2	52.0	52.0
Total Split (%)	17.0%	39.0%	39.0%	11.0%	33.0%	33.0%	10.0%	36.0%		14.0%	40.0%	40.0%
Maximum Green (s)	17.1	44.3	44.3	10.3	36.5	36.5	9.0	40.3		14.2	45.5	45.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7		3.0	3.7	3.7
All-Red Time (s)	2.0	2.7	2.7	1.0	2.7	2.7	1.0	2.8		1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5		3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0			27.0	27.0
Pedestrian Calls (#/hr)		2	2		4	4		3			6	6
Act Effct Green (s)	15.8	50.8	50.8	62.3	46.9	46.9	43.4	31.9		51.5	36.4	36.4
Actuated g/C Ratio	0.12	0.39	0.39	0.48	0.36	0.36	0.33	0.25		0.40	0.28	0.28
v/c Ratio	0.66	0.89	0.30	0.71	0.44	0.21	0.84	0.72		0.64	0.79	0.29
Control Delay	62.5	44.6	8.7	45.6	34.0	3.2	60.8	48.3		36.0	49.5	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	62.5	44.6	8.7	45.6	34.0	3.2	60.8	48.3		36.0	49.5	7.9
LOS	E	D	A	D	C	A	E	D		D	D	A
Approach Delay		43.4			31.7			51.0			41.6	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	34.8	155.6	6.9	23.7	54.3	0.0	28.7	73.3		31.2	96.3	2.4
Queue Length 95th (m)	48.1	#203.1	25.4	#64.6	75.1	8.8	#49.2	86.3		43.6	109.5	16.7
Internal Link Dist (m)		536.5			579.0			577.7			2115.5	
Turn Bay Length (m)	110.0		85.0	165.0		85.0	120.0			45.0		55.0
Base Capacity (vph)	457	1963	699	228	1731	655	203	1060		294	1213	622
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.60	0.89	0.30	0.71	0.44	0.21	0.84	0.57		0.62	0.63	0.24

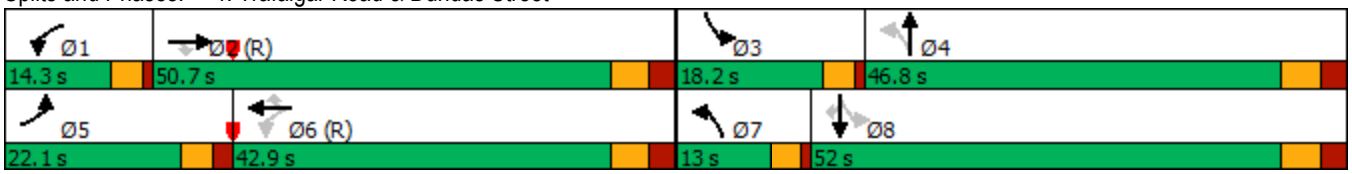
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 18.2 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 41.7		Intersection LOS: D	

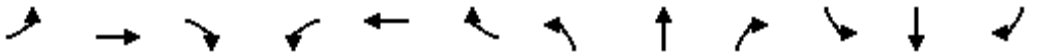
Intersection Capacity Utilization 89.3% ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

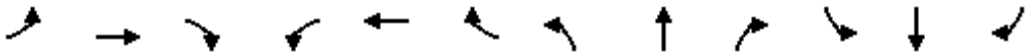




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	1678	203	155	732	134	163	486	93	176	739	145
Future Volume (vph)	262	1678	203	155	732	134	163	486	93	176	739	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3395	5029	1528	1700	4794	1510	1716	3379		1716	3466	1521
Flt Permitted	0.95	1.00	1.00	0.09	1.00	1.00	0.18	1.00		0.21	1.00	1.00
Satd. Flow (perm)	3395	5029	1528	153	4794	1510	320	3379		371	3466	1521
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	273	1748	211	161	762	140	170	506	97	183	770	151
RTOR Reduction (vph)	0	0	103	0	0	89	0	14	0	0	0	99
Lane Group Flow (vph)	273	1748	108	161	763	51	170	589	0	183	770	52
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4			8		8
Actuated Green, G (s)	15.8	50.7	50.7	59.9	46.9	46.9	40.9	31.9		49.4	36.4	36.4
Effective Green, g (s)	15.8	50.7	50.7	59.9	46.9	46.9	40.9	31.9		49.4	36.4	36.4
Actuated g/C Ratio	0.12	0.39	0.39	0.46	0.36	0.36	0.31	0.25		0.38	0.28	0.28
Clearance Time (s)	5.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5		3.5	3.5	3.5
Lane Grp Cap (vph)	412	1961	595	225	1729	544	197	829		280	970	425
v/s Ratio Prot	c0.08	c0.35		0.07	0.16		c0.06	0.17		c0.07	0.22	
v/s Ratio Perm			0.07	0.26		0.03	c0.21			0.18		0.03
v/c Ratio	0.66	0.89	0.18	0.72	0.44	0.09	0.86	0.71		0.65	0.79	0.12
Uniform Delay, d1	54.6	37.1	26.0	28.5	31.6	27.5	36.5	44.8		29.7	43.3	34.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.1	6.6	0.7	10.7	0.8	0.3	30.6	3.0		5.6	4.7	0.2
Delay (s)	58.7	43.7	26.7	39.2	32.4	27.8	67.1	47.8		35.3	48.0	35.0
Level of Service	E	D	C	D	C	C	E	D		D	D	D
Approach Delay (s)		43.9			32.8			52.1			44.1	
Approach LOS		D			C			D			D	

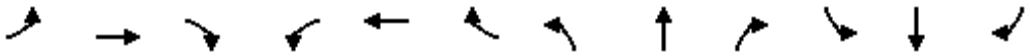
Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



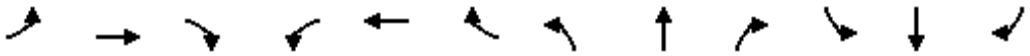
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	191	6	16	169	101	6	142	49	558	138	227
Future Volume (vph)	146	191	6	16	169	101	6	142	49	558	138	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.997			0.949			0.963			0.961	
Flt Protected		0.979			0.997			0.998			0.971	
Satd. Flow (prot)	0	3416	0	0	3311	0	0	3364	0	0	3266	0
Flt Permitted		0.979			0.997			0.998			0.971	
Satd. Flow (perm)	0	3416	0	0	3311	0	0	3364	0	0	3266	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			1235.4			238.8			171.1	
Travel Time (s)		28.9			74.1			14.3			10.3	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	162	212	7	17	188	105	7	148	51	581	144	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	381	0	0	310	0	0	206	0	0	977	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			



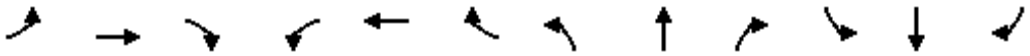
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	146	191	6	16	169	101	6	142	49	558	138	227
Future Volume (veh/h)	146	191	6	16	169	101	6	142	49	558	138	227
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	162	212	7	17	188	105	7	148	51	581	144	252
Approach Volume (veh/h)		381			310			206			977	
Crossing Volume (veh/h)		742			317			955			212	
High Capacity (veh/h)		768			1080			646			1173	
High v/c (veh/h)		0.50			0.29			0.32			0.83	
Low Capacity (veh/h)		609			885			503			969	
Low v/c (veh/h)		0.63			0.35			0.41			1.01	

Intersection Summary				
Maximum v/c High	0.83			
Maximum v/c Low	1.01			
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
Future Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
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		0.966			0.989			0.967			0.998	
Flt Protected		0.998			0.979			0.997			0.995	
Satd. Flow (prot)	0	1776	0	0	1726	0	0	1759	0	0	1808	0
Flt Permitted		0.998			0.979			0.997			0.995	
Satd. Flow (perm)	0	1776	0	0	1726	0	0	1759	0	0	1808	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.5			1234.4			328.3			432.7	
Travel Time (s)		14.5			74.1			19.7			26.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	2	36	13	54	61	10	17	228	79	22	180	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	0	125	0	0	324	0	0	205	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

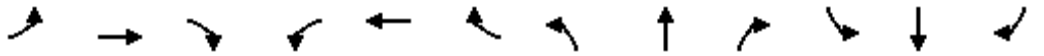
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
Future Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	36	13	54	61	10	17	228	79	22	180	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	51	125	324	205
Volume Left (vph)	2	54	17	22
Volume Right (vph)	13	10	79	3
Hadj (s)	-0.11	0.13	-0.09	0.07
Departure Headway (s)	5.3	5.4	4.6	4.8
Degree Utilization, x	0.07	0.19	0.41	0.28
Capacity (veh/h)	601	606	758	703
Control Delay (s)	8.7	9.6	10.7	9.7
Approach Delay (s)	8.7	9.6	10.7	9.7
Approach LOS	A	A	B	A

Intersection Summary				
Delay	10.1			
Level of Service	B			
Intersection Capacity Utilization	37.4%	ICU Level of Service	A	
Analysis Period (min)	15			

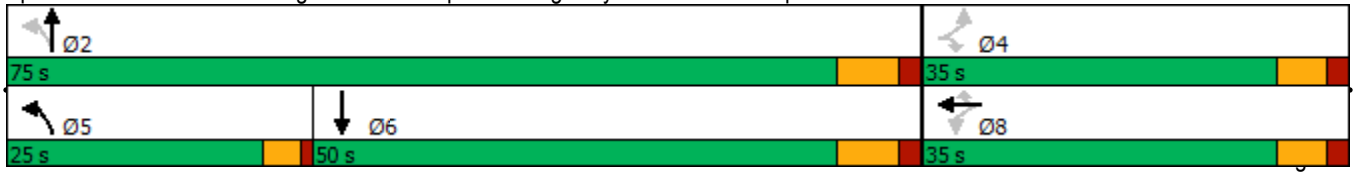


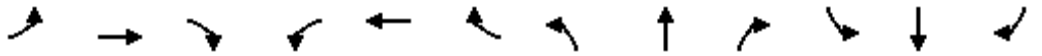
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	106	0	3	2	814	0	0	950	0
Future Volume (vph)	3	0	2	106	0	3	2	814	0	0	950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.714			0.950	0.950		0.232					
Satd. Flow (perm)	803	0	1566	1449	1388	1487	291	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	119	0	3	2	915	0	0	1067	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	59	60	3	2	915	0	0	1067	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	8.2		8.2	8.2	8.2	8.2	43.0	41.4			39.7	
Actuated g/C Ratio	0.14		0.14	0.14	0.14	0.14	0.73	0.71			0.68	
v/c Ratio	0.03		0.01	0.29	0.31	0.01	0.01	0.39			0.33	
Control Delay	23.7		0.0	27.3	27.9	0.0	3.0	5.5			6.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	23.7		0.0	27.3	27.9	0.0	3.0	5.5			6.3	
LOS	C		A	C	C	A	A	A			A	
Approach Delay		14.2			26.9			5.5			6.3	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.3		0.0	5.7	6.1	0.0	0.1	20.6			15.6	
Queue Length 95th (m)	2.4		0.0	17.0	18.0	0.0	0.6	34.6			38.3	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	399		819	721	691	780	537	3297			3739	
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	0.01		0.00	0.08	0.09	0.00	0.00	0.28			0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 58.6			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

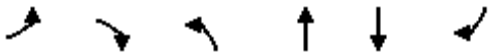
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	106	0	3	2	814	0	0	950	0
Future Volume (vph)	3	0	2	106	0	3	2	814	0	0	950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.71		1.00	0.95	0.95	1.00	0.23	1.00			1.00	
Satd. Flow (perm)	803		1566	1449	1388	1487	290	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	119	0	3	2	915	0	0	1067	0
RTOR Reduction (vph)	0	0	2	0	0	3	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	59	60	0	2	915	0	0	1067	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	6.8		6.8	6.8	6.8	6.8	43.3	43.3			38.3	
Effective Green, g (s)	6.8		6.8	6.8	6.8	6.8	43.3	43.3			38.3	
Actuated g/C Ratio	0.11		0.11	0.11	0.11	0.11	0.69	0.69			0.61	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	86		168	156	149	160	213	2267			2882	
v/s Ratio Prot							0.00	c0.28			0.22	
v/s Ratio Perm	0.00		0.00	0.04	0.04	0.00	0.01					
v/c Ratio	0.03		0.00	0.38	0.40	0.00	0.01	0.40			0.37	
Uniform Delay, d1	25.2		25.1	26.2	26.3	25.1	3.2	4.3			6.3	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	1.5	1.8	0.0	0.0	0.1			0.1	
Delay (s)	25.4		25.1	27.7	28.0	25.1	3.3	4.4			6.4	
Level of Service	C		C	C	C	C	A	A			A	
Approach Delay (s)		25.3			27.8			4.4			6.4	
Approach LOS		C			C			A			A	

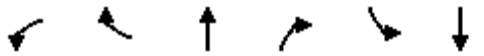
Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	816	1058	26
Future Volume (vph)	0	0	0	816	1058	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	917	1189	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	917	1189	29
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

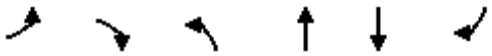
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	816	33	0	1058
Future Volume (vph)	0	0	816	33	0	1058
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	917	37	0	1189
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	917	37	0	1189
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

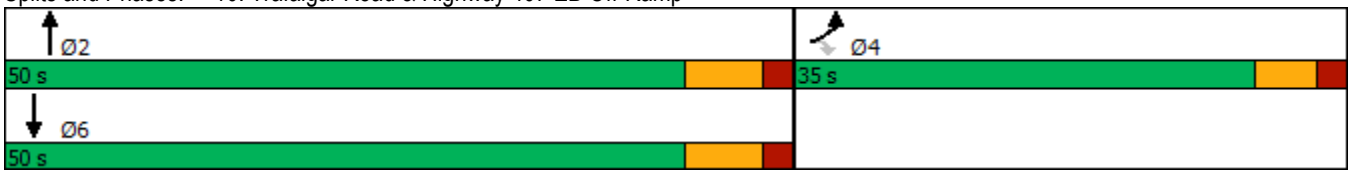


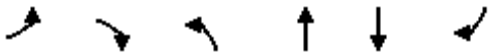
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	72	0	800	928	0
Future Volume (vph)	45	72	0	800	928	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		74				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	49	79	0	879	1020	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	79	0	879	1020	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	35.0	35.0		50.0	50.0	
Total Split (%)	41.2%	41.2%		58.8%	58.8%	
Maximum Green (s)	29.0	29.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	7.4	7.4		47.4	47.4	
Actuated g/C Ratio	0.12	0.12		0.74	0.74	
v/c Ratio	0.25	0.35		0.36	0.42	
Control Delay	28.6	12.8		4.7	5.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.6	12.8		4.7	5.0	
LOS	C	B		A	A	
Approach Delay	18.9			4.7	5.0	
Approach LOS	B			A	A	
Queue Length 50th (m)	5.3	0.5		19.0	23.3	
Queue Length 95th (m)	13.8	10.8		30.8	37.3	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	778	675		2424	2446	
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	0.06	0.12		0.36	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 64			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 41.5%		ICU Level of Service A	
Analysis Period (min) 15			

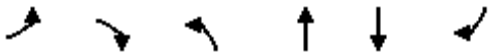
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	72	0	800	928	0
Future Volume (vph)	45	72	0	800	928	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	79	0	879	1020	0
RTOR Reduction (vph)	0	67	0	0	0	0
Lane Group Flow (vph)	49	12	0	879	1020	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	6.2	6.2		46.0	46.0	
Effective Green, g (s)	6.2	6.2		46.0	46.0	
Actuated g/C Ratio	0.10	0.10		0.71	0.71	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	133		2310	2331	
v/s Ratio Prot	c0.03			0.27	c0.31	
v/s Ratio Perm		0.01				
v/c Ratio	0.30	0.09		0.38	0.44	
Uniform Delay, d1	27.5	26.9		3.9	4.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.3		0.5	0.6	
Delay (s)	28.5	27.2		4.3	4.7	
Level of Service	C	C		A	A	
Approach Delay (s)	27.7			4.3	4.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	845	928	23
Future Volume (vph)	0	0	0	845	928	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	929	1020	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	929	1020	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

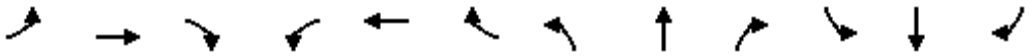
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	800	200	0	1000
Future Volume (vph)	0	0	800	200	0	1000
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	879	220	0	1099
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	879	220	0	1099
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

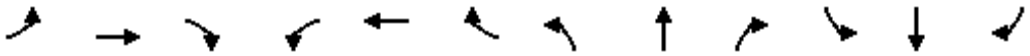
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



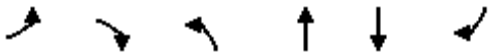
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	550	258	92	287	83	100	304	86	173	547	63
Future Volume (vph)	74	550	258	92	287	83	100	304	86	173	547	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.956			0.973			0.974			0.988	
Flt Protected		0.996			0.990			0.990			0.989	
Satd. Flow (prot)	0	3234	0	0	3339	0	0	3234	0	0	3420	0
Flt Permitted		0.996			0.990			0.990			0.989	
Satd. Flow (perm)	0	3234	0	0	3339	0	0	3234	0	0	3420	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			174.1			169.6	
Travel Time (s)		14.1			6.1			10.4			10.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	83	618	290	103	322	93	112	342	97	194	615	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	991	0	0	518	0	0	551	0	0	880	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			

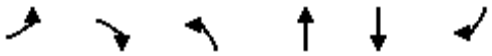


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	74	550	258	92	287	83	100	304	86	173	547	63
Future Volume (veh/h)	74	550	258	92	287	83	100	304	86	173	547	63
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	83	618	290	103	322	93	112	342	97	194	615	71
Approach Volume (veh/h)		991			518			551			880	
Crossing Volume (veh/h)		912			537			895			537	
High Capacity (veh/h)		669			906			678			906	
High v/c (veh/h)		1.48			0.57			0.81			0.97	
Low Capacity (veh/h)		523			730			531			730	
Low v/c (veh/h)		1.90			0.71			1.04			1.21	

Intersection Summary				
Maximum v/c High	1.48			
Maximum v/c Low	1.90			
Intersection Capacity Utilization	88.4%	ICU Level of Service	E	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	29	39	948	1074	20
Future Volume (vph)	29	29	39	948	1074	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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)	1075	1401	1653	4885	4980	1566
Flt Permitted	0.950		0.207			
Satd. Flow (perm)	1075	1401	360	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32				22
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			224.9	145.5	
Travel Time (s)	16.2			10.1	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	32	32	42	1030	1167	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	32	42	1030	1167	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	

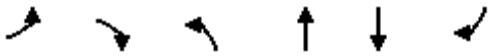


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	10.4	10.4	65.5	65.9	59.6	59.6
Actuated g/C Ratio	0.13	0.13	0.82	0.83	0.75	0.75
v/c Ratio	0.23	0.15	0.10	0.25	0.31	0.02
Control Delay	37.0	14.2	3.3	3.2	6.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	14.2	3.3	3.2	6.9	3.4
LOS	D	B	A	A	A	A
Approach Delay	25.6			3.2	6.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	4.7	0.0	1.4	17.6	33.6	0.0
Queue Length 95th (m)	12.9	7.7	3.8	24.5	44.4	2.8
Internal Link Dist (m)	88.4			200.9	121.5	
Turn Bay Length (m)			110.0			40.0
Base Capacity (vph)	243	342	410	4043	3728	1177
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	0.13	0.09	0.10	0.25	0.31	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 79.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

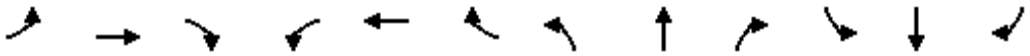
Splits and Phases: 14: Trafalgar Road & GO Parking Lot





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	29	39	948	1074	20
Future Volume (vph)	29	29	39	948	1074	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1	4.0	6.4	6.4	6.4
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)	1075	1401	1653	4885	4980	1566
Flt Permitted	0.95	1.00	0.21	1.00	1.00	1.00
Satd. Flow (perm)	1075	1401	360	4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	32	42	1030	1167	22
RTOR Reduction (vph)	0	30	0	0	0	7
Lane Group Flow (vph)	32	2	42	1030	1167	15
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	6.0	6.0	64.8	64.8	56.8	56.8
Effective Green, g (s)	6.0	6.0	64.8	64.8	56.8	56.8
Actuated g/C Ratio	0.07	0.07	0.77	0.77	0.67	0.67
Clearance Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Lane Grp Cap (vph)	76	99	338	3755	3355	1055
v/s Ratio Prot	c0.03		0.01	c0.21	c0.23	
v/s Ratio Perm		0.00	0.09			0.01
v/c Ratio	0.42	0.02	0.12	0.27	0.35	0.01
Uniform Delay, d1	37.5	36.4	2.6	2.9	5.9	4.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.1	0.2	0.2	0.3	0.0
Delay (s)	41.5	36.5	2.7	3.0	6.1	4.6
Level of Service	D	D	A	A	A	A
Approach Delay (s)	39.0			3.0	6.1	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	17.5
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
Future Volume (vph)	2	32	12	48	54	9	15	203	70	20	160	3
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		0.966			0.989			0.967			0.998	
Flt Protected		0.998			0.979			0.997			0.995	
Satd. Flow (prot)	0	1776	0	0	1726	0	0	1759	0	0	1808	0
Flt Permitted		0.998			0.979			0.997			0.995	
Satd. Flow (perm)	0	1776	0	0	1726	0	0	1759	0	0	1808	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.5			1234.4			328.3			432.7	
Travel Time (s)		14.5			74.1			19.7			26.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	2	36	13	54	61	10	17	228	79	22	180	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	0	125	0	0	324	0	0	205	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

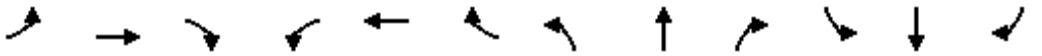
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

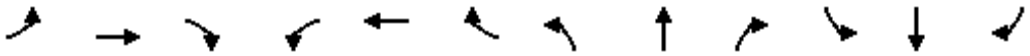
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	32	12	48	54	9	15	203	70	20	160	3
Future Vol, veh/h	2	32	12	48	54	9	15	203	70	20	160	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	6	4	11	2	2	6	5	3	2
Mvmt Flow	2	36	13	54	61	10	17	228	79	22	180	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.7	9.6	10.6	9.7
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	4%	43%	11%
Vol Thru, %	70%	70%	49%	87%
Vol Right, %	24%	26%	8%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	288	46	111	183
LT Vol	15	2	48	20
Through Vol	203	32	54	160
RT Vol	70	12	9	3
Lane Flow Rate	324	52	125	206
Geometry Grp	1	1	1	1
Degree of Util (X)	0.405	0.074	0.184	0.276
Departure Headway (Hd)	4.51	5.188	5.32	4.826
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	684	670	740
Service Time	2.559	3.27	3.391	2.882
HCM Lane V/C Ratio	0.407	0.076	0.187	0.278
HCM Control Delay	10.6	8.7	9.6	9.7
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2	0.2	0.7	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	205	68	46	410	440	89	1016	23	130	715	147
Future Volume (vph)	88	205	68	46	410	440	89	1016	23	130	715	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	210.0		60.0	160.0		150.0	180.0		60.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			15.0		
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
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1716	3500	1566	1750	5029	1536	1684	5029	1566
Flt Permitted	0.336			0.614			0.323			0.194		
Satd. Flow (perm)	619	3500	1566	1109	3500	1566	595	5029	1536	344	5029	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			251			94			158
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		1234.7			397.9			276.7			224.9	
Travel Time (s)		74.1			23.9			12.5			10.1	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	95	220	73	49	441	473	96	1092	25	140	769	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	220	73	49	441	473	96	1092	25	140	769	158
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	

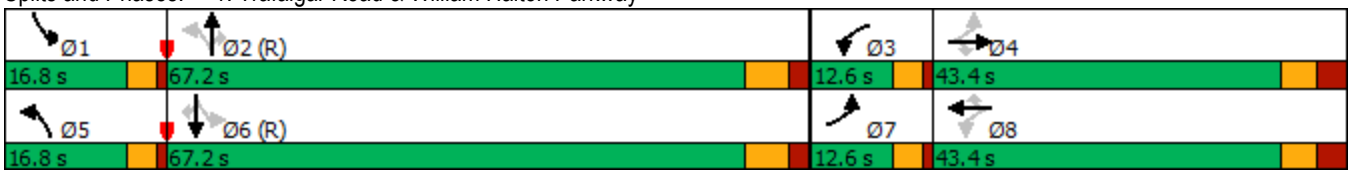


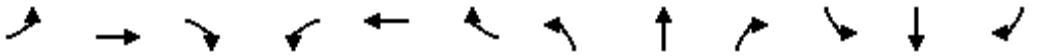
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	38.0	38.0	11.0	38.0	38.0	11.0	42.9	42.9	11.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
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	C-Max	C-Max	None	C-Max	C-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)	43.6	33.7	33.7	41.9	31.0	31.0	80.2	68.3	68.3	83.0	69.7	69.7
Actuated g/C Ratio	0.31	0.24	0.24	0.30	0.22	0.22	0.57	0.49	0.49	0.59	0.50	0.50
v/c Ratio	0.37	0.26	0.16	0.13	0.57	0.87	0.23	0.44	0.03	0.46	0.31	0.19
Control Delay	35.6	43.6	5.0	30.8	50.8	41.2	14.0	25.3	0.1	17.9	22.3	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	43.6	5.0	30.8	50.8	41.2	14.0	25.3	0.1	17.9	22.3	3.8
LOS	D	D	A	C	D	D	B	C	A	B	C	A
Approach Delay		34.4			45.1			23.9			19.0	
Approach LOS		C			D			C			B	
Queue Length 50th (m)	17.9	26.0	0.0	9.0	56.1	62.7	11.1	74.6	0.0	16.6	47.1	0.0
Queue Length 95th (m)	30.1	36.8	7.8	17.6	71.3	106.6	20.1	92.9	0.0	28.1	61.3	12.7
Internal Link Dist (m)		1210.7			373.9			252.7			200.9	
Turn Bay Length (m)	210.0		60.0	160.0		150.0	180.0		60.0			
Base Capacity (vph)	262	910	475	374	910	592	461	2454	797	331	2504	848
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	0.36	0.24	0.15	0.13	0.48	0.80	0.21	0.44	0.03	0.42	0.31	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 29.2		Intersection LOS: C	

Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

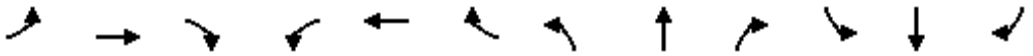




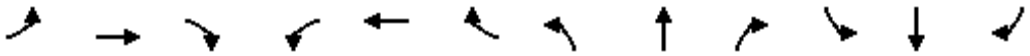
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	205	68	46	410	440	89	1016	23	130	715	147
Future Volume (vph)	88	205	68	46	410	440	89	1016	23	130	715	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3500	1566	1716	3500	1566	1750	5029	1536	1684	5029	1545
Flt Permitted	0.34	1.00	1.00	0.61	1.00	1.00	0.32	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	618	3500	1566	1110	3500	1566	595	5029	1536	344	5029	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	95	220	73	49	441	473	96	1092	25	140	769	158
RTOR Reduction (vph)	0	0	55	0	0	194	0	0	13	0	0	80
Lane Group Flow (vph)	95	220	18	49	441	279	96	1092	12	140	769	78
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
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)	42.1	33.7	33.7	38.3	31.8	31.8	76.5	67.5	67.5	79.3	68.9	68.9
Effective Green, g (s)	42.1	33.7	33.7	38.3	31.8	31.8	76.5	67.5	67.5	79.3	68.9	68.9
Actuated g/C Ratio	0.30	0.24	0.24	0.27	0.23	0.23	0.55	0.48	0.48	0.57	0.49	0.49
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	253	842	376	331	795	355	399	2424	740	294	2474	760
v/s Ratio Prot	c0.02	0.06		0.01	0.13		0.02	0.22		c0.04	0.15	
v/s Ratio Perm	0.09		0.01	0.03		c0.18	0.12		0.01	c0.23		0.05
v/c Ratio	0.38	0.26	0.05	0.15	0.55	0.79	0.24	0.45	0.02	0.48	0.31	0.10
Uniform Delay, d1	36.7	43.1	40.8	38.0	47.8	50.9	15.3	24.0	18.9	15.6	21.3	19.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3	0.1	0.2	1.4	12.5	0.3	0.6	0.0	1.2	0.3	0.3
Delay (s)	37.6	43.4	40.9	38.2	49.3	63.4	15.7	24.6	19.0	16.8	21.6	19.3
Level of Service	D	D	D	D	D	E	B	C	B	B	C	B
Approach Delay (s)		41.5			55.7			23.8			20.7	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	85	46	66	83	9	77	1077	85	12	726	57
Future Volume (vph)	44	85	46	66	83	9	77	1077	85	12	726	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	30.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			30.0			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		0.947			0.986			0.989			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1744	0	1750	1816	0	1750	3454	0	1750	3423	0
Flt Permitted	0.695			0.536			0.341			0.189		
Satd. Flow (perm)	1220	1744	0	987	1816	0	628	3454	0	348	3423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			4			10			13	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		1234.4			2091.5			95.4			186.3	
Travel Time (s)		74.1			125.5			4.3			8.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	46	89	48	69	87	9	81	1134	89	13	764	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	137	0	69	96	0	81	1223	0	13	824	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	

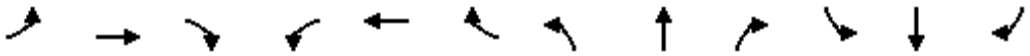


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0		11.5	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)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Act Effct Green (s)	13.8	13.8		13.8	13.8		89.8	89.8		96.2	94.2	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.75	0.75		0.80	0.78	
v/c Ratio	0.33	0.62		0.61	0.45		0.17	0.47		0.04	0.31	
Control Delay	53.8	54.2		71.8	53.3		7.2	7.7		3.2	4.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	53.8	54.2		71.8	53.3		7.2	7.7		3.2	4.2	
LOS	D	D		E	D		A	A		A	A	
Approach Delay		54.1			61.1			7.7			4.2	
Approach LOS		D			E			A			A	
Queue Length 50th (m)	10.2	26.2		15.8	20.6		3.8	40.5		0.5	22.9	
Queue Length 95th (m)	20.9	44.6		30.0	35.7		14.5	92.0		2.1	37.5	
Internal Link Dist (m)		1210.4			2067.5			71.4			162.3	
Turn Bay Length (m)	40.0			30.0			130.0			170.0		
Base Capacity (vph)	329	486		266	493		469	2586		414	2688	
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	0.14	0.28		0.26	0.19		0.17	0.47		0.03	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	85	46	66	83	9	77	1077	85	12	726	57
Future Volume (vph)	44	85	46	66	83	9	77	1077	85	12	726	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1745		1750	1816		1750	3455		1750	3424	
Flt Permitted	0.69	1.00		0.54	1.00		0.34	1.00		0.19	1.00	
Satd. Flow (perm)	1220	1745		988	1816		628	3455		348	3424	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	89	48	69	87	9	81	1134	89	13	764	60
RTOR Reduction (vph)	0	19	0	0	4	0	0	3	0	0	3	0
Lane Group Flow (vph)	46	118	0	69	92	0	81	1220	0	13	821	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.8	13.8		13.8	13.8		87.4	87.4		94.2	94.2	
Effective Green, g (s)	13.8	13.8		13.8	13.8		87.4	87.4		94.2	94.2	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.73	0.73		0.79	0.79	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	140	200		113	208		457	2516		305	2687	
v/s Ratio Prot		0.07			0.05			c0.35		0.00	c0.24	
v/s Ratio Perm	0.04			c0.07			0.13			0.03		
v/c Ratio	0.33	0.59		0.61	0.44		0.18	0.49		0.04	0.31	
Uniform Delay, d1	48.8	50.4		50.5	49.5		5.1	6.8		3.9	3.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	4.4		9.4	1.5		0.8	0.7		0.1	0.3	
Delay (s)	50.2	54.8		59.9	51.0		5.9	7.5		4.0	3.9	
Level of Service	D	D		E	D		A	A		A	A	
Approach Delay (s)		53.6			54.8			7.4			3.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	355	1	134	889	0	169
Future Volume (vph)	355	1	134	889	0	169
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				0.993		
Satd. Flow (prot)	1807	0	0	1829	1593	0
Flt Permitted				0.993		
Satd. Flow (perm)	1807	0	0	1829	1593	0
Link Speed (k/h)	60			60	60	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	13.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	370	1	140	926	0	176
Shared Lane Traffic (%)						
Lane Group Flow (vph)	371	0	0	1066	176	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	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

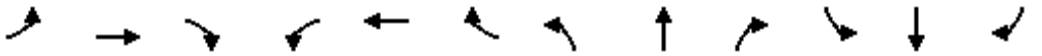
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.4%		ICU Level of Service F	
Analysis Period (min) 15			



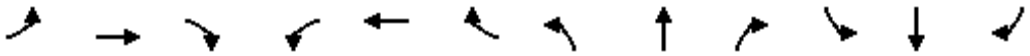
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	355	1	134	889	0	169
Future Volume (Veh/h)	355	1	134	889	0	169
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	370	1	140	926	0	176
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			371		1576	370
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			371		1576	370
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		100	74
cM capacity (veh/h)			1188		106	675

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	371	1066	176
Volume Left	0	140	0
Volume Right	1	0	176
cSH	1700	1188	675
Volume to Capacity	0.22	0.12	0.26
Queue Length 95th (m)	0.0	3.0	7.9
Control Delay (s)	0.0	3.0	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	3.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		93.4%	ICU Level of Service F
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	1076	164	211	1323	189	268	793	145	144	482	176
Future Volume (vph)	248	1076	164	211	1323	189	268	793	145	144	482	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	165.0		85.0	120.0		0.0	45.0		55.0
Storage Lanes	2		1	1		1	1		0	1		1
Taper Length (m)	45.0			65.0			100.0			75.0		
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00	1.00				0.98
Frt			0.850			0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4980	1566	1750	5029	1566	1750	3410	0	1733	3500	1566
Flt Permitted	0.950			0.131			0.363			0.101		
Satd. Flow (perm)	3389	4980	1512	241	5029	1535	666	3410	0	184	3500	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			191		17				181
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			1927.8	
Travel Time (s)		30.4			42.0			38.7			115.7	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	256	1109	169	218	1364	195	276	818	149	148	497	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	1109	169	218	1364	195	276	967	0	148	497	181
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		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
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
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
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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4			8		8
Detector Phase	5	2	2	1	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	12.0	32.4	32.4	12.0	32.4	32.4	11.0	32.5		11.0	32.5	32.5
Total Split (s)	20.8	46.8	46.8	20.8	46.8	46.8	15.6	46.8		15.6	46.8	46.8
Total Split (%)	16.0%	36.0%	36.0%	16.0%	36.0%	36.0%	12.0%	36.0%		12.0%	36.0%	36.0%
Maximum Green (s)	15.8	40.4	40.4	15.8	40.4	40.4	11.6	40.3		11.6	40.3	40.3
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7		3.0	3.7	3.7
All-Red Time (s)	2.0	2.7	2.7	2.0	2.7	2.7	1.0	2.8		1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.4	6.4	5.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0		10.0			10.0	10.0
Flash Dont Walk (s)		16.0	16.0		16.0	16.0		16.0			16.0	16.0
Pedestrian Calls (#/hr)		15	15		5	5		4			6	6
Act Effct Green (s)	15.1	41.6	41.6	58.2	41.6	41.6	54.0	39.9		53.7	39.7	39.7
Actuated g/C Ratio	0.12	0.32	0.32	0.45	0.32	0.32	0.42	0.31		0.41	0.31	0.31
v/c Ratio	0.65	0.70	0.28	0.77	0.85	0.31	0.74	0.91		0.70	0.46	0.30
Control Delay	63.1	41.8	6.0	43.7	47.5	6.2	38.9	56.2		43.7	38.1	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	63.1	41.8	6.0	43.7	47.5	6.2	38.9	56.2		43.7	38.1	6.0
LOS	E	D	A	D	D	A	D	E		D	D	A
Approach Delay		41.4			42.5			52.4			32.1	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	32.6	92.2	0.0	32.5	121.0	0.7	45.4	123.2		22.4	53.8	0.0
Queue Length 95th (m)	46.8	108.7	15.9	#67.2	140.2	17.5	#67.6	#160.2		#47.6	70.2	16.1
Internal Link Dist (m)		568.0			792.3			620.9			1903.8	
Turn Bay Length (m)	110.0		85.0	165.0		85.0	120.0			45.0		55.0
Base Capacity (vph)	412	1592	598	292	1610	621	373	1068		214	1085	600
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.62	0.70	0.28	0.75	0.85	0.31	0.74	0.91		0.69	0.46	0.30

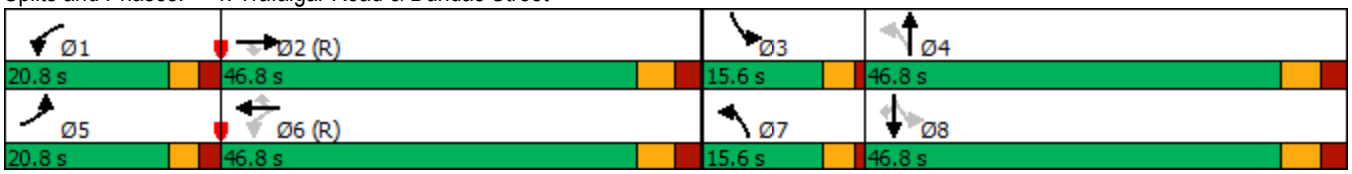
Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 40.3 (31%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 42.9	Intersection LOS: D

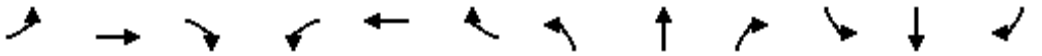
Intersection Capacity Utilization 86.2% ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

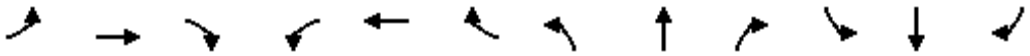




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	1076	164	211	1323	189	268	793	145	144	482	176
Future Volume (vph)	248	1076	164	211	1323	189	268	793	145	144	482	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.4	6.4	5.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3395	4980	1512	1749	5029	1535	1748	3410		1733	3500	1533
Flt Permitted	0.95	1.00	1.00	0.13	1.00	1.00	0.36	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3395	4980	1512	240	5029	1535	669	3410		184	3500	1533
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	256	1109	169	218	1364	195	276	818	149	148	497	181
RTOR Reduction (vph)	0	0	115	0	0	130	0	12	0	0	0	126
Lane Group Flow (vph)	256	1109	54	218	1364	65	276	955	0	148	497	55
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4			8		8
Actuated Green, G (s)	15.1	41.6	41.6	56.9	41.7	41.7	51.5	39.9		51.1	39.7	39.7
Effective Green, g (s)	15.1	41.6	41.6	56.9	41.7	41.7	51.5	39.9		51.1	39.7	39.7
Actuated g/C Ratio	0.12	0.32	0.32	0.44	0.32	0.32	0.40	0.31		0.39	0.31	0.31
Clearance Time (s)	5.0	6.4	6.4	5.0	6.4	6.4	4.0	6.5		4.0	6.5	6.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	394	1593	483	281	1613	492	361	1046		208	1068	468
v/s Ratio Prot	0.08	0.22		c0.09	c0.27		c0.07	c0.28		0.06	0.14	
v/s Ratio Perm			0.04	0.25		0.04	0.23			0.22		0.04
v/c Ratio	0.65	0.70	0.11	0.78	0.85	0.13	0.76	0.91		0.71	0.47	0.12
Uniform Delay, d1	54.9	38.7	31.2	26.3	41.2	31.3	30.6	43.4		30.3	36.6	32.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.0	2.5	0.5	14.5	5.7	0.6	10.9	12.5		13.4	0.7	0.2
Delay (s)	59.9	41.2	31.6	40.8	46.8	31.9	41.5	55.9		43.6	37.2	32.8
Level of Service	E	D	C	D	D	C	D	E		D	D	C
Approach Delay (s)		43.3			44.4			52.7			37.4	
Approach LOS		D			D			D			D	

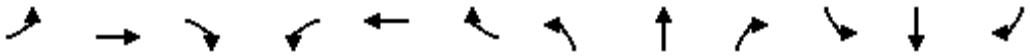
Intersection Summary			
HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



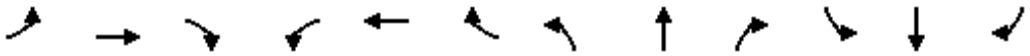
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	138	6	59	227	343	5	152	50	172	173	166
Future Volume (vph)	128	138	6	59	227	343	5	152	50	172	173	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.997			0.918			0.964			0.951	
Flt Protected		0.977			0.995			0.999			0.983	
Satd. Flow (prot)	0	3409	0	0	3197	0	0	3371	0	0	3272	0
Flt Permitted		0.977			0.995			0.999			0.983	
Satd. Flow (perm)	0	3409	0	0	3197	0	0	3371	0	0	3272	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			1234.7			238.8			171.3	
Travel Time (s)		28.6			74.1			14.3			10.3	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	131	141	6	60	232	350	5	155	51	176	177	169
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	278	0	0	642	0	0	211	0	0	522	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



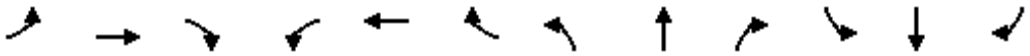
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	128	138	6	59	227	343	5	152	50	172	173	166
Future Volume (veh/h)	128	138	6	59	227	343	5	152	50	172	173	166
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	131	141	6	60	232	350	5	155	51	176	177	169
Approach Volume (veh/h)		278			642			211			522	
Crossing Volume (veh/h)		413			291			448			297	
High Capacity (veh/h)		1000			1102			973			1097	
High v/c (veh/h)		0.28			0.58			0.22			0.48	
Low Capacity (veh/h)		814			905			790			900	
Low v/c (veh/h)		0.34			0.71			0.27			0.58	

Intersection Summary				
Maximum v/c High	0.58			
Maximum v/c Low	0.71			
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Future Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.970			0.962			0.994	
Flt Protected		0.990			0.979			0.998			0.997	
Satd. Flow (prot)	0	1758	0	0	1716	0	0	1764	0	0	1826	0
Flt Permitted		0.990			0.979			0.998			0.997	
Satd. Flow (perm)	0	1758	0	0	1716	0	0	1764	0	0	1826	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.5			1234.4			218.8			432.8	
Travel Time (s)		14.5			74.1			13.1			26.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	7	18	9	57	45	29	9	189	78	16	217	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	131	0	0	276	0	0	244	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

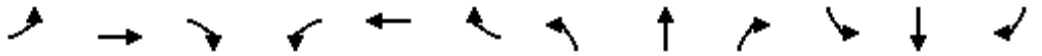
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Future Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	18	9	57	45	29	9	189	78	16	217	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	34	131	276	244
Volume Left (vph)	7	57	9	16
Volume Right (vph)	9	29	78	11
Hadj (s)	-0.08	0.02	-0.12	0.02
Departure Headway (s)	5.2	5.2	4.5	4.7
Degree Utilization, x	0.05	0.19	0.35	0.32
Capacity (veh/h)	601	628	763	730
Control Delay (s)	8.5	9.4	9.9	9.9
Approach Delay (s)	8.5	9.4	9.9	9.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	9.7			
Level of Service	A			
Intersection Capacity Utilization	37.4%	ICU Level of Service	A	
Analysis Period (min)	15			



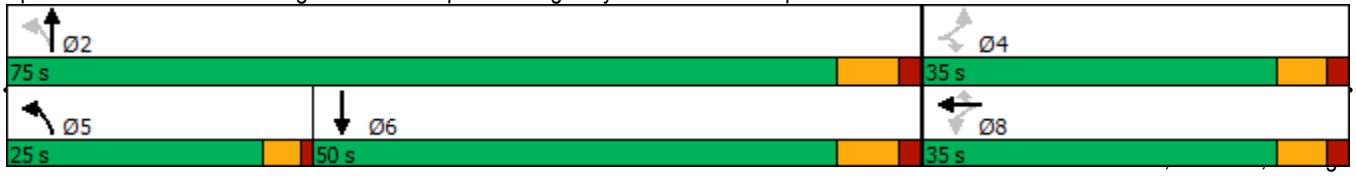
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	5	201	2	16	6	1388	0	0	847	0
Future Volume (vph)	6	0	5	201	2	16	6	1388	0	0	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.997	0.850						
Flt Protected	0.950			0.950	0.954		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1523	1431	1750	3500	0	0	4980	0
Flt Permitted	0.682			0.950	0.954		0.278					
Satd. Flow (perm)	1095	0	1331	1615	1523	1431	512	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		1	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	6	0	5	209	2	17	6	1446	0	0	882	0
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	6	0	5	107	106	15	6	1446	0	0	882	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

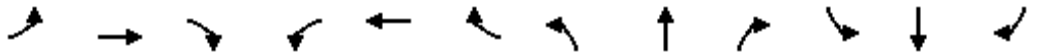
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	10.0		10.0	10.0	10.0	10.0	39.6	36.6			34.9	
Actuated g/C Ratio	0.17		0.17	0.17	0.17	0.17	0.66	0.61			0.58	
v/c Ratio	0.03		0.02	0.39	0.41	0.05	0.01	0.67			0.30	
Control Delay	21.7		0.2	27.1	27.6	0.3	4.2	10.0			7.6	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	21.7		0.2	27.1	27.6	0.3	4.2	10.0			7.6	
LOS	C		A	C	C	A	A	B			A	
Approach Delay		11.9			25.5			10.0			7.6	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.5		0.0	10.7	10.9	0.0	0.2	45.5			13.7	
Queue Length 95th (m)	3.5		0.0	26.1	27.0	0.0	1.3	80.9			35.1	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	535		691	790	745	740	778	3474			3613	
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	0.01		0.01	0.14	0.14	0.02	0.01	0.42			0.24	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 59.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 10.6 Intersection LOS: B
Intersection Capacity Utilization 61.7% ICU Level of Service B
Analysis Period (min) 15

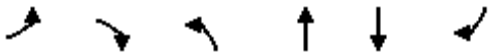
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	5	201	2	16	6	1388	0	0	847	0
Future Volume (vph)	6	0	5	201	2	16	6	1388	0	0	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1523	1431	1750	3500			4980	
Flt Permitted	0.68		1.00	0.95	0.95	1.00	0.28	1.00			1.00	
Satd. Flow (perm)	1095		1331	1615	1523	1431	512	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	0	5	209	2	17	6	1446	0	0	882	0
RTOR Reduction (vph)	0	0	4	0	1	13	0	0	0	0	0	0
Lane Group Flow (vph)	6	0	1	107	105	2	6	1446	0	0	882	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	10.1		10.1	10.1	10.1	10.1	39.9	39.9			34.9	
Effective Green, g (s)	10.1		10.1	10.1	10.1	10.1	39.9	39.9			34.9	
Actuated g/C Ratio	0.16		0.16	0.16	0.16	0.16	0.63	0.63			0.55	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	175		213	258	244	229	343	2216			2758	
v/s Ratio Prot							0.00	c0.41			0.18	
v/s Ratio Perm	0.01		0.00	0.07	0.07	0.00	0.01					
v/c Ratio	0.03		0.00	0.41	0.43	0.01	0.02	0.65			0.32	
Uniform Delay, d1	22.3		22.2	23.8	23.9	22.2	4.4	7.2			7.6	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	1.1	1.2	0.0	0.0	0.7			0.1	
Delay (s)	22.4		22.2	24.9	25.1	22.3	4.4	7.9			7.7	
Level of Service	C		C	C	C	C	A	A			A	
Approach Delay (s)		22.3			24.8			7.9			7.7	
Approach LOS		C			C			A			A	

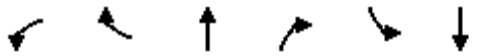
Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1394	1098	39
Future Volume (vph)	0	0	0	1394	1098	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	1452	1144	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1452	1144	41
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

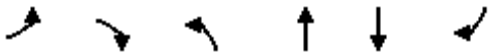
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1394	130	0	1098
Future Volume (vph)	0	0	1394	130	0	1098
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	1452	135	0	1144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1452	135	0	1144
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

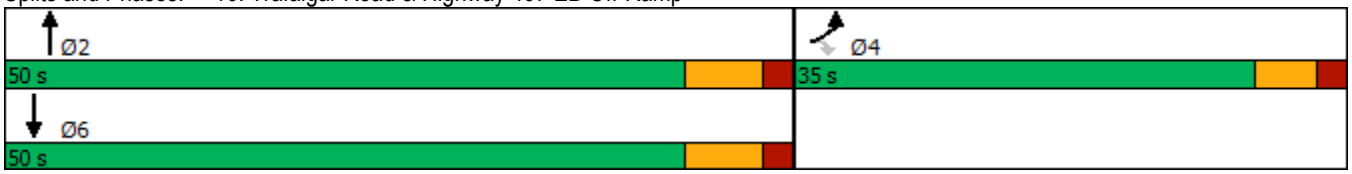


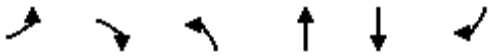
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	63	0	1488	922	0
Future Volume (vph)	33	63	0	1488	922	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	35	67	0	1583	981	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	67	0	1583	981	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	35.0	35.0		50.0	50.0	
Total Split (%)	41.2%	41.2%		58.8%	58.8%	
Maximum Green (s)	29.0	29.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	7.0	7.0		47.3	47.3	
Actuated g/C Ratio	0.11	0.11		0.74	0.74	
v/c Ratio	0.18	0.34		0.61	0.38	
Control Delay	27.6	12.7		6.6	4.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	27.6	12.7		6.6	4.6	
LOS	C	B		A	A	
Approach Delay	17.8			6.6	4.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	3.8	0.0		43.7	20.7	
Queue Length 95th (m)	10.8	9.4		70.6	33.7	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	798	619		2605	2580	
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	0.04	0.11		0.61	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 63.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

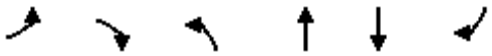
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





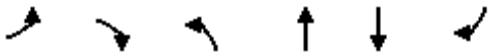
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	63	0	1488	922	0
Future Volume (vph)	33	63	0	1488	922	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	67	0	1583	981	0
RTOR Reduction (vph)	0	61	0	0	0	0
Lane Group Flow (vph)	35	6	0	1583	981	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	5.8	5.8		45.9	45.9	
Effective Green, g (s)	5.8	5.8		45.9	45.9	
Actuated g/C Ratio	0.09	0.09		0.71	0.71	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	114		2482	2458	
v/s Ratio Prot	c0.02			c0.45	0.28	
v/s Ratio Perm		0.00				
v/c Ratio	0.22	0.05		0.64	0.40	
Uniform Delay, d1	27.4	26.9		5.0	3.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		1.3	0.5	
Delay (s)	28.1	27.1		6.3	4.3	
Level of Service	C	C		A	A	
Approach Delay (s)	27.5			6.3	4.3	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1521	922	18
Future Volume (vph)	0	0	0	1521	922	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	1618	981	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1618	981	19
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1521	922	18
Future Volume (Veh/h)	0	0	0	1521	922	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	1618	981	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.79	0.90	0.90			
vC, conflicting volume	1790	490	1000			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888	205	772			
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)	224	720	753			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	809	809	490	490	19
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	19
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.48	0.48	0.29	0.29	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

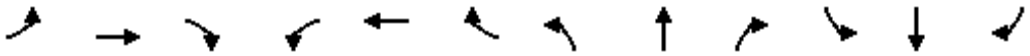
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	57.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1488	178	0	985
Future Volume (vph)	0	0	1488	178	0	985
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	1583	189	0	1048
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1583	189	0	1048
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

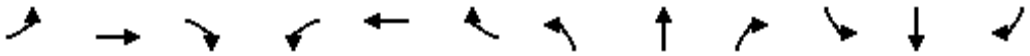
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



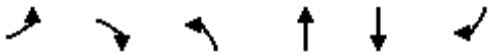
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	458	125	128	622	119	282	586	209	102	302	79
Future Volume (vph)	24	458	125	128	622	119	282	586	209	102	302	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.979			0.971			0.976	
Flt Protected		0.998			0.993			0.987			0.990	
Satd. Flow (prot)	0	3328	0	0	3402	0	0	3346	0	0	3382	0
Flt Permitted		0.998			0.993			0.987			0.990	
Satd. Flow (perm)	0	3328	0	0	3402	0	0	3346	0	0	3382	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			174.1			169.6	
Travel Time (s)		14.1			6.1			10.4			10.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	25	477	130	133	648	124	294	610	218	106	315	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	632	0	0	905	0	0	1122	0	0	503	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 100.3%		ICU Level of Service G	
Analysis Period (min) 15			

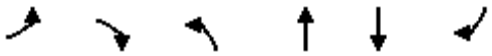


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	24	458	125	128	622	119	282	586	209	102	302	79
Future Volume (veh/h)	24	458	125	128	622	119	282	586	209	102	302	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	25	477	130	133	648	124	294	610	218	106	315	82
Approach Volume (veh/h)		632			905			1122			503	
Crossing Volume (veh/h)		554			929			608			1075	
High Capacity (veh/h)		894			660			856			585	
High v/c (veh/h)		0.71			1.37			1.31			0.86	
Low Capacity (veh/h)		719			515			686			451	
Low v/c (veh/h)		0.88			1.76			1.64			1.12	

Intersection Summary				
Maximum v/c High	1.37			
Maximum v/c Low	1.76			
Intersection Capacity Utilization	100.3%	ICU Level of Service	G	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	44	37	1550	1050	25
Future Volume (vph)	43	44	37	1550	1050	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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)	1257	1465	1608	5029	5029	1566
Flt Permitted	0.950		0.220			
Satd. Flow (perm)	1257	1465	372	5029	5029	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		46				26
Link Speed (k/h)	25			80	60	
Link Distance (m)	112.4			224.9	145.5	
Travel Time (s)	16.2			10.1	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	42%	9%	11%	2%	2%	2%
Adj. Flow (vph)	45	46	39	1632	1105	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	46	39	1632	1105	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	

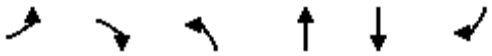


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	10.4	10.4	65.1	64.0	57.5	57.5
Actuated g/C Ratio	0.13	0.13	0.78	0.77	0.69	0.69
v/c Ratio	0.29	0.21	0.10	0.42	0.32	0.02
Control Delay	38.4	13.0	3.5	4.8	7.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	13.0	3.5	4.8	7.6	3.3
LOS	D	B	A	A	A	A
Approach Delay	25.5			4.8	7.5	
Approach LOS	C			A	A	
Queue Length 50th (m)	6.6	0.0	1.3	32.7	31.2	0.0
Queue Length 95th (m)	16.3	9.0	3.6	44.3	41.8	3.1
Internal Link Dist (m)	88.4			200.9	121.5	
Turn Bay Length (m)			110.0			40.0
Base Capacity (vph)	270	351	395	3875	3478	1091
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	0.17	0.13	0.10	0.42	0.32	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 83.1			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

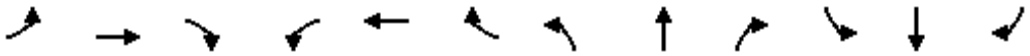
Splits and Phases: 14: Trafalgar Road & GO Parking Lot





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	44	37	1550	1050	25
Future Volume (vph)	43	44	37	1550	1050	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1	4.0	6.4	6.4	6.4
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)	1257	1465	1608	5029	5029	1566
Flt Permitted	0.95	1.00	0.22	1.00	1.00	1.00
Satd. Flow (perm)	1257	1465	373	5029	5029	1566
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	46	39	1632	1105	26
RTOR Reduction (vph)	0	42	0	0	0	9
Lane Group Flow (vph)	45	4	39	1632	1105	17
Heavy Vehicles (%)	42%	9%	11%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	8.3	8.3	64.3	64.3	56.1	56.1
Effective Green, g (s)	8.3	8.3	64.3	64.3	56.1	56.1
Actuated g/C Ratio	0.10	0.10	0.75	0.75	0.65	0.65
Clearance Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	121	141	338	3755	3276	1020
v/s Ratio Prot	c0.04		0.01	c0.32	0.22	
v/s Ratio Perm		0.00	0.08			0.01
v/c Ratio	0.37	0.03	0.12	0.43	0.34	0.02
Uniform Delay, d1	36.5	35.3	3.1	4.1	6.7	5.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	0.2	0.4	0.3	0.0
Delay (s)	38.4	35.3	3.2	4.5	7.0	5.3
Level of Service	D	D	A	A	A	A
Approach Delay (s)	36.8			4.4	6.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	17.5
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Future Volume (vph)	7	17	8	54	42	27	8	178	73	15	204	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.970			0.962			0.994	
Flt Protected		0.990			0.979			0.998			0.997	
Satd. Flow (prot)	0	1758	0	0	1716	0	0	1764	0	0	1826	0
Flt Permitted		0.990			0.979			0.998			0.997	
Satd. Flow (perm)	0	1758	0	0	1716	0	0	1764	0	0	1826	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.5			1234.4			218.8			432.8	
Travel Time (s)		14.5			74.1			13.1			26.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	7	18	9	57	45	29	9	189	78	16	217	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	131	0	0	276	0	0	244	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

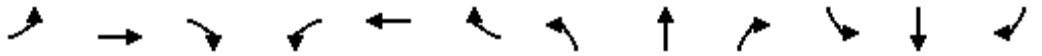
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	17	8	54	42	27	8	178	73	15	204	10
Future Vol, veh/h	7	17	8	54	42	27	8	178	73	15	204	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	11	2	2	3	2	2	2
Mvmt Flow	7	18	9	57	45	29	9	189	78	16	217	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	9.3	9.9	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	22%	44%	7%
Vol Thru, %	69%	53%	34%	89%
Vol Right, %	28%	25%	22%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	259	32	123	229
LT Vol	8	7	54	15
Through Vol	178	17	42	204
RT Vol	73	8	27	10
Lane Flow Rate	276	34	131	244
Geometry Grp	1	1	1	1
Degree of Util (X)	0.343	0.049	0.185	0.315
Departure Headway (Hd)	4.476	5.191	5.101	4.651
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	802	684	699	770
Service Time	2.52	3.268	3.165	2.697
HCM Lane V/C Ratio	0.344	0.05	0.187	0.317
HCM Control Delay	9.9	8.5	9.3	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.5	0.2	0.7	1.4



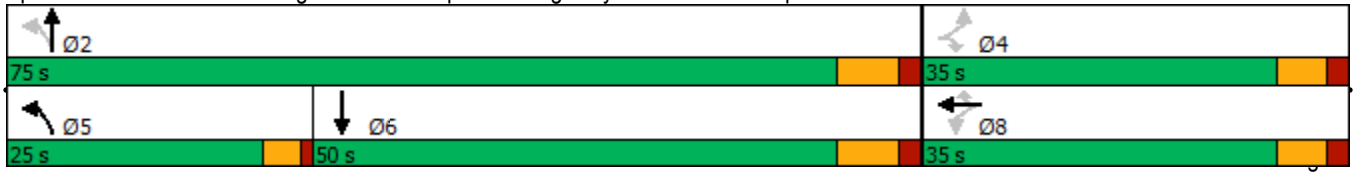
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	113	0	19	1	828	0	0	722	0
Future Volume (vph)	1	0	3	113	0	19	1	828	0	0	722	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.995	0.850						
Flt Protected	0.950			0.950	0.954		0.950					
Satd. Flow (prot)	892	0	1566	1630	1562	1487	1750	3500	0	0	5029	0
Flt Permitted	0.713			0.950	0.954		0.310					
Satd. Flow (perm)	670	0	1566	1630	1562	1487	571	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	123	0	21	1	900	0	0	785	0
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	1	0	3	63	62	19	1	900	0	0	785	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

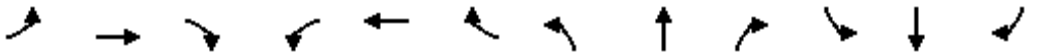
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	8.0		8.0	8.0	8.0	8.0	42.9	41.3			39.7	
Actuated g/C Ratio	0.14		0.14	0.14	0.14	0.14	0.74	0.71			0.68	
v/c Ratio	0.01		0.01	0.28	0.22	0.07	0.00	0.36			0.23	
Control Delay	23.0		0.0	26.9	7.3	0.5	3.0	5.1			5.6	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	23.0		0.0	26.9	7.3	0.5	3.0	5.1			5.6	
LOS	C		A	C	A	A	A	A			A	
Approach Delay		5.8			15.0			5.1			5.6	
Approach LOS		A			B			A			A	
Queue Length 50th (m)	0.1		0.0	6.1	0.0	0.0	0.0	19.5			10.4	
Queue Length 95th (m)	1.3		0.0	17.7	7.5	0.0	0.4	32.3			26.2	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	335		822	815	820	783	847	3500			3976	
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	0.00		0.00	0.08	0.08	0.02	0.00	0.26			0.20	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 58.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 6.1 Intersection LOS: A
Intersection Capacity Utilization 56.7% ICU Level of Service B
Analysis Period (min) 15

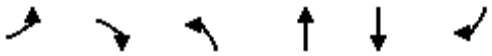
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	113	0	19	1	828	0	0	722	0
Future Volume (vph)	1	0	3	113	0	19	1	828	0	0	722	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1562	1487	1750	3500			5029	
Flt Permitted	0.71		1.00	0.95	0.95	1.00	0.31	1.00			1.00	
Satd. Flow (perm)	669		1566	1630	1562	1487	572	3500			5029	
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)	1	0	3	123	0	21	1	900	0	0	785	0
RTOR Reduction (vph)	0	0	3	0	55	17	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	0	63	7	2	1	900	0	0	785	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	6.6		6.6	6.6	6.6	6.6	43.3	43.3			38.3	
Effective Green, g (s)	6.6		6.6	6.6	6.6	6.6	43.3	43.3			38.3	
Actuated g/C Ratio	0.10		0.10	0.10	0.10	0.10	0.69	0.69			0.61	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	70		164	171	163	156	412	2409			3062	
v/s Ratio Prot							0.00	c0.26			0.16	
v/s Ratio Perm	0.00		0.00	c0.04	0.00	0.00	0.00					
v/c Ratio	0.01		0.00	0.37	0.04	0.01	0.00	0.37			0.26	
Uniform Delay, d1	25.2		25.2	26.2	25.3	25.2	3.2	4.1			5.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	1.3	0.1	0.0	0.0	0.1			0.0	
Delay (s)	25.3		25.2	27.6	25.4	25.3	3.2	4.2			5.7	
Level of Service	C		C	C	C	C	A	A			A	
Approach Delay (s)		25.2			26.3			4.2			5.7	
Approach LOS		C			C			A			A	

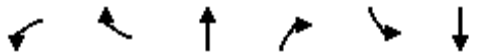
Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	829	838	34
Future Volume (vph)	0	0	0	829	838	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	901	911	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	901	911	37
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

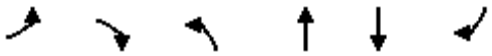
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	829	43	0	838
Future Volume (vph)	0	0	829	43	0	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	901	47	0	911
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	901	47	0	911
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

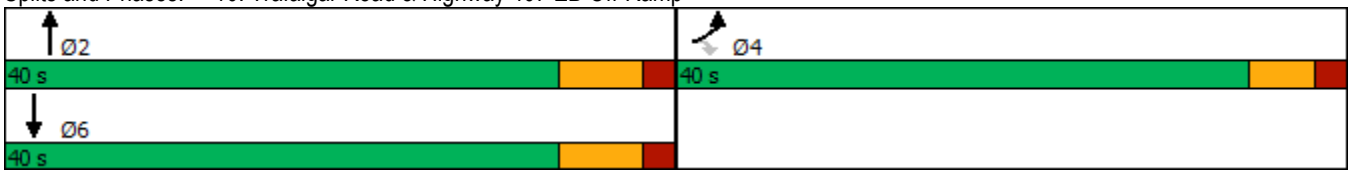


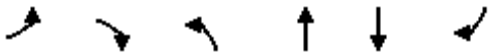
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	31	0	826	834	0
Future Volume (vph)	34	31	0	826	834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		33				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	37	33	0	888	897	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	33	0	888	897	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	40.0	40.0		40.0	40.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	34.0	34.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	6.7	6.7		41.6	41.6	
Actuated g/C Ratio	0.12	0.12		0.77	0.77	
v/c Ratio	0.17	0.17		0.33	0.33	
Control Delay	22.5	10.8		4.2	4.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	22.5	10.8		4.2	4.2	
LOS	C	B		A	A	
Approach Delay	17.0			4.2	4.2	
Approach LOS	B			A	A	
Queue Length 50th (m)	3.2	0.0		17.8	18.1	
Queue Length 95th (m)	9.6	5.9		28.8	29.3	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1103	880		2703	2703	
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	0.03	0.04		0.33	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 53.9			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 38.9%		ICU Level of Service A	
Analysis Period (min) 15			

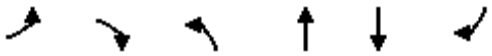
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	31	0	826	834	0
Future Volume (vph)	34	31	0	826	834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	33	0	888	897	0
RTOR Reduction (vph)	0	30	0	0	0	0
Lane Group Flow (vph)	37	3	0	888	897	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	4.4	4.4		38.9	38.9	
Effective Green, g (s)	4.4	4.4		38.9	38.9	
Actuated g/C Ratio	0.08	0.08		0.69	0.69	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	136	107		2418	2418	
v/s Ratio Prot	c0.02			0.25	c0.26	
v/s Ratio Perm		0.00				
v/c Ratio	0.27	0.02		0.37	0.37	
Uniform Delay, d1	24.4	24.0		3.6	3.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.1		0.4	0.4	
Delay (s)	25.5	24.1		4.0	4.1	
Level of Service	C	C		A	A	
Approach Delay (s)	24.8			4.0	4.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	860	834	13
Future Volume (vph)	0	0	0	860	834	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	925	897	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	925	897	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	826	90	0	865
Future Volume (vph)	0	0	826	90	0	865
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	888	97	0	930
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	888	97	0	930
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Existing AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	7	2.0	7	2.0	0.211	9.4	LOS A	0.6	4.0	0.56	0.56	0.56	49.0
2	T1	All MCs	158	2.0	158	2.0	0.211	10.4	LOS B	0.6	4.0	0.57	0.57	0.57	49.8
3	R2	All MCs	54	2.0	54	2.0	0.199	9.6	LOS A	0.5	3.9	0.58	0.58	0.58	49.3
Approach			219	2.0	219	2.0	0.211	10.2	LOS B	0.6	4.0	0.57	0.57	0.57	49.6
East: William Halton Parkway															
4	L2	All MCs	18	2.0	18	2.0	0.182	6.0	LOS A	0.5	3.8	0.34	0.26	0.34	51.0
5	T1	All MCs	188	2.0	188	2.0	0.182	5.9	LOS A	0.5	3.8	0.34	0.25	0.34	52.0
6	R2	All MCs	112	2.0	112	2.0	0.182	9.0	LOS A	0.5	3.6	0.32	0.24	0.32	51.7
Approach			318	2.0	318	2.0	0.182	7.0	LOS A	0.5	3.8	0.33	0.25	0.33	51.8
North: Sixth Line															
7	L2	All MCs	620	2.0	620	2.0	0.649	13.3	LOS B	6.6	46.8	0.50	0.45	0.78	43.7
8	T1	All MCs	153	2.0	153	2.0	0.429	11.2	LOS B	1.7	12.1	0.37	0.23	0.37	50.2
9	R2	All MCs	252	2.0	252	2.0	0.429	8.7	LOS A	1.7	12.1	0.37	0.23	0.37	49.9
Approach			1026	2.0	1026	2.0	0.649	11.9	LOS B	6.6	46.8	0.45	0.37	0.62	45.9
West: William Halton Parkway															
10	L2	All MCs	162	2.0	162	2.0	0.307	10.0	LOS B	1.0	7.1	0.55	0.57	0.63	45.8
11	T1	All MCs	212	2.0	212	2.0	0.307	9.7	LOS A	1.0	7.1	0.53	0.55	0.61	49.4
12	R2	All MCs	7	2.0	7	2.0	0.307	12.3	LOS B	1.0	6.9	0.53	0.54	0.61	49.5
Approach			381	2.0	381	2.0	0.307	9.9	LOS A	1.0	7.1	0.54	0.56	0.62	47.8
All Vehicles			1943	2.0	1943	2.0	0.649	10.5	LOS B	6.6	46.8	0.46	0.41	0.57	47.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Existing PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	5	2.0	5	2.0	0.136	5.8	LOS A	0.4	2.6	0.36	0.30	0.36	51.4
2	T1	All MCs	155	2.0	155	2.0	0.136	7.2	LOS A	0.4	2.6	0.37	0.31	0.37	52.3
3	R2	All MCs	51	2.0	51	2.0	0.128	5.8	LOS A	0.4	2.5	0.38	0.32	0.38	51.9
Approach			211	2.0	211	2.0	0.136	6.9	LOS A	0.4	2.6	0.37	0.31	0.37	52.2
East: William Halton Parkway															
4	L2	All MCs	60	2.0	60	2.0	0.328	7.6	LOS A	1.1	8.0	0.38	0.27	0.38	49.5
5	T1	All MCs	232	2.0	232	2.0	0.328	7.6	LOS A	1.1	8.0	0.38	0.27	0.38	50.4
6	R2	All MCs	350	2.0	350	2.0	0.387	12.7	LOS B	1.3	9.5	0.38	0.27	0.38	49.9
Approach			642	2.0	642	2.0	0.387	10.4	LOS B	1.3	9.5	0.38	0.27	0.38	50.0
North: Sixth Line															
7	L2	All MCs	176	2.0	176	2.0	0.292	7.1	LOS A	1.0	6.8	0.37	0.26	0.37	48.0
8	T1	All MCs	177	2.0	177	2.0	0.292	8.5	LOS A	1.0	6.8	0.36	0.25	0.36	50.1
9	R2	All MCs	169	2.0	169	2.0	0.292	7.1	LOS A	0.9	6.4	0.35	0.25	0.35	50.9
Approach			521	2.0	521	2.0	0.292	7.6	LOS A	1.0	6.8	0.36	0.26	0.36	49.6
West: William Halton Parkway															
10	L2	All MCs	131	2.0	131	2.0	0.169	6.2	LOS A	0.5	3.5	0.38	0.31	0.38	47.6
11	T1	All MCs	141	2.0	141	2.0	0.169	6.1	LOS A	0.5	3.5	0.36	0.29	0.36	52.1
12	R2	All MCs	6	2.0	6	2.0	0.169	8.7	LOS A	0.5	3.3	0.36	0.29	0.36	52.0
Approach			278	2.0	278	2.0	0.169	6.2	LOS A	0.5	3.5	0.37	0.30	0.37	49.9
All Vehicles			1652	2.0	1652	2.0	0.387	8.3	LOS A	1.3	9.5	0.37	0.27	0.37	50.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing 2024 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	112	23.0	112	23.0	0.571	19.6	LOS C	2.6	19.7	0.66	0.80	1.12	43.2
2	T1	All MCs	342	2.0	342	2.0	0.571	16.2	LOS C	2.6	19.7	0.64	0.75	1.01	45.5
3	R2	All MCs	97	3.0	97	3.0	0.407	17.0	LOS C	1.5	11.0	0.61	0.68	0.84	47.4
Approach			551	6.5	551	6.5	0.571	17.0	LOS C	2.6	19.7	0.64	0.75	1.00	45.3
East: William Halton Parkway															
4	L2	All MCs	103	2.0	103	2.0	0.352	9.2	LOS A	1.3	9.1	0.50	0.47	0.58	47.6
5	T1	All MCs	322	3.0	322	3.0	0.352	11.1	LOS B	1.3	9.1	0.49	0.46	0.56	49.2
6	R2	All MCs	93	4.0	93	4.0	0.352	12.8	LOS B	1.2	8.7	0.48	0.45	0.55	49.5
Approach			519	3.0	519	3.0	0.352	11.0	LOS B	1.3	9.1	0.49	0.46	0.56	48.9
North: Ninth Line															
7	L2	All MCs	194	2.0	194	2.0	0.682	17.6	LOS C	5.7	40.9	0.68	0.84	1.37	43.3
8	T1	All MCs	615	2.0	615	2.0	0.682	18.3	LOS C	5.7	40.9	0.63	0.73	1.15	45.8
9	R2	All MCs	71	2.0	71	2.0	0.504	15.9	LOS C	2.7	19.4	0.58	0.62	0.90	47.7
Approach			880	2.0	880	2.0	0.682	18.0	LOS C	5.7	40.9	0.64	0.75	1.18	45.3
West: William Halton Parkway															
10	L2	All MCs	83	4.0	83	4.0	1.051	76.9	LOS F	23.7	169.0	1.00	2.28	5.39	26.2
11	T1	All MCs	618	2.0	618	2.0	1.051	69.8	LOS F	23.7	169.0	0.97	2.09	4.83	27.8
12	R2	All MCs	290	12.0	290	12.0	0.748	35.7	LOS E	4.8	36.5	0.80	1.07	1.71	39.2
Approach			991	5.1	991	5.1	1.051	60.4	LOS F	23.7	169.0	0.92	1.81	3.97	30.2
All Vehicles			2940	4.1	2940	4.1	1.051	30.9	LOS D	23.7	169.0	0.71	1.05	1.98	39.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing 2024 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	294	3.0	294	3.0	0.923	40.2	LOS E	16.5	118.2	0.96	1.57	3.06	34.5
2	T1	All MCs	610	2.0	610	2.0	0.923	33.0	LOS D	16.5	118.2	0.85	1.28	2.38	38.2
3	R2	All MCs	218	2.0	218	2.0	0.657	22.3	LOS C	4.9	35.0	0.69	0.84	1.33	44.6
Approach			1122	2.3	1122	2.3	0.923	32.8	LOS D	16.5	118.2	0.85	1.27	2.35	38.1
East: William Halton Parkway															
4	L2	All MCs	133	2.0	133	2.0	0.809	32.4	LOS D	6.3	44.9	0.84	1.16	1.92	37.3
5	T1	All MCs	648	2.0	648	2.0	0.809	34.9	LOS D	6.3	45.1	0.84	1.15	1.92	38.2
6	R2	All MCs	124	2.0	124	2.0	0.809	35.9	LOS E	6.3	45.1	0.83	1.14	1.92	38.4
Approach			905	2.0	905	2.0	0.809	34.7	LOS D	6.3	45.1	0.84	1.15	1.92	38.1
North: Ninth Line															
7	L2	All MCs	106	2.0	106	2.0	0.575	18.7	LOS C	2.5	18.1	0.73	0.86	1.19	42.8
8	T1	All MCs	315	2.0	315	2.0	0.575	18.7	LOS C	2.5	18.1	0.71	0.82	1.10	44.6
9	R2	All MCs	82	2.0	82	2.0	0.424	20.7	LOS C	1.5	11.0	0.69	0.76	0.95	46.1
Approach			503	2.0	503	2.0	0.575	19.0	LOS C	2.5	18.1	0.71	0.82	1.09	44.4
West: William Halton Parkway															
10	L2	All MCs	25	4.0	25	4.0	0.506	12.3	LOS B	2.7	19.0	0.56	0.60	0.88	47.2
11	T1	All MCs	477	2.0	477	2.0	0.506	12.6	LOS B	2.7	19.0	0.54	0.57	0.81	48.4
12	R2	All MCs	130	10.0	130	10.0	0.360	14.0	LOS B	1.3	9.6	0.51	0.48	0.61	49.0
Approach			632	3.7	632	3.7	0.506	12.9	LOS B	2.7	19.0	0.54	0.56	0.77	48.4
All Vehicles			3163	2.4	3163	2.4	0.923	27.2	LOS D	16.5	118.2	0.76	1.02	1.71	40.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix G

Traffic Control Warrant Sheets

Burnhamthorpe at Collector 1
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	744	83%	83%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	152	89%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	593	66%	66%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	75	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe at Collector 1
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	744	83%	83%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	152	89%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	593	66%	66%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	75	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe at Collector 1
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	773	86%	86%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	152	89%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	622	69%	69%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	75	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe at Collector 1
2041 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	962	107%	107%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	278	164%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	683	76%	76%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	138	184%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe at Sixth Line
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1095	122%	122%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	319	188%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	776	86%	86%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	210	280%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe Road at Collector 5
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1013	141%	130%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	221	130%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	792	110%	99%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	74	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe Road at Collector 5
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1044	145%	130%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	221	130%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	823	114%	99%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	74	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Burnhamthorpe Road at Collector 5
2041 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1135	158%	130%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	221	130%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	913	127%	99%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	74	99%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Collector 3 at Collector 5
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	255	35%	35%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	77	45%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	179	25%	25%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	57	76%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Local 6 at Trafalgar Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2299	255%	76%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	130	76%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2169	241%	132%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	99	132%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Marvin Avenue at Trafalgar Road
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2454	273%	76%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	130	76%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2324	258%	132%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	99	132%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Marvin Avenue at Trafalgar Road
2041 Future Total

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2796	311%	76%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	130	76%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2667	296%	132%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	99	132%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Marvin Avenue at Trafalgar Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2835	315%	199%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	338	199%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2497	277%	277%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	219	292%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Marvin Avenue at Collector 1
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	378	53%	53%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	223	131%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	156	22%	22%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	82	109%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Marvin Avenue at Collector 4
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	543	75%	75%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	244	144%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	299	41%	41%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	155	206%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Settlers Road at Collector 1
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	421	58%	58%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	227	134%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	194	27%	27%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	132	175%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Settlers Road at Collector 4
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	589	82%	82%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	239	140%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	351	49%	49%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	98	131%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Settlers Road at Collector 6
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	454	63%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	185	109%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	269	37%	37%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	84	111%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Settlers Road at Trafalgar Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2666	296%	244%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	415	244%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2251	250%	250%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	288	384%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Sixth Line at Burnhamthorpe Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	919	102%	102%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	286	168%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	632	70%	70%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	195	259%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Sixth Line at Burnhamthorpe Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	987	110%	110%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	307	181%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	680	76%	76%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	208	277%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Sixth Line at Burnhamthorpe Road
2041 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1093	121%	121%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	350	206%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	744	83%	83%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	241	322%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Burnhamthorpe Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1441	160%	160%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	302	177%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1240	138%	114%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	85	114%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Burnhamthorpe Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1452	161%	161%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	336	198%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1228	136%	118%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	89	118%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Burnhamthorpe Road
2041 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1661	185%	185%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	409	240%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1388	154%	145%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	109	145%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Burnhamthorpe Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2156	240%	240%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	737	434%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1665	185%	185%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	208	277%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1141	127%	5%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	8	5%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1133	126%	11%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	8	11%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1119	124%	5%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	8	5%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1111	123%	11%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	8	11%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2041 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1533	170%	80%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	136	80%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1397	155%	155%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	179	239%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1432	159%	59%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	101	59%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1332	148%	148%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	111	148%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1473	164%	59%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	101	59%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1373	153%	148%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	111	148%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 1
2041 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1833	204%	134%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	229	134%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1604	178%	178%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	262	349%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1289	143%	55%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	93	55%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1195	133%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1267	141%	55%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	93	55%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1174	130%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2041 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1763	196%	133%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	226	133%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1536	171%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1558	173%	68%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	116	68%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1442	160%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1599	178%	68%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	116	68%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1483	165%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 2
2041 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	2040	227%	146%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	249	146%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1792	199%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1072	119%	50%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	84	50%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1016	113%	75%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	56	75%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1053	117%	50%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	84	50%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	996	111%	75%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	56	75%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2041 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1330	148%	91%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	155	91%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1226	136%	136%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	138	183%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1394	155%	117%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	199	117%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1196	133%	133%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	151	202%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1437	160%	117%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	199	117%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1239	138%	138%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	151	202%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

William Halton Parkway at Collector 5
2041 Future Total

Justification #7

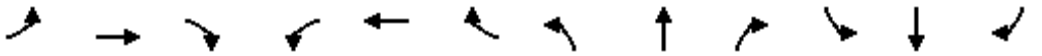
Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1661	185%	144%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	246	144%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	1415	157%	157%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	237	316%		

Notes

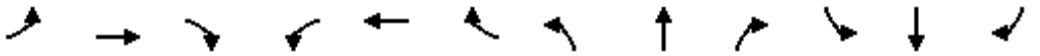
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Appendix H

2031 Future Background Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Future Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	210.0		60.0	160.0		150.0	60.0		55.0	45.0		55.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			90.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3500	1452	1750	4421	1493	1733	4378	1566
Flt Permitted	0.444			0.101			0.086			0.090		
Satd. Flow (perm)	818	3500	1566	186	3500	1452	158	4421	1493	164	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159			132			96			96
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	412	1098	257	177	387	132	317	1624	25	307	1288	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	1098	257	177	387	132	317	1624	25	307	1288	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	

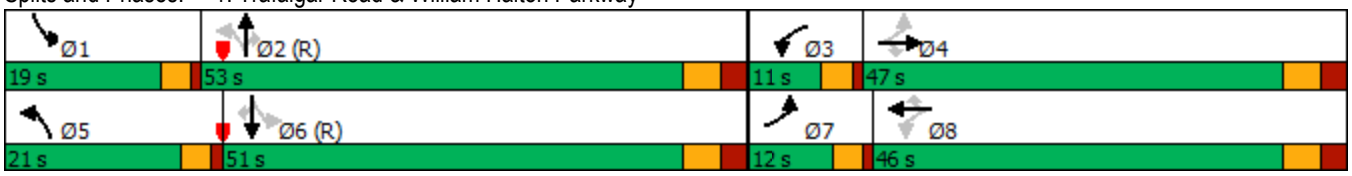


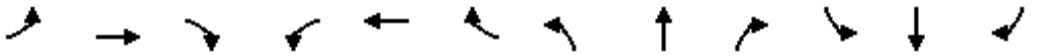
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	45.4	45.4	11.0	45.4	45.4	11.0	43.4	43.4	11.0	43.4	43.4
Total Split (s)	12.0	47.0	47.0	11.0	46.0	46.0	21.0	53.0	53.0	19.0	51.0	51.0
Total Split (%)	9.2%	36.2%	36.2%	8.5%	35.4%	35.4%	16.2%	40.8%	40.8%	14.6%	39.2%	39.2%
Maximum Green (s)	8.0	40.6	40.6	7.0	39.6	39.6	17.0	46.6	46.6	15.0	44.6	44.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		32.0	32.0		32.0	32.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.0	40.6	40.6	49.0	39.6	39.6	66.0	46.6	46.6	62.0	44.6	44.6
Actuated g/C Ratio	0.39	0.31	0.31	0.38	0.30	0.30	0.51	0.36	0.36	0.48	0.34	0.34
v/c Ratio	1.09	1.00	0.43	1.15	0.36	0.25	1.10	1.03	0.04	1.19	0.86	0.24
Control Delay	107.3	72.8	15.7	147.0	36.6	6.6	118.0	70.3	0.1	149.1	46.7	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.3	72.8	15.7	147.0	36.6	6.6	118.0	70.3	0.1	149.1	46.7	12.6
LOS	F	E	B	F	D	A	F	E	A	F	D	B
Approach Delay		72.6			59.0			77.1			61.9	
Approach LOS		E			E			E			E	
Queue Length 50th (m)	~90.8	~149.3	18.4	~36.5	40.8	0.0	~75.9	~184.4	0.0	~78.5	127.4	8.7
Queue Length 95th (m)	#166.8	#196.2	42.3	#83.3	54.8	14.3	#133.7	#218.1	0.0	#135.8	149.7	24.0
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	210.0		60.0	160.0		150.0	60.0		55.0	45.0		55.0
Base Capacity (vph)	378	1093	598	154	1066	534	288	1584	596	259	1501	600
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	1.09	1.00	0.43	1.15	0.36	0.25	1.10	1.03	0.04	1.19	0.86	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 125			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 69.5		Intersection LOS: E	
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

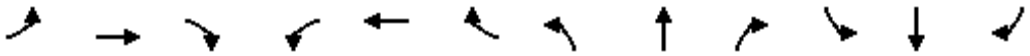




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Future Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	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)	1750	3500	1566	1750	3500	1452	1750	4421	1493	1733	4378	1566
Flt Permitted	0.44	1.00	1.00	0.10	1.00	1.00	0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	818	3500	1566	186	3500	1452	158	4421	1493	164	4378	1566
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)	412	1098	257	177	387	132	317	1624	25	307	1288	146
RTOR Reduction (vph)	0	0	109	0	0	92	0	0	16	0	0	63
Lane Group Flow (vph)	412	1098	148	177	387	40	317	1624	9	307	1288	83
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
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)	48.6	40.6	40.6	46.6	39.6	39.6	63.6	46.6	46.6	59.6	44.6	44.6
Effective Green, g (s)	48.6	40.6	40.6	46.6	39.6	39.6	63.6	46.6	46.6	59.6	44.6	44.6
Actuated g/C Ratio	0.37	0.31	0.31	0.36	0.30	0.30	0.49	0.36	0.36	0.46	0.34	0.34
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	363	1093	489	150	1066	442	285	1584	535	256	1501	537
v/s Ratio Prot	c0.07	0.31		0.06	0.11		c0.15	0.37		0.14	0.29	
v/s Ratio Perm	0.35		0.09	c0.36		0.03	0.40		0.01	c0.41		0.05
v/c Ratio	1.13	1.00	0.30	1.18	0.36	0.09	1.11	1.03	0.02	1.20	0.86	0.15
Uniform Delay, d1	39.6	44.7	33.9	37.0	35.3	32.3	40.1	41.7	26.9	40.0	39.8	29.6
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	89.2	28.3	0.7	130.0	0.4	0.2	86.9	29.3	0.1	121.0	6.6	0.6
Delay (s)	128.8	73.0	34.7	167.0	35.8	32.5	127.0	71.0	27.0	161.0	46.3	30.2
Level of Service	F	E	C	F	D	C	F	E	C	F	D	C
Approach Delay (s)		80.5			68.5			79.5			65.2	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	74.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Future Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor		1.00		1.00								
Frt		0.954			0.933			0.989			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3326	0	1750	3196	0	1700	4366	0	1750	4348	0
Flt Permitted	0.515			0.394			0.133			0.054		
Satd. Flow (perm)	949	3326	0	725	3196	0	238	4366	0	99	4348	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			129			11			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		387.6			810.8			2139.5			320.3	
Travel Time (s)		27.9			58.4			128.4			19.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	156	268	119	90	160	129	121	1661	132	120	1421	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	387	0	90	289	0	121	1793	0	120	1483	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		56.0	56.0		22.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		46.7%	46.7%		18.3%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		49.7	49.7		18.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	23.8	23.8		23.8	23.8		70.3	70.3		85.8	83.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.59		0.72	0.70	
v/c Ratio	0.83	0.56		0.63	0.39		0.87	0.70		0.61	0.49	
Control Delay	77.4	40.0		61.3	22.7		77.2	21.1		32.9	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	77.4	40.0		61.3	22.7		77.2	21.1		32.9	10.0	
LOS	E	D		E	C		E	C		C	B	
Approach Delay		50.7			31.9			24.7			11.7	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	35.6	38.4		19.6	16.8		22.1	113.0		11.4	59.9	
Queue Length 95th (m)	54.6	47.9		34.0	26.2		#70.2	182.3		32.6	95.3	
Internal Link Dist (m)		363.6			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	281	1018		215	1038		139	2563		318	3026	
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	0.56	0.38		0.42	0.28		0.87	0.70		0.38	0.49	

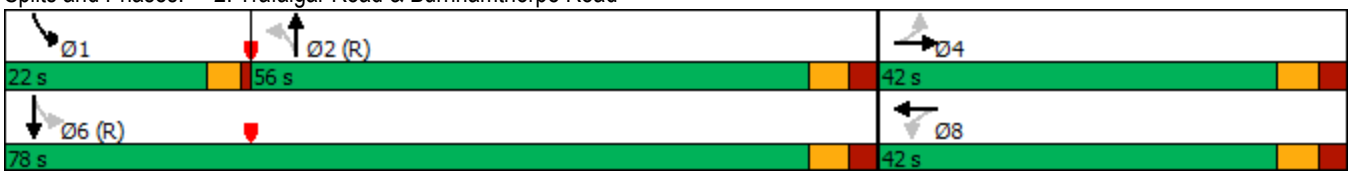
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	

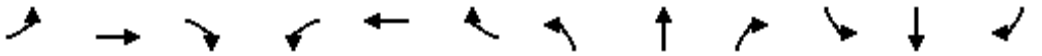
Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Future Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3325		1749	3196		1700	4366		1750	4347	
Flt Permitted	0.51	1.00		0.39	1.00		0.13	1.00		0.05	1.00	
Satd. Flow (perm)	949	3325		725	3196		238	4366		99	4347	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	156	268	119	90	160	129	121	1661	132	120	1421	62
RTOR Reduction (vph)	0	36	0	0	103	0	0	5	0	0	2	0
Lane Group Flow (vph)	156	351	0	90	186	0	121	1788	0	120	1481	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		23.8	23.8		70.4	70.4		83.5	83.5	
Effective Green, g (s)	23.8	23.8		23.8	23.8		70.4	70.4		83.5	83.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.59		0.70	0.70	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	188	659		143	633		139	2561		194	3024	
v/s Ratio Prot		0.11			0.06			0.41		c0.05	0.34	
v/s Ratio Perm	c0.16			0.12			c0.51			0.38		
v/c Ratio	0.83	0.53		0.63	0.29		0.87	0.70		0.62	0.49	
Uniform Delay, d1	46.2	43.1		44.1	40.9		20.9	17.4		22.7	8.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.0	0.8		8.4	0.3		47.8	1.6		5.8	0.6	
Delay (s)	71.2	43.9		52.4	41.2		68.8	19.0		28.5	9.0	
Level of Service	E	D		D	D		E	B		C	A	
Approach Delay (s)		51.8			43.9			22.1			10.4	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1293	1	292	542	0	405
Future Volume (vph)	1293	1	292	542	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	50.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			60.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.099			
Satd. Flow (perm)	3500	0	179	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						276
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1405	1	317	589	0	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1406	0	317	589	0	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	43.0		16.0	59.0	31.0	31.0
Total Split (%)	47.8%		17.8%	65.6%	34.4%	34.4%
Maximum Green (s)	36.6		12.0	52.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	36.6		55.0	52.6		27.0
Actuated g/C Ratio	0.41		0.61	0.58		0.30
v/c Ratio	0.99		1.01	0.29		0.66
Control Delay	48.8		77.7	9.8		15.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	48.8		77.7	9.8		15.5
LOS	D		E	A		B
Approach Delay	48.8			33.6	15.5	
Approach LOS	D			C	B	
Queue Length 50th (m)	123.7		~39.8	24.7		22.6
Queue Length 95th (m)	#172.9		#92.0	33.7		55.6
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			50.0			
Base Capacity (vph)	1423		314	2025		663
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	0.99		1.01	0.29		0.66

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

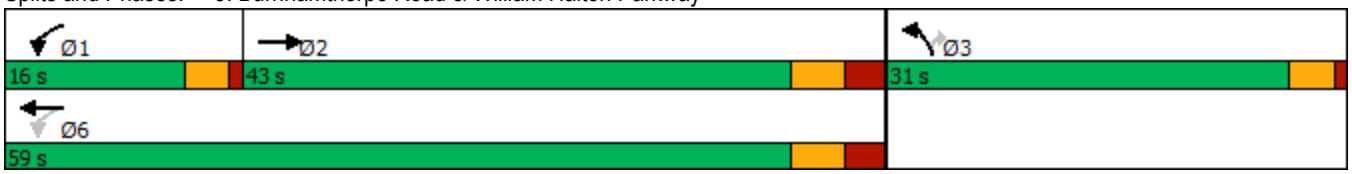
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

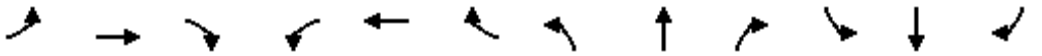
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



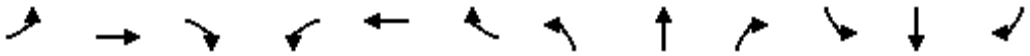


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1293	1	292	542	0	405
Future Volume (vph)	1293	1	292	542	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.10	1.00		1.00
Satd. Flow (perm)	3500		178	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1405	1	317	589	0	440
RTOR Reduction (vph)	0	0	0	0	0	193
Lane Group Flow (vph)	1406	0	317	589	0	247
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	36.6		52.6	52.6		27.0
Effective Green, g (s)	36.6		52.6	52.6		27.0
Actuated g/C Ratio	0.41		0.58	0.58		0.30
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1423		309	2025		469
v/s Ratio Prot	0.40		c0.14	0.17		
v/s Ratio Perm			c0.46			c0.16
v/c Ratio	0.99		1.03	0.29		0.53
Uniform Delay, d1	26.5		27.0	9.4		26.2
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	21.2		58.0	0.1		4.2
Delay (s)	47.7		85.0	9.4		30.4
Level of Service	D		F	A		C
Approach Delay (s)	47.7			35.9	30.4	
Approach LOS	D			D	C	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Future Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	165.0		85.0	120.0		50.0	50.0		65.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	45.0			65.0			100.0			100.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.99			0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	1700	4214	1536	1716	4378	1566	1716	4378	1551
Flt Permitted	0.950			0.084			0.097			0.122		
Satd. Flow (perm)	3393	4421	1529	150	4214	1512	175	4378	1543	220	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			162			96			154
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			2139.5	
Travel Time (s)		28.8			31.0			36.1			128.4	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	49.4	49.4	11.5	49.4	49.4	11.5	48.4	48.4	11.5	48.4	48.4
Total Split (s)	14.0	56.0	56.0	12.0	54.0	54.0	12.0	49.0	49.0	13.0	50.0	50.0
Total Split (%)	10.8%	43.1%	43.1%	9.2%	41.5%	41.5%	9.2%	37.7%	37.7%	10.0%	38.5%	38.5%
Maximum Green (s)	10.0	49.6	49.6	8.0	47.6	47.6	8.0	42.6	42.6	9.0	43.6	43.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		36.0	36.0		36.0	36.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	11.3	49.6	49.6	59.3	47.6	47.6	51.7	41.3	41.3	53.7	42.3	42.3
Actuated g/C Ratio	0.09	0.38	0.38	0.46	0.37	0.37	0.40	0.32	0.32	0.41	0.33	0.33
v/c Ratio	1.56	1.29	0.36	1.50	0.81	0.46	1.19	0.71	0.23	1.66	0.88	0.34
Control Delay	306.2	168.9	12.8	278.0	42.4	16.5	157.6	42.2	10.5	342.6	49.4	10.4
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	306.2	168.9	12.8	278.0	42.4	16.5	157.6	42.2	10.5	342.6	49.4	10.4
LOS	F	F	B	F	D	B	F	D	B	F	D	B
Approach Delay		177.7			72.7			56.4			98.2	
Approach LOS		F			E			E			F	
Queue Length 50th (m)	~90.3	~294.6	16.3	~84.5	120.2	25.9	~43.2	91.3	5.1	~98.7	123.7	8.4
Queue Length 95th (m)	#123.5	#327.0	36.8	#139.1	142.0	51.8	#91.3	109.5	19.2	#156.6	145.6	26.8
Internal Link Dist (m)		536.5			579.0			577.7			2115.5	
Turn Bay Length (m)	110.0		85.0	165.0		85.0	120.0		50.0	50.0		65.0
Base Capacity (vph)	295	1686	673	179	1542	656	164	1434	570	194	1468	613
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	1.56	1.29	0.36	1.50	0.81	0.46	1.19	0.69	0.22	1.66	0.85	0.33

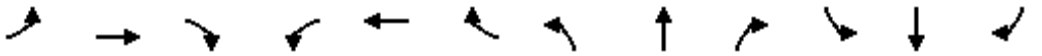
Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.66	
Intersection Signal Delay: 114.5	Intersection LOS: F

Intersection Capacity Utilization 108.9%	ICU Level of Service G
Analysis Period (min) 15	

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Trafalgar Road & Dundas Street

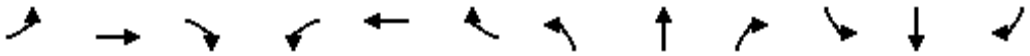




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Future Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	1700	4214	1512	1716	4378	1543	1716	4378	1523
Flt Permitted	0.95	1.00	1.00	0.08	1.00	1.00	0.10	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	3395	4421	1529	150	4214	1512	175	4378	1543	220	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
RTOR Reduction (vph)	0	0	90	0	0	103	0	0	66	0	0	104
Lane Group Flow (vph)	460	2172	153	268	1256	200	195	988	59	322	1250	98
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4		4	8		8
Actuated Green, G (s)	11.3	49.6	49.6	56.9	47.6	47.6	49.3	41.3	41.3	51.3	42.3	42.3
Effective Green, g (s)	11.3	49.6	49.6	56.9	47.6	47.6	49.3	41.3	41.3	51.3	42.3	42.3
Actuated g/C Ratio	0.09	0.38	0.38	0.44	0.37	0.37	0.38	0.32	0.32	0.39	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	295	1686	583	176	1542	553	161	1390	490	190	1424	495
v/s Ratio Prot	c0.14	0.49		0.11	0.30		0.07	0.23		c0.12	0.29	
v/s Ratio Perm			0.10	c0.55		0.13	0.38		0.04	c0.55		0.06
v/c Ratio	1.56	1.29	0.26	1.52	0.81	0.36	1.21	0.71	0.12	1.69	0.88	0.20
Uniform Delay, d1	59.4	40.2	27.6	35.4	37.2	30.1	33.0	39.1	31.5	31.7	41.4	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	267.7	134.3	1.1	262.0	4.8	1.8	138.9	1.8	0.1	334.2	6.6	0.2
Delay (s)	327.0	174.5	28.7	297.4	42.1	31.9	171.9	40.9	31.6	365.9	48.0	31.9
Level of Service	F	F	C	F	D	C	F	D	C	F	D	C
Approach Delay (s)		186.6			77.8			59.5			103.9	
Approach LOS		F			E			E			F	

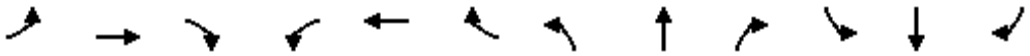
Intersection Summary			
HCM 2000 Control Delay	120.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



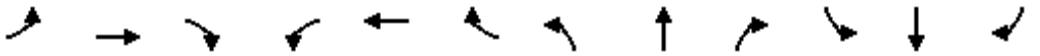
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	594	95	67	379	133	43	179	198	803	174	318
Future Volume (vph)	261	594	95	67	379	133	43	179	198	803	174	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.985			0.967			0.930			0.961	
Flt Protected		0.986			0.994			0.995			0.970	
Satd. Flow (prot)	0	3399	0	0	3364	0	0	3239	0	0	3262	0
Flt Permitted		0.986			0.994			0.995			0.970	
Satd. Flow (perm)	0	3399	0	0	3364	0	0	3239	0	0	3262	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			844.9			671.5			229.3	
Travel Time (s)		28.9			50.7			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	290	660	106	70	421	139	48	186	206	836	181	353
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1056	0	0	630	0	0	440	0	0	1370	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 114.1%		ICU Level of Service H	
Analysis Period (min) 15			

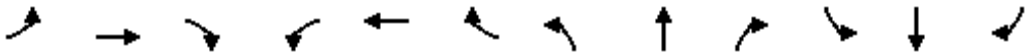


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	261	594	95	67	379	133	43	179	198	803	174	318
Future Volume (veh/h)	261	594	95	67	379	133	43	179	198	803	174	318
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	290	660	106	70	421	139	48	186	206	836	181	353
Approach Volume (veh/h)		1056			630			440			1370	
Crossing Volume (veh/h)		1087			524			1786#			539	
High Capacity (veh/h)		580			916			322			905	
High v/c (veh/h)		1.82			0.69			1.36			1.51	
Low Capacity (veh/h)		446			739			232			729	
Low v/c (veh/h)		2.37			0.85			1.90			1.88	

Intersection Summary					
Maximum v/c High	1.82				
Maximum v/c Low	2.37				
Intersection Capacity Utilization	114.1%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	130	47	117	176	18	181	528	120	71	440	10
Future Volume (vph)	58	130	47	117	176	18	181	528	120	71	440	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.960			0.986			0.972			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3360	0	1684	3364	0	1750	3377	0	1700	3456	0
Flt Permitted	0.615			0.627			0.466			0.367		
Satd. Flow (perm)	1133	3360	0	1111	3364	0	858	3377	0	657	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			13			46			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	146	53	131	198	20	203	593	135	80	494	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	199	0	131	218	0	203	728	0	80	505	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

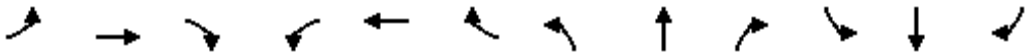


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.5	14.5		14.5	14.5		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.64	0.64		0.64	0.64	
v/c Ratio	0.30	0.29		0.61	0.33		0.37	0.34		0.19	0.23	
Control Delay	29.2	19.4		40.4	25.5		10.0	7.0		8.3	6.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.2	19.4		40.4	25.5		10.0	7.0		8.3	6.7	
LOS	C	B		D	C		B	A		A	A	
Approach Delay		21.8			31.1			7.6			6.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	7.9	9.2		17.1	13.2		11.7	19.7		4.0	13.5	
Queue Length 95th (m)	17.8	17.1		33.1	21.6		30.3	36.8		12.4	25.8	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			30.0			30.0			30.0		
Base Capacity (vph)	446	1354		437	1332		544	2161		417	2196	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.15		0.30	0.16		0.37	0.34		0.19	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

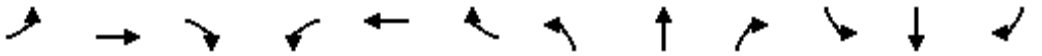
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	130	47	117	176	18	181	528	120	71	440	10
Future Volume (vph)	58	130	47	117	176	18	181	528	120	71	440	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3360		1684	3365		1750	3378		1700	3455	
Flt Permitted	0.62	1.00		0.63	1.00		0.47	1.00		0.37	1.00	
Satd. Flow (perm)	1134	3360		1111	3365		859	3378		657	3455	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	146	53	131	198	20	203	593	135	80	494	11
RTOR Reduction (vph)	0	43	0	0	10	0	0	17	0	0	1	0
Lane Group Flow (vph)	65	156	0	131	208	0	203	711	0	80	504	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.5	14.5		14.5	14.5		47.7	47.7		47.7	47.7	
Effective Green, g (s)	14.5	14.5		14.5	14.5		47.7	47.7		47.7	47.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	218	648		214	649		545	2145		417	2194	
v/s Ratio Prot		0.05			0.06			0.21			0.15	
v/s Ratio Perm	0.06			c0.12			c0.24			0.12		
v/c Ratio	0.30	0.24		0.61	0.32		0.37	0.33		0.19	0.23	
Uniform Delay, d1	25.9	25.6		27.7	26.1		6.5	6.3		5.7	5.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		5.1	0.3		1.9	0.4		1.0	0.2	
Delay (s)	26.7	25.8		32.8	26.3		8.5	6.7		6.7	6.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.1			28.8			7.1			6.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



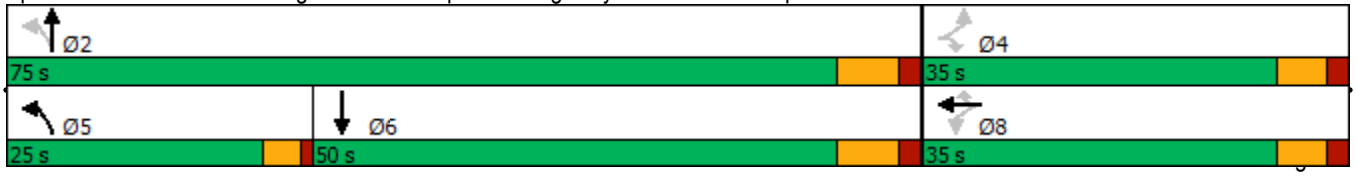
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Future Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.586			0.950	0.950		0.074					
Satd. Flow (perm)	659	0	1566	1449	1388	1487	93	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	322	0	3	2	1762	0	0	1917	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	161	161	3	2	1762	0	0	1917	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

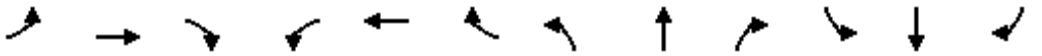
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	15.6		15.6	15.6	15.6	15.6	55.0	51.9			50.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.64			0.62	
v/c Ratio	0.02		0.01	0.58	0.60	0.01	0.01	0.83			0.65	
Control Delay	30.7		0.0	40.2	41.7	0.0	5.5	16.2			12.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	30.7		0.0	40.2	41.7	0.0	5.5	16.2			12.1	
LOS	C		A	D	D	A	A	B			B	
Approach Delay		18.4			40.6			16.1			12.1	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	0.4		0.0	22.3	23.4	0.0	0.1	95.2			56.5	
Queue Length 95th (m)	2.9		0.0	50.8	53.6	0.0	0.9	160.5			117.5	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	244		630	537	514	601	357	2821			2986	
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	0.01		0.00	0.30	0.31	0.00	0.01	0.62			0.64	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 81
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 16.2 — Intersection LOS: B
Intersection Capacity Utilization 68.8% — ICU Level of Service C
Analysis Period (min) 15

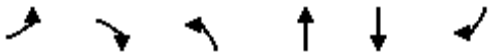
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Future Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.59		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	659		1566	1449	1388	1487	92	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	322	0	3	2	1762	0	0	1917	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	161	161	1	2	1762	0	0	1917	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	15.6		15.6	15.6	15.6	15.6	55.3	55.3			50.4	
Effective Green, g (s)	15.6		15.6	15.6	15.6	15.6	55.3	55.3			50.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.66	0.66			0.60	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	122		291	269	258	276	72	2178			2852	
v/s Ratio Prot							0.00	c0.53			0.40	
v/s Ratio Perm	0.00		0.00	0.11	0.12	0.00	0.02					
v/c Ratio	0.02		0.00	0.60	0.62	0.00	0.03	0.81			0.67	
Uniform Delay, d1	27.9		27.8	31.3	31.4	27.8	6.9	10.4			11.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	3.6	4.6	0.0	0.2	2.3			0.6	
Delay (s)	28.0		27.8	34.8	36.1	27.8	7.1	12.8			11.9	
Level of Service	C		C	C	D	C	A	B			B	
Approach Delay (s)		27.9			35.4			12.8			11.9	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1570	1995	30
Future Volume (vph)	0	0	0	1570	1995	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	1764	2242	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1764	2242	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

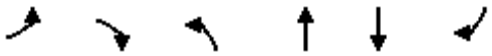
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1570	38	0	1995
Future Volume (vph)	0	0	1570	38	0	1995
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	1764	43	0	2242
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1764	43	0	2242
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	271	0	1582	1846	0
Future Volume (vph)	52	271	0	1582	1846	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		4				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	57	298	0	1738	2029	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	298	0	1738	2029	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

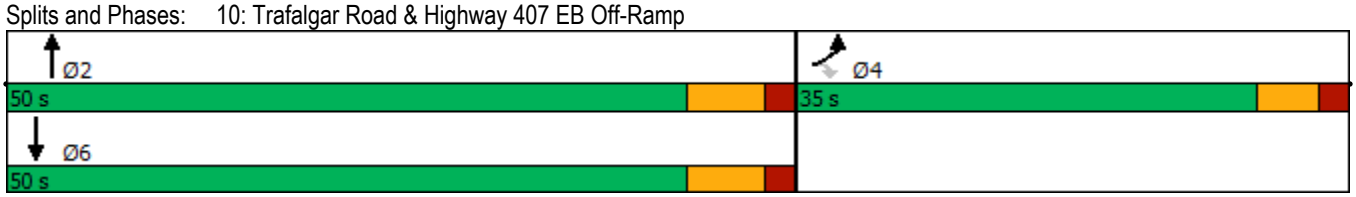
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	35.0	35.0		50.0	50.0	
Total Split (%)	41.2%	41.2%		58.8%	58.8%	
Maximum Green (s)	29.0	29.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	20.7	20.7		43.2	43.2	
Actuated g/C Ratio	0.27	0.27		0.56	0.56	
v/c Ratio	0.12	0.79		0.95	1.09	
Control Delay	20.9	40.9		30.1	71.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.9	40.9		30.1	71.5	
LOS	C	D		C	E	
Approach Delay	37.7			30.1	71.5	
Approach LOS	D			C	E	
Queue Length 50th (m)	6.2	39.4		115.3	~179.5	
Queue Length 95th (m)	14.1	65.9		#204.8	#256.4	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	649	533		1839	1856	
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	0.09	0.56		0.95	1.09	

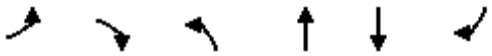
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 77			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 51.1		Intersection LOS: D	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

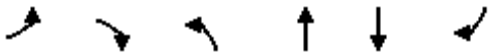
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	271	0	1582	1846	0
Future Volume (vph)	52	271	0	1582	1846	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	57	298	0	1738	2029	0
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	57	295	0	1738	2029	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.7	20.7		43.2	43.2	
Effective Green, g (s)	20.7	20.7		43.2	43.2	
Actuated g/C Ratio	0.27	0.27		0.56	0.56	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	461	377		1839	1856	
v/s Ratio Prot	0.03			0.53	c0.61	
v/s Ratio Perm		c0.21				
v/c Ratio	0.12	0.78		0.95	1.09	
Uniform Delay, d1	21.2	26.0		15.7	16.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	10.2		11.5	51.3	
Delay (s)	21.4	36.2		27.2	68.1	
Level of Service	C	D		C	E	
Approach Delay (s)	33.8			27.2	68.1	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1604	1846	26
Future Volume (vph)	0	0	0	1604	1846	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	1763	2029	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1763	2029	29
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

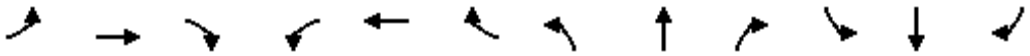
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1582	230	0	2117
Future Volume (vph)	0	0	1582	230	0	2117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	1738	253	0	2326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1738	253	0	2326
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

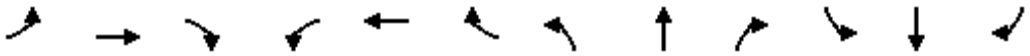
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



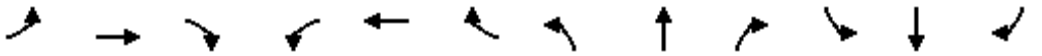
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	1149	353	106	643	95	152	349	99	199	628	96
Future Volume (vph)	101	1149	353	106	643	95	152	349	99	199	628	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.967			0.983			0.975			0.984	
Flt Protected		0.997			0.994			0.987			0.989	
Satd. Flow (prot)	0	3299	0	0	3387	0	0	3196	0	0	3406	0
Flt Permitted		0.997			0.994			0.987			0.989	
Satd. Flow (perm)	0	3299	0	0	3387	0	0	3196	0	0	3406	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	113	1291	397	119	722	107	171	392	111	224	706	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1801	0	0	948	0	0	674	0	0	1038	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 126.6%		ICU Level of Service H	
Analysis Period (min) 15			

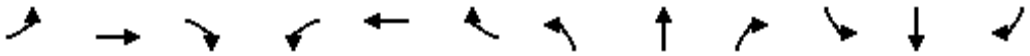


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	101	1149	353	106	643	95	152	349	99	199	628	96
Future Volume (veh/h)	101	1149	353	106	643	95	152	349	99	199	628	96
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	113	1291	397	119	722	107	171	392	111	224	706	108
Approach Volume (veh/h)		1801			948			674			1038	
Crossing Volume (veh/h)		1049			676			1628#			1012	
High Capacity (veh/h)		598			810			369			616	
High v/c (veh/h)		3.01			1.17			1.83			1.68	
Low Capacity (veh/h)		462			646			270			477	
Low v/c (veh/h)		3.90			1.47			2.50			2.17	

Intersection Summary					
Maximum v/c High	3.01				
Maximum v/c Low	3.90				
Intersection Capacity Utilization	126.6%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Future Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	45.0		30.0	30.0		40.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	15.0			15.0			80.0			15.0		
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		0.882			0.850				0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1566	0	1653	4885	1566	1750	4980	1566
Flt Permitted	0.286						0.136			0.100		
Satd. Flow (perm)	324	1487	0	1842	1566	0	237	4885	1566	184	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90			312				141			126
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	261	42	1666	404	549	1626	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	261	0	42	1666	404	549	1626	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	46.5		46.5	46.5		11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	11.0	58.0		47.0	47.0		11.0	41.0	41.0	21.0	51.0	51.0
Total Split (%)	9.2%	48.3%		39.2%	39.2%		9.2%	34.2%	34.2%	17.5%	42.5%	42.5%
Maximum Green (s)	7.0	51.5		40.5	40.5		7.0	34.5	34.5	17.0	44.5	44.5
Yellow Time (s)	3.0	3.3		3.3	3.3		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2		1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5		4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		33.0		33.0	33.0			22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)		0		0	0			0	0		0	0
Act Effct Green (s)	23.5	21.0			10.0		44.0	34.5	34.5	58.0	48.9	48.9
Actuated g/C Ratio	0.26	0.23			0.11		0.49	0.39	0.39	0.65	0.55	0.55
v/c Ratio	0.94	0.27			0.58		0.19	0.88	0.59	1.32	0.60	0.28
Control Delay	95.6	11.2			7.7		9.2	32.7	17.8	185.0	15.7	7.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.6	11.2			7.7		9.2	32.7	17.8	185.0	15.7	7.0
LOS	F	B			A		A	C	B	F	B	A
Approach Delay		56.9			7.7			29.4			53.1	
Approach LOS		E			A			C			D	
Queue Length 50th (m)	19.6	3.2			0.0		2.3	95.7	34.3	~108.2	72.8	11.3
Queue Length 95th (m)	#57.1	16.1			12.2		5.7	116.1	63.1	#169.2	88.2	25.0
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	30.0						45.0		30.0	30.0		40.0
Base Capacity (vph)	143	893			879		227	1883	690	416	2721	912
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	0.94	0.13			0.30		0.19	0.88	0.59	1.32	0.60	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 89.5			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 41.0		Intersection LOS: D	
Intersection Capacity Utilization 95.9%		ICU Level of Service F	
Analysis Period (min) 15			

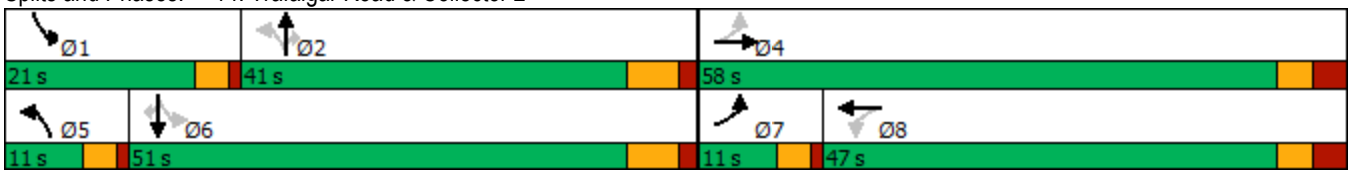
~ Volume exceeds capacity, queue is theoretically infinite.

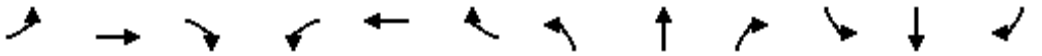
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

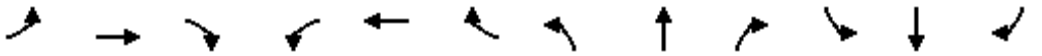
Splits and Phases: 14: Trafalgar Road & Collector 2





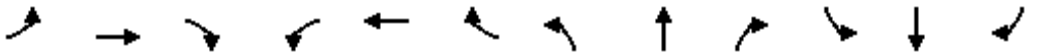
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Future Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5			6.5		4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.88			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)	1075	1486			1566		1653	4885	1566	1750	4980	1566
Flt Permitted	0.29	1.00			1.00		0.14	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	323	1486			1566		236	4885	1566	184	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	261	42	1666	404	549	1626	252
RTOR Reduction (vph)	0	69	0	0	232	0	0	0	85	0	0	58
Lane Group Flow (vph)	135	45	0	0	29	0	42	1666	319	549	1626	194
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			10.0		40.3	36.1	36.1	57.1	48.9	48.9
Effective Green, g (s)	21.0	21.0			10.0		40.3	36.1	36.1	57.1	48.9	48.9
Actuated g/C Ratio	0.23	0.23			0.11		0.44	0.40	0.40	0.63	0.54	0.54
Clearance Time (s)	4.0	6.5			6.5		4.0	6.5	6.5	4.0	6.5	6.5
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)	132	342			171		169	1935	620	407	2673	840
v/s Ratio Prot	c0.08	0.03			0.02		0.01	0.34		c0.25	0.33	
v/s Ratio Perm	c0.16						0.10		0.20	c0.59		0.12
v/c Ratio	1.02	0.13			0.17		0.25	0.86	0.51	1.35	0.61	0.23
Uniform Delay, d1	33.8	27.8			36.8		14.5	25.2	20.9	27.2	14.5	11.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	84.5	0.2			0.5		0.8	5.3	3.0	172.6	1.0	0.6
Delay (s)	118.3	28.0			37.2		15.3	30.5	23.9	199.7	15.6	11.8
Level of Service	F	C			D		B	C	C	F	B	B
Approach Delay (s)		77.0			37.2			28.9			56.8	
Approach LOS		E			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1627	0	88	557	0	6	0	0	0	0	0
Future Volume (vph)	0	1627	0	88	557	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)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		844.9			181.9			147.1			190.6	
Travel Time (s)		50.7			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1808	0	98	619	0	7	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1808	0	98	619	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

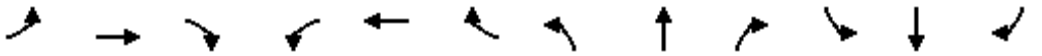
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1627	0	88	557	0	6	0	0	0	0	0
Future Volume (Veh/h)	0	1627	0	88	557	0	6	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1808	0	98	619	0	7	0	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					390							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	624			1813			2324	2633	914	1729	2633	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	619			1813			2322	2632	914	1726	2632	314
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			71			54	100	100	100	100	100
cM capacity (veh/h)	951			333			15	16	273	43	16	674

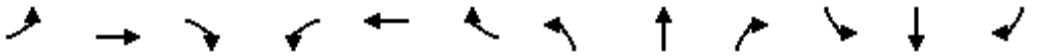
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	0	1205	603	98	413	206	7	0	0	0
Volume Left	0	0	0	98	0	0	7	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	333	1700	1700	15	1700	1700	1700
Volume to Capacity	0.00	0.71	0.35	0.29	0.24	0.12	0.46	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	9.1	0.0	0.0	9.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	20.2	0.0	0.0	374.3	0.0	0.0	0.0
Lane LOS				C			F	A	A	A
Approach Delay (s)	0.0			2.8			374.3		0.0	
Approach LOS							F		A	

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	66.1%	ICU Level of Service		C
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1594	33	0	636	146	0	0	80	0	0	9
Future Volume (vph)	0	1594	33	0	636	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			355.4	
Travel Time (s)		10.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1771	37	0	707	162	0	0	89	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1808	0	0	707	162	0	0	89	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

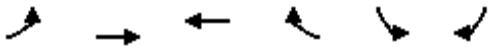
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1594	33	0	636	146	0	0	80	0	0	9
Future Volume (Veh/h)	0	1594	33	0	636	146	0	0	80	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1771	37	0	707	162	0	0	89	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					208							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	874			1813			2163	2668	914	1692	2525	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	734			1813			2108	2647	914	1605	2494	190
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	67	100	100	99
cM capacity (veh/h)	809			333			27	21	273	44	27	762

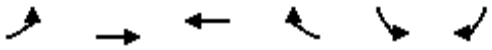
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1181	627	354	354	162	89	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	162	89	10
cSH	1700	1700	1700	1700	1700	273	762
Volume to Capacity	0.69	0.37	0.21	0.21	0.10	0.33	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	10.4	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	24.4	9.8
Lane LOS						C	A
Approach Delay (s)	0.0		0.0			24.4	9.8
Approach LOS						C	A

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	58.5%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1306	476	39	0	155
Future Volume (vph)	0	1306	476	39	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1451	529	43	0	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1451	529	43	0	172
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

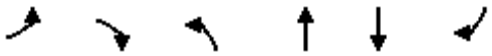
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1306	476	39	0	155
Future Volume (Veh/h)	0	1306	476	39	0	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1451	529	43	0	172
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228				
pX, platoon unblocked					0.70	
vC, conflicting volume	577				1264	274
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	577				509	274
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)	988				341	716

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	726	726	264	264	43	172
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	43	172
cSH	1700	1700	1700	1700	1700	716
Volume to Capacity	0.43	0.43	0.16	0.16	0.03	0.24
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.1
Control Delay (s)	0.0	0.0	0.0	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	0.9		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	37	0	1798	1382	153
Future Volume (vph)	0	37	0	1798	1382	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	4421	4421	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	4421	4421	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	41	0	1998	1536	170
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	41	0	1998	1536	170
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

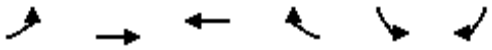
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	37	0	1798	1382	153
Future Volume (Veh/h)	0	37	0	1798	1382	153
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	41	0	1998	1536	170
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.87	0.75	0.75			
vC, conflicting volume	2212	522	1711			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	773			
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)	885	803	624			

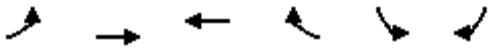
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	41	666	666	666	512	512	512	170
Volume Left	0	0	0	0	0	0	0	0
Volume Right	41	0	0	0	0	0	0	170
cSH	803	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.39	0.39	0.39	0.30	0.30	0.30	0.10
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.7	0.0			0.0			
Approach LOS	A							

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	46.3%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1244	515	0	75	0
Future Volume (vph)	0	1244	515	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1750	1842
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1382	572	0	83	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1382	572	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

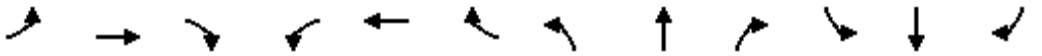
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			



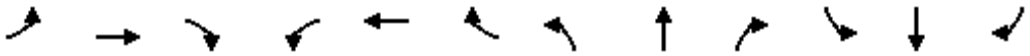
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1244	515	0	75	0
Future Volume (Veh/h)	0	1244	515	0	75	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1382	572	0	83	0
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		402				
pX, platoon unblocked					0.71	
vC, conflicting volume	577				1273	296
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	577				562	296
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				74	100
cM capacity (veh/h)	988				321	693

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	0	691	691	381	191	83	0
Volume Left	0	0	0	0	0	83	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	321	1700
Volume to Capacity	0.00	0.41	0.41	0.22	0.11	0.26	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.7	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	20.1	0.0
Lane LOS						C	A
Approach Delay (s)	0.0			0.0		20.1	
Approach LOS						C	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Future Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			157			132			120			120
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	412	1098	257	177	387	132	317	1624	25	307	1288	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	1098	257	177	387	132	317	1624	25	307	1288	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

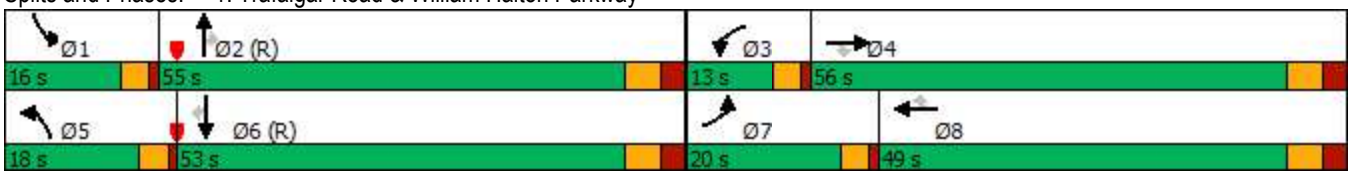


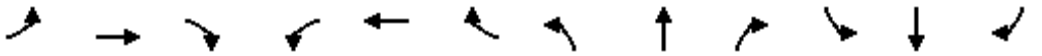
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.1	49.1	9.0	42.1	42.1	14.3	48.6	48.6	12.5	46.8	46.8
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.06	0.89	0.39	0.81	0.37	0.25	0.91	1.06	0.04	1.02	0.88	0.24
Control Delay	120.8	53.5	14.6	91.5	39.6	6.8	92.6	84.0	0.1	119.4	52.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.8	53.5	14.6	91.5	39.6	6.8	92.6	84.0	0.1	119.4	52.2	9.5
LOS	F	D	B	F	D	A	F	F	A	F	D	A
Approach Delay		63.5			46.6			84.3			60.5	
Approach LOS		E			D			F			E	
Queue Length 50th (m)	~64.5	150.1	19.1	25.4	44.2	0.0	45.6	~205.0	0.0	~48.2	140.3	4.9
Queue Length 95th (m)	#97.4	179.4	42.3	#44.3	58.6	14.8	#73.8	#238.5	0.0	#78.1	163.0	20.1
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	388	1240	656	218	1065	533	347	1534	596	300	1463	603
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	0.89	0.39	0.81	0.36	0.25	0.91	1.06	0.04	1.02	0.88	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 67.4		Intersection LOS: E	
Intersection Capacity Utilization 88.0%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

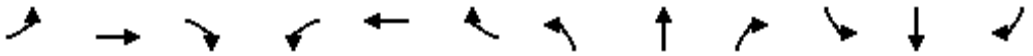
Splits and Phases: 1: Trafalgar Road & William Halton Parkway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Future Volume (vph)	379	1010	236	163	356	121	292	1494	23	282	1185	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	412	1098	257	177	387	132	317	1624	25	307	1288	146
RTOR Reduction (vph)	0	0	102	0	0	92	0	0	16	0	0	80
Lane Group Flow (vph)	412	1098	155	177	387	40	317	1624	9	307	1288	66
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.1	49.1	9.0	42.1	42.1	14.3	48.6	48.6	12.5	46.8	46.8
Effective Green, g (s)	16.0	49.1	49.1	9.0	42.1	42.1	14.3	48.6	48.6	12.5	46.8	46.8
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1227	549	218	1052	436	346	1534	518	300	1463	523
v/s Ratio Prot	c0.12	c0.31		0.05	0.11		c0.09	c0.37		0.09	0.29	
v/s Ratio Perm			0.10			0.03			0.01			0.04
v/c Ratio	1.06	0.89	0.28	0.81	0.37	0.09	0.92	1.06	0.02	1.02	0.88	0.13
Uniform Delay, d1	62.0	43.0	32.8	64.7	38.5	35.2	62.3	45.7	30.0	63.8	44.0	32.4
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	63.0	9.3	0.6	20.1	0.5	0.2	28.0	40.3	0.1	58.1	7.9	0.5
Delay (s)	125.0	52.3	33.3	84.7	38.9	35.4	90.2	86.0	30.1	121.8	51.9	32.9
Level of Service	F	D	C	F	D	D	F	F	C	F	D	C
Approach Delay (s)		66.5			49.9			86.0			62.6	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	69.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Future Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor		1.00		1.00								
Frt		0.954			0.933			0.989			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3326	0	1750	3196	0	1700	4366	0	1750	4348	0
Flt Permitted	0.515			0.394			0.133			0.054		
Satd. Flow (perm)	949	3326	0	725	3196	0	238	4366	0	99	4348	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			129			11			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		387.6			810.8			2139.5			320.3	
Travel Time (s)		27.9			58.4			128.4			19.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	156	268	119	90	160	129	121	1661	132	120	1421	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	387	0	90	289	0	121	1793	0	120	1483	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		56.0	56.0		22.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		46.7%	46.7%		18.3%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		49.7	49.7		18.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	23.8	23.8		23.8	23.8		70.3	70.3		85.8	83.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.59		0.72	0.70	
v/c Ratio	0.83	0.56		0.63	0.39		0.87	0.70		0.61	0.49	
Control Delay	77.4	40.0		61.3	22.7		77.2	21.1		32.9	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	77.4	40.0		61.3	22.7		77.2	21.1		32.9	10.0	
LOS	E	D		E	C		E	C		C	B	
Approach Delay		50.7			31.9			24.7			11.7	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	35.6	38.4		19.6	16.8		22.1	113.0		11.4	59.9	
Queue Length 95th (m)	54.6	47.9		34.0	26.2		#70.2	182.3		32.6	95.3	
Internal Link Dist (m)		363.6			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	281	1018		215	1038		139	2563		318	3026	
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	0.56	0.38		0.42	0.28		0.87	0.70		0.38	0.49	

Intersection Summary

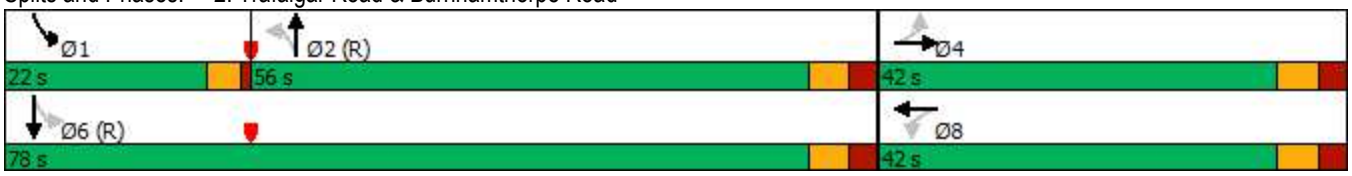
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87

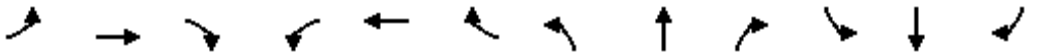
Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Future Volume (vph)	140	241	107	81	144	116	109	1495	119	108	1279	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3325		1749	3196		1700	4366		1750	4347	
Flt Permitted	0.51	1.00		0.39	1.00		0.13	1.00		0.05	1.00	
Satd. Flow (perm)	949	3325		725	3196		238	4366		99	4347	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	156	268	119	90	160	129	121	1661	132	120	1421	62
RTOR Reduction (vph)	0	36	0	0	103	0	0	5	0	0	2	0
Lane Group Flow (vph)	156	351	0	90	186	0	121	1788	0	120	1481	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		23.8	23.8		70.4	70.4		83.5	83.5	
Effective Green, g (s)	23.8	23.8		23.8	23.8		70.4	70.4		83.5	83.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.59		0.70	0.70	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	188	659		143	633		139	2561		194	3024	
v/s Ratio Prot		0.11			0.06			0.41		c0.05	0.34	
v/s Ratio Perm	c0.16			0.12			c0.51			0.38		
v/c Ratio	0.83	0.53		0.63	0.29		0.87	0.70		0.62	0.49	
Uniform Delay, d1	46.2	43.1		44.1	40.9		20.9	17.4		22.7	8.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.0	0.8		8.4	0.3		47.8	1.6		5.8	0.6	
Delay (s)	71.2	43.9		52.4	41.2		68.8	19.0		28.5	9.0	
Level of Service	E	D		D	D		E	B		C	A	
Approach Delay (s)		51.8			43.9			22.1			10.4	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1293	1	292	542	0	405
Future Volume (vph)	1293	1	292	542	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.067			
Satd. Flow (perm)	3500	0	121	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						332
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1405	1	317	589	0	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1406	0	317	589	0	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



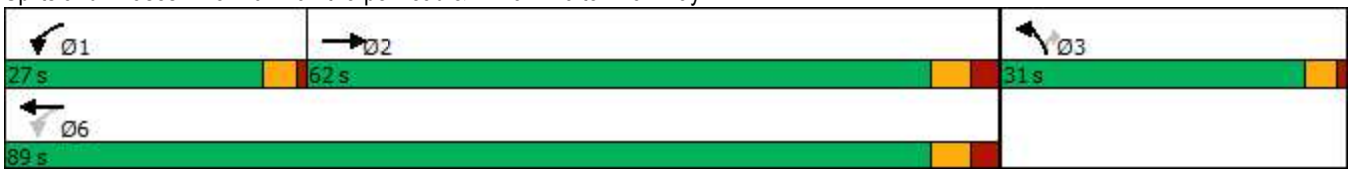
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	62.0		27.0	89.0	31.0	31.0
Total Split (%)	51.7%		22.5%	74.2%	25.8%	25.8%
Maximum Green (s)	55.6		23.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	55.7		82.5	80.1		27.0
Actuated g/C Ratio	0.47		0.70	0.68		0.23
v/c Ratio	0.85		0.88	0.25		0.72
Control Delay	33.7		57.1	7.4		18.1
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	33.7		57.1	7.4		18.1
LOS	C		E	A		B
Approach Delay	33.7			24.8	18.1	
Approach LOS	C			C	B	
Queue Length 50th (m)	152.5		55.4	24.7		21.8
Queue Length 95th (m)	184.6		#98.8	32.1		60.8
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1658		397	2439		615
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	0.85		0.80	0.24		0.72

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 117.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

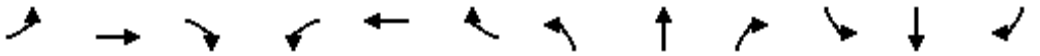
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



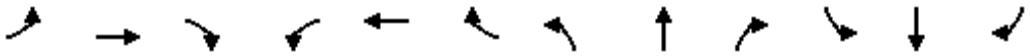


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1293	1	292	542	0	405
Future Volume (vph)	1293	1	292	542	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.07	1.00		1.00
Satd. Flow (perm)	3500		121	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1405	1	317	589	0	440
RTOR Reduction (vph)	0	0	0	0	0	256
Lane Group Flow (vph)	1406	0	317	589	0	184
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	55.7		80.1	80.1		27.0
Effective Green, g (s)	55.7		80.1	80.1		27.0
Actuated g/C Ratio	0.47		0.68	0.68		0.23
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1659		359	2362		359
v/s Ratio Prot	0.40		c0.15	0.17		
v/s Ratio Perm			c0.45			c0.12
v/c Ratio	0.85		0.88	0.25		0.51
Uniform Delay, d1	27.2		36.3	7.2		39.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.6		21.7	0.1		5.2
Delay (s)	32.7		58.0	7.2		44.7
Level of Service	C		E	A		D
Approach Delay (s)	32.7			25.0	44.7	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	14.4
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Future Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	3298	4214	1536	3330	4378	1566	3330	4378	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	4421	1529	3298	4214	1512	3326	4378	1543	3327	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			162			96			145
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			2139.5	
Travel Time (s)		28.8			31.0			36.1			128.4	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.9	50.6	50.6	8.9	48.6	48.6	8.0	41.7	41.7	8.0	41.7	41.7
Actuated g/C Ratio	0.08	0.39	0.39	0.07	0.37	0.37	0.06	0.32	0.32	0.06	0.32	0.32
v/c Ratio	1.63	1.26	0.35	1.20	0.80	0.45	0.96	0.70	0.22	1.58	0.89	0.34
Control Delay	332.8	157.9	12.3	173.7	41.0	16.0	112.9	41.8	10.5	320.9	50.8	11.9
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	332.8	157.9	12.3	173.7	41.0	16.0	112.9	41.8	10.5	320.9	50.8	11.9
LOS	F	F	B	F	D	B	F	D	B	F	D	B
Approach Delay		173.5			56.3			49.4			95.4	
Approach LOS		F			E			D			F	
Queue Length 50th (m)	~90.3	~290.8	15.7	~45.6	118.7	25.5	26.1	91.3	5.1	~60.2	125.2	10.2
Queue Length 95th (m)	#123.5	#323.2	35.9	#73.4	140.1	51.1	#49.7	109.5	19.2	#89.5	147.3	29.3
Internal Link Dist (m)		536.5			579.0			577.7			2115.5	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Base Capacity (vph)	283	1720	685	224	1575	666	204	1434	570	204	1434	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.63	1.26	0.35	1.20	0.80	0.45	0.96	0.69	0.22	1.58	0.87	0.34

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.63	
Intersection Signal Delay: 107.4	Intersection LOS: F

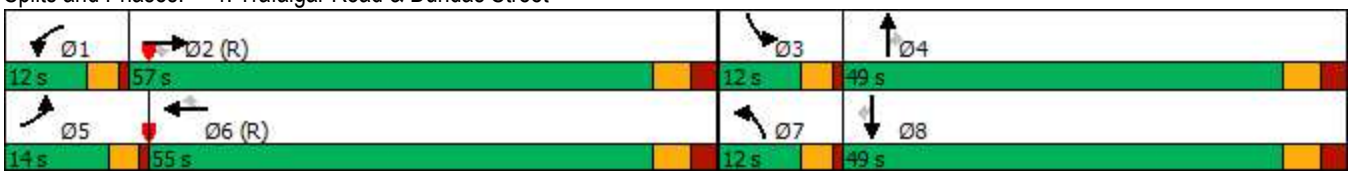
Intersection Capacity Utilization 97.8%	ICU Level of Service F
Analysis Period (min) 15	

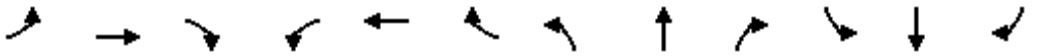
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

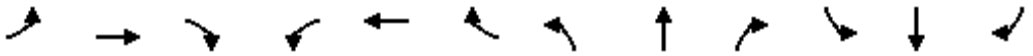




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Future Volume (vph)	442	2085	233	257	1206	291	187	948	120	309	1200	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Flt Permitted	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 (perm)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	460	2172	243	268	1256	303	195	988	125	322	1250	202
RTOR Reduction (vph)	0	0	90	0	0	101	0	0	65	0	0	98
Lane Group Flow (vph)	460	2172	153	268	1256	202	195	988	60	322	1250	104
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.9	50.6	50.6	8.9	48.6	48.6	8.0	41.7	41.7	8.0	41.7	41.7
Effective Green, g (s)	10.9	50.6	50.6	8.9	48.6	48.6	8.0	41.7	41.7	8.0	41.7	41.7
Actuated g/C Ratio	0.08	0.39	0.39	0.07	0.37	0.37	0.06	0.32	0.32	0.06	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	284	1720	595	225	1575	565	204	1404	494	204	1404	488
v/s Ratio Prot	c0.14	c0.49		0.08	0.30		0.06	0.23		c0.10	c0.29	
v/s Ratio Perm			0.10			0.13			0.04			0.07
v/c Ratio	1.62	1.26	0.26	1.19	0.80	0.36	0.96	0.70	0.12	1.58	0.89	0.21
Uniform Delay, d1	59.5	39.7	26.9	60.5	36.3	29.4	60.8	38.7	31.2	61.0	42.0	32.2
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	294.6	123.1	1.0	121.3	4.3	1.8	50.3	1.7	0.1	282.5	7.6	0.3
Delay (s)	354.1	162.8	28.0	181.9	40.6	31.2	111.1	40.4	31.3	343.5	49.6	32.4
Level of Service	F	F	C	F	D	C	F	D	C	F	D	C
Approach Delay (s)		182.0			59.8			50.1			101.0	
Approach LOS		F			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	112.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

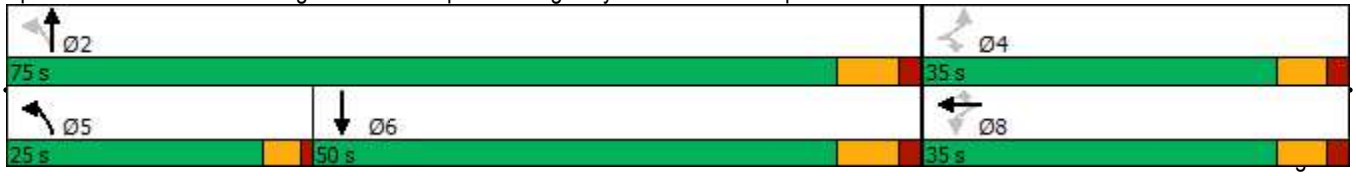


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Future Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.586			0.950	0.950		0.074					
Satd. Flow (perm)	659	0	1566	1449	1388	1487	93	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	322	0	3	2	1762	0	0	1917	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	161	161	3	2	1762	0	0	1917	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	15.6		15.6	15.6	15.6	15.6	55.0	51.9			50.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.64			0.62	
v/c Ratio	0.02		0.01	0.58	0.60	0.01	0.01	0.83			0.65	
Control Delay	30.7		0.0	40.2	41.7	0.0	5.5	16.2			12.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	30.7		0.0	40.2	41.7	0.0	5.5	16.2			12.1	
LOS	C		A	D	D	A	A	B			B	
Approach Delay		18.4			40.6			16.1			12.1	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	0.4		0.0	22.3	23.4	0.0	0.1	95.2			56.5	
Queue Length 95th (m)	2.9		0.0	50.8	53.6	0.0	0.9	160.5			117.5	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	244		630	537	514	601	357	2821			2986	
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	0.01		0.00	0.30	0.31	0.00	0.01	0.62			0.64	

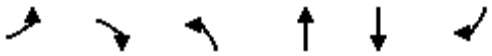
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 81			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Future Volume (vph)	3	0	2	287	0	3	2	1568	0	0	1706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.59		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	659		1566	1449	1388	1487	92	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	322	0	3	2	1762	0	0	1917	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	161	161	1	2	1762	0	0	1917	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	15.6		15.6	15.6	15.6	15.6	55.3	55.3			50.4	
Effective Green, g (s)	15.6		15.6	15.6	15.6	15.6	55.3	55.3			50.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.66	0.66			0.60	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	122		291	269	258	276	72	2178			2852	
v/s Ratio Prot							0.00	c0.53			0.40	
v/s Ratio Perm	0.00		0.00	0.11	0.12	0.00	0.02					
v/c Ratio	0.02		0.00	0.60	0.62	0.00	0.03	0.81			0.67	
Uniform Delay, d1	27.9		27.8	31.3	31.4	27.8	6.9	10.4			11.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	3.6	4.6	0.0	0.2	2.3			0.6	
Delay (s)	28.0		27.8	34.8	36.1	27.8	7.1	12.8			11.9	
Level of Service	C		C	C	D	C	A	B			B	
Approach Delay (s)		27.9			35.4			12.8			11.9	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1570	1995	30
Future Volume (vph)	0	0	0	1570	1995	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	1764	2242	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1764	2242	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

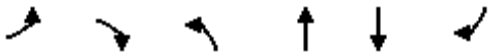
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	1570	38	0	1995
Future Volume (vph)	0	0	1570	38	0	1995
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	1764	43	0	2242
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1764	43	0	2242
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



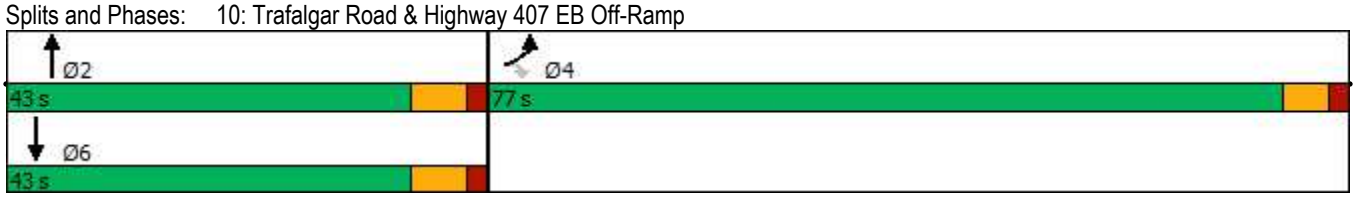
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	271	0	1582	1846	0
Future Volume (vph)	52	271	0	1582	1846	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	57	298	0	1738	2029	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	298	0	1738	2029	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

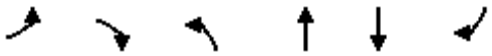
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	77.0	77.0		43.0	43.0	
Total Split (%)	64.2%	64.2%		35.8%	35.8%	
Maximum Green (s)	71.0	71.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.5	19.5		36.2	36.2	
Actuated g/C Ratio	0.28	0.28		0.53	0.53	
v/c Ratio	0.12	0.75		1.01	1.17	
Control Delay	18.0	34.9		43.2	101.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	18.0	34.9		43.2	101.6	
LOS	B	C		D	F	
Approach Delay	32.2			43.2	101.6	
Approach LOS	C			D	F	
Queue Length 50th (m)	5.3	34.4		~110.6	~166.0	
Queue Length 95th (m)	12.6	59.1		#195.8	#242.3	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1689	1379		1724	1740	
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	0.03	0.22		1.01	1.17	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 68.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 71.0	Intersection LOS: E
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

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

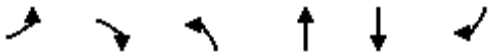
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	271	0	1582	1846	0
Future Volume (vph)	52	271	0	1582	1846	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	57	298	0	1738	2029	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	298	0	1738	2029	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.5	19.5		36.2	36.2	
Effective Green, g (s)	19.5	19.5		36.2	36.2	
Actuated g/C Ratio	0.28	0.28		0.53	0.53	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	487	397		1725	1741	
v/s Ratio Prot	0.03			0.53	c0.61	
v/s Ratio Perm		c0.21				
v/c Ratio	0.12	0.75		1.01	1.17	
Uniform Delay, d1	18.2	22.4		16.2	16.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.8		23.5	81.1	
Delay (s)	18.3	30.2		39.8	97.4	
Level of Service	B	C		D	F	
Approach Delay (s)	28.3			39.8	97.4	
Approach LOS	C			D	F	

Intersection Summary			
HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1604	1846	26
Future Volume (vph)	0	0	0	1604	1846	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	1763	2029	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1763	2029	29
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

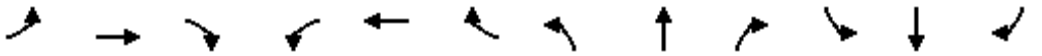
Intersection Sign configuration not allowed in HCM analysis.



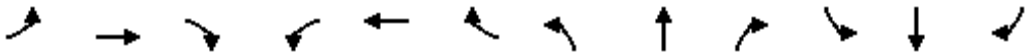
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1582	230	0	2117
Future Volume (vph)	0	0	1582	230	0	2117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	1738	253	0	2326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1738	253	0	2326
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Future Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.544						0.950			0.950		
Satd. Flow (perm)	616	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				285			290			124
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	261	42	1666	404	549	1626	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	261	42	1666	404	549	1626	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	59.5		48.5	48.5	48.5	11.0	42.5	42.5	18.0	49.5	49.5
Total Split (%)	9.2%	49.6%		40.4%	40.4%	40.4%	9.2%	35.4%	35.4%	15.0%	41.3%	41.3%
Maximum Green (s)	7.0	53.0		42.0	42.0	42.0	7.0	36.0	36.0	14.0	43.0	43.0
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	23.7	21.2				10.2	7.0	36.0	36.0	14.0	47.4	47.4
Actuated g/C Ratio	0.27	0.24				0.12	0.08	0.41	0.41	0.16	0.54	0.54
v/c Ratio	0.67	0.27				0.60	0.32	0.84	0.50	1.02	0.61	0.28
Control Delay	45.9	10.8				10.0	45.5	28.2	7.9	82.1	16.1	7.3
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	10.8				10.0	45.5	28.2	7.9	82.1	16.1	7.3
LOS	D	B				B	D	C	A	F	B	A
Approach Delay		29.8			10.0			24.6			30.1	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	19.1	3.2				0.0	6.8	90.0	12.0	~49.4	72.8	11.5
Queue Length 95th (m)	#41.9	15.7				16.6	16.9	111.3	34.6	#82.7	90.2	25.9
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	202	929				895	131	1994	811	539	2677	899
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	0.67	0.12				0.29	0.32	0.84	0.50	1.02	0.61	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 88.2			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

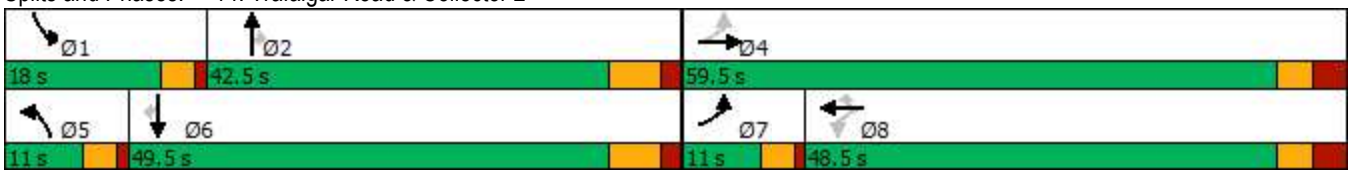
~ Volume exceeds capacity, queue is theoretically infinite.

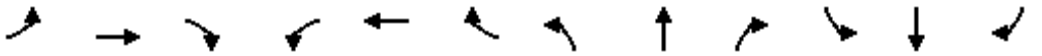
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

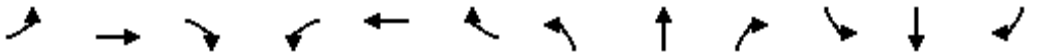
Splits and Phases: 14: Trafalgar Road & Collector 2



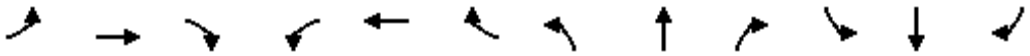


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Future Volume (vph)	124	22	83	0	0	235	39	1533	364	494	1496	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.54	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	616	1486				1566	1653	4885	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	261	42	1666	404	549	1626	252
RTOR Reduction (vph)	0	69	0	0	0	231	0	0	169	0	0	59
Lane Group Flow (vph)	135	45	0	0	0	30	42	1666	235	549	1626	193
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	21.2	21.2				10.2	4.2	37.6	37.6	14.0	47.4	47.4
Effective Green, g (s)	21.2	21.2				10.2	4.2	37.6	37.6	14.0	47.4	47.4
Actuated g/C Ratio	0.24	0.24				0.11	0.05	0.42	0.42	0.16	0.53	0.53
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	181	350				177	77	2045	655	529	2628	826
v/s Ratio Prot	c0.06	0.03					0.03	c0.34		c0.16	0.33	
v/s Ratio Perm	c0.12					0.02			0.15			0.12
v/c Ratio	0.75	0.13				0.17	0.55	0.81	0.36	1.04	0.62	0.23
Uniform Delay, d1	31.2	27.0				36.0	41.9	23.0	17.9	37.9	14.9	11.4
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.3	0.2				0.4	7.7	3.7	1.5	49.3	1.1	0.7
Delay (s)	46.6	27.2				36.4	49.5	26.7	19.4	87.2	16.0	12.1
Level of Service	D	C				D	D	C	B	F	B	B
Approach Delay (s)		37.7			36.4			25.8			31.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1627	0	88	557	0	6	0	0	0	0	0
Future Volume (vph)	0	1627	0	88	557	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)	30.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.105			0.930					
Satd. Flow (perm)	1842	3500	0	193	3500	0	1705	1842	0	1842	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		844.9			181.9			147.1			190.6	
Travel Time (s)		50.7			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1808	0	98	619	0	7	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1808	0	98	619	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		71.1		71.1	71.1		13.1					
Actuated g/C Ratio		0.92		0.92	0.92		0.17					
v/c Ratio		0.56		0.55	0.19		0.02					
Control Delay		5.2		23.4	2.7		27.0					
Queue Delay		0.0		0.0	0.0		0.0					
Total Delay		5.2		23.4	2.7		27.0					
LOS		A		C	A		C					
Approach Delay		5.2			5.5			27.0				
Approach LOS		A			A			C				
Queue Length 50th (m)		0.0		0.0	0.0		0.8					
Queue Length 95th (m)		173.2		#48.8	36.8		4.5					
Internal Link Dist (m)		820.9			157.9			123.1			166.6	
Turn Bay Length (m)				50.0			30.0					
Base Capacity (vph)		3235		178	3235		673					
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		0.56		0.55	0.19		0.01					

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.9			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 5.4		Intersection LOS: A	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	

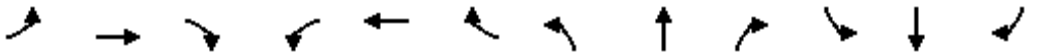
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 15: Collector 1 & William Halton Parkway

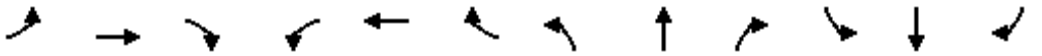




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1627	0	88	557	0	6	0	0	0	0	0
Future Volume (vph)	0	1627	0	88	557	0	6	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1		5.4					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Frpb, ped/bikes		1.00		1.00	1.00		1.00					
Flpb, ped/bikes		1.00		1.00	1.00		1.00					
Frt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3500		1749	3500		1743					
Flt Permitted		1.00		0.10	1.00		0.93					
Satd. Flow (perm)		3500		193	3500		1706					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1808	0	98	619	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	1808	0	98	619	0	7	0	0	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		66.6		66.6	66.6		4.3					
Effective Green, g (s)		66.6		66.6	66.6		4.3					
Actuated g/C Ratio		0.82		0.82	0.82		0.05					
Clearance Time (s)		5.1		5.1	5.1		5.4					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		2863		157	2863		90					
v/s Ratio Prot		c0.52			0.18							
v/s Ratio Perm				0.51			c0.00					
v/c Ratio		0.63		0.62	0.22		0.08					
Uniform Delay, d1		2.8		2.7	1.6		36.7					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		1.1		17.3	0.2		0.4					
Delay (s)		3.9		20.0	1.8		37.0					
Level of Service		A		C	A		D					
Approach Delay (s)		3.9			4.3			37.0			0.0	
Approach LOS		A			A			D			A	

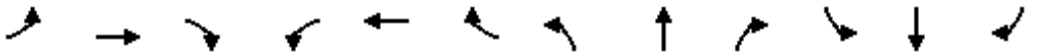
Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1594	33	0	636	146	0	0	80	0	0	9
Future Volume (vph)	0	1594	33	0	636	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			355.4	
Travel Time (s)		10.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1771	37	0	707	162	0	0	89	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1808	0	0	707	162	0	0	89	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

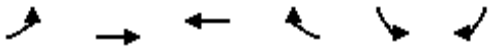
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1594	33	0	636	146	0	0	80	0	0	9
Future Volume (Veh/h)	0	1594	33	0	636	146	0	0	80	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1771	37	0	707	162	0	0	89	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		182			208							
pX, platoon unblocked	0.94			0.75			0.78	0.78	0.75	0.78	0.78	0.94
vC, conflicting volume	874			1813			2163	2668	914	1692	2525	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728			1423			1564	2208	228	963	2025	182
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	99
cM capacity (veh/h)	812			355			57	34	577	137	44	768

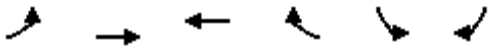
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1181	627	354	354	162	89	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	162	89	10
cSH	1700	1700	1700	1700	1700	577	768
Volume to Capacity	0.69	0.37	0.21	0.21	0.10	0.15	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.1	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.4	9.7
Lane LOS						B	A
Approach Delay (s)	0.0		0.0			12.4	9.7
Approach LOS						B	A

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	58.5%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1306	476	39	0	155
Future Volume (vph)	0	1306	476	39	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1451	529	43	0	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1451	529	43	0	172
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

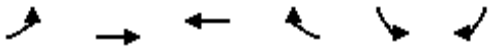
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			



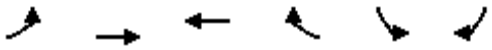
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1306	476	39	0	155
Future Volume (Veh/h)	0	1306	476	39	0	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1451	529	43	0	172
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.98				0.71	0.98
vC, conflicting volume	577				1264	274
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	528				427	219
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)	1010				390	762

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	726	726	264	264	43	172
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	43	172
cSH	1700	1700	1700	1700	1700	762
Volume to Capacity	0.43	0.43	0.16	0.16	0.03	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.6
Control Delay (s)	0.0	0.0	0.0	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	0.9		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1244	515	0	75	0
Future Volume (vph)	0	1244	515	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1743	1842
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1382	572	0	83	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1382	572	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



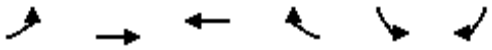
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)		61.5	61.5		12.7	
Actuated g/C Ratio		0.77	0.77		0.16	
v/c Ratio		0.51	0.21		0.30	
Control Delay		7.3	5.0		30.9	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.3	5.0		30.9	
LOS		A	A		C	
Approach Delay		7.3	5.0		30.9	
Approach LOS		A	A		C	
Queue Length 50th (m)		32.3	9.6		12.3	
Queue Length 95th (m)		115.0	36.7		19.8	
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)					40.0	
Base Capacity (vph)		2692	2692		706	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.51	0.21		0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 51.3%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 24: William Halton Parkway & Collector 5

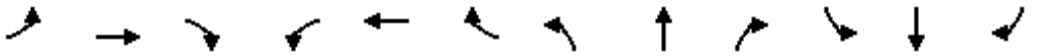




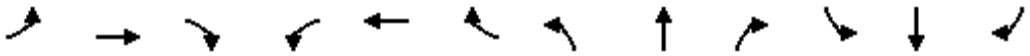
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1244	515	0	75	0
Future Volume (vph)	0	1244	515	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3500	3500		1750	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3500	3500		1750	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1382	572	0	83	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1382	572	0	83	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		60.2	60.2		11.1	
Effective Green, g (s)		60.2	60.2		11.1	
Actuated g/C Ratio		0.75	0.75		0.14	
Clearance Time (s)		5.5	5.5		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2607	2607		240	
v/s Ratio Prot		c0.39	0.16		c0.05	
v/s Ratio Perm						
v/c Ratio		0.53	0.22		0.35	
Uniform Delay, d1		4.3	3.1		31.6	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.2	0.2		0.9	
Delay (s)		4.5	3.3		32.4	
Level of Service		A	A		C	
Approach Delay (s)		4.5	3.3		32.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	9.5
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Future Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	210.0		60.0	160.0		150.0	60.0		55.0	45.0		55.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			90.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor												0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1716	3500	1566	1750	4421	1536	1684	4421	1566
Flt Permitted	0.099			0.229			0.086			0.092		
Satd. Flow (perm)	182	3500	1566	414	3500	1566	158	4421	1536	163	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			128			89			152
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
Shared Lane Traffic (%)												
Lane Group Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	45.4	45.4	11.0	45.4	45.4	11.0	43.4	43.4	11.0	42.9	42.9
Total Split (s)	24.0	47.0	47.0	23.0	46.0	46.0	21.0	58.0	58.0	12.0	49.0	49.0
Total Split (%)	17.1%	33.6%	33.6%	16.4%	32.9%	32.9%	15.0%	41.4%	41.4%	8.6%	35.0%	35.0%
Maximum Green (s)	20.0	40.6	40.6	19.0	39.6	39.6	17.0	51.6	51.6	8.0	43.6	43.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		32.0	32.0		32.0	32.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	63.0	40.6	40.6	61.0	39.6	39.6	66.0	51.6	51.6	53.0	43.6	43.6
Actuated g/C Ratio	0.45	0.29	0.29	0.44	0.28	0.28	0.47	0.37	0.37	0.38	0.31	0.31
v/c Ratio	1.42	0.66	0.18	1.32	0.98	1.03	1.34	1.03	0.05	1.30	1.02	0.49
Control Delay	238.3	47.3	4.1	190.5	74.6	83.3	208.1	74.7	0.2	203.6	75.8	20.9
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	238.3	47.3	4.1	190.5	74.6	83.3	208.1	74.7	0.2	203.6	75.8	20.9
LOS	F	D	A	F	E	F	F	E	A	F	E	C
Approach Delay		112.6			104.5			96.5			80.5	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~144.8	85.8	0.0	~133.4	141.6	~134.2	~112.6	~208.2	0.0	~52.5	~170.0	29.5
Queue Length 95th (m)	#210.7	107.2	8.7	#201.0	#186.2	#204.7	#174.9	#241.5	0.0	#102.0	#203.8	57.3
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	210.0		60.0	160.0		150.0	60.0		55.0	45.0		55.0
Base Capacity (vph)	305	1015	539	357	990	534	267	1629	622	148	1376	585
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	1.42	0.66	0.18	1.32	0.98	1.03	1.34	1.03	0.05	1.30	1.02	0.49

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.42	
Intersection Signal Delay: 97.2	Intersection LOS: F

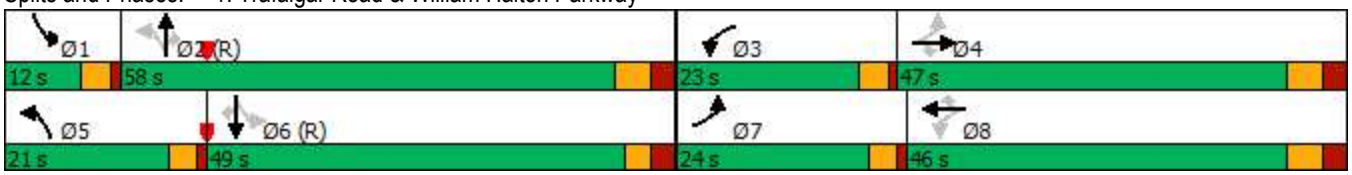
Intersection Capacity Utilization 113.0%	ICU Level of Service H
Analysis Period (min) 15	

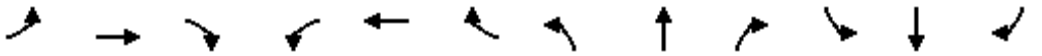
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway



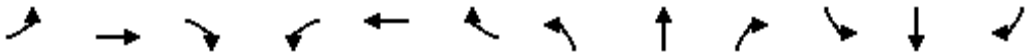


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Future Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3500	1566	1716	3500	1566	1750	4421	1536	1684	4421	1545
Flt Permitted	0.10	1.00	1.00	0.23	1.00	1.00	0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	181	3500	1566	414	3500	1566	158	4421	1536	163	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
RTOR Reduction (vph)	0	0	70	0	0	92	0	0	20	0	0	105
Lane Group Flow (vph)	432	669	28	473	974	456	357	1685	12	192	1399	183
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
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)	60.6	40.6	40.6	58.6	39.6	39.6	63.6	51.6	51.6	51.6	43.6	43.6
Effective Green, g (s)	60.6	40.6	40.6	58.6	39.6	39.6	63.6	51.6	51.6	51.6	43.6	43.6
Actuated g/C Ratio	0.43	0.29	0.29	0.42	0.28	0.28	0.45	0.37	0.37	0.37	0.31	0.31
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	1015	454	349	990	442	265	1629	566	146	1376	481
v/s Ratio Prot	c0.20	0.19		0.18	0.28		c0.16	0.38		0.07	0.32	
v/s Ratio Perm	c0.41		0.02	0.38		0.29	c0.45		0.01	0.41		0.12
v/c Ratio	1.43	0.66	0.06	1.36	0.98	1.03	1.35	1.03	0.02	1.32	1.02	0.38
Uniform Delay, d1	43.9	43.6	35.9	33.4	49.9	50.2	44.2	44.2	28.1	37.9	48.2	37.7
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	211.8	2.1	0.1	177.6	24.7	51.3	179.2	31.7	0.1	181.9	28.5	2.3
Delay (s)	255.7	45.7	36.1	211.0	74.6	101.5	223.4	75.9	28.2	219.8	76.7	39.9
Level of Service	F	D	D	F	E	F	F	E	C	F	E	D
Approach Delay (s)		120.6			114.3			100.6			85.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	103.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Future Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.956			0.944			0.991			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3346	0	1750	3304	0	1750	4375	0	1750	4286	0
Flt Permitted	0.403			0.532			0.129			0.052		
Satd. Flow (perm)	708	3346	0	980	3304	0	238	4375	0	96	4286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			105			10			39	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		468.0			810.8			2139.5			320.3	
Travel Time (s)		33.7			58.4			128.4			19.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	108	188	77	89	223	133	107	1756	107	134	1291	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	265	0	89	356	0	107	1863	0	134	1505	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		11.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		67.0	67.0		11.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.8%	55.8%		9.2%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		60.7	60.7		7.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	20.5	20.5		20.5	20.5		72.5	72.5		89.1	86.8	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.74	0.72	
v/c Ratio	0.89	0.43		0.53	0.55		0.75	0.70		0.63	0.48	
Control Delay	104.9	36.0		54.9	33.6		55.6	19.8		35.1	8.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	104.9	36.0		54.9	33.6		55.6	19.8		35.1	8.3	
LOS	F	D		D	C		E	B		D	A	
Approach Delay		56.0			37.9			21.8			10.5	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	25.1	23.5		19.3	28.4		17.3	119.4		14.5	54.0	
Queue Length 95th (m)	#43.6	32.7		32.9	39.0		#58.7	176.2		37.1	87.3	
Internal Link Dist (m)		444.0			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	210	1029		290	1054		143	2647		212	3110	
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	0.51	0.26		0.31	0.34		0.75	0.70		0.63	0.48	

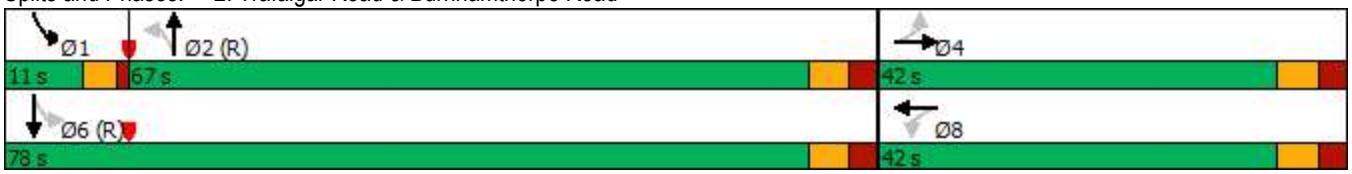
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	

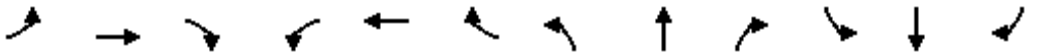
Analysis Period (min) 15

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Future Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3347		1750	3304		1750	4377		1750	4285	
Flt Permitted	0.40	1.00		0.53	1.00		0.13	1.00		0.05	1.00	
Satd. Flow (perm)	708	3347		980	3304		238	4377		96	4285	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	188	77	89	223	133	107	1756	107	134	1291	214
RTOR Reduction (vph)	0	44	0	0	87	0	0	4	0	0	11	0
Lane Group Flow (vph)	108	221	0	89	269	0	107	1859	0	134	1494	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.5	20.5		20.5	20.5		72.5	72.5		86.8	86.8	
Effective Green, g (s)	20.5	20.5		20.5	20.5		72.5	72.5		86.8	86.8	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.72	0.72	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	120	571		167	564		143	2644		211	3099	
v/s Ratio Prot		0.07			0.08			0.42		c0.05	0.35	
v/s Ratio Perm	c0.15			0.09			c0.45			0.40		
v/c Ratio	0.90	0.39		0.53	0.48		0.75	0.70		0.64	0.48	
Uniform Delay, d1	48.7	44.2		45.4	44.9		17.2	16.3		26.2	7.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	52.4	0.4		3.2	0.6		29.7	1.6		6.1	0.5	
Delay (s)	101.1	44.6		48.6	45.5		46.8	17.9		32.3	7.6	
Level of Service	F	D		D	D		D	B		C	A	
Approach Delay (s)		61.0			46.2			19.5			9.6	
Approach LOS		E			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	959	1	389	1484	0	399
Future Volume (vph)	959	1	389	1484	0	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	50.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			60.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.116			
Satd. Flow (perm)	3433	0	214	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						417
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	999	1	405	1546	0	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1000	0	405	1546	0	416
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



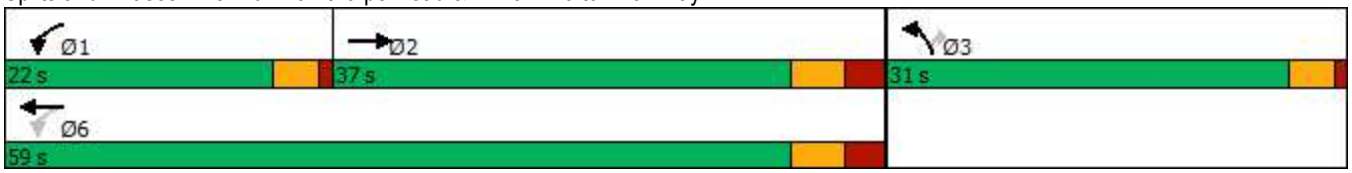
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	37.0		22.0	59.0	31.0	31.0
Total Split (%)	41.1%		24.4%	65.6%	34.4%	34.4%
Maximum Green (s)	30.6		18.0	52.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	30.6		54.6	52.2		27.0
Actuated g/C Ratio	0.34		0.61	0.58		0.30
v/c Ratio	0.85		0.94	0.76		0.55
Control Delay	36.1		54.4	17.1		5.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	36.1		54.4	17.1		5.6
LOS	D		D	B		A
Approach Delay	36.1			24.8	5.6	
Approach LOS	D			C	A	
Queue Length 50th (m)	83.8		51.7	96.6		0.0
Queue Length 95th (m)	#117.1		#105.6	123.5		19.8
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			50.0			
Base Capacity (vph)	1173		438	2055		763
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	0.85		0.92	0.75		0.55

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

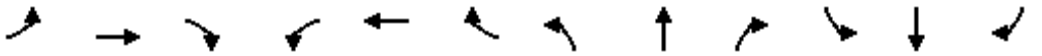
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



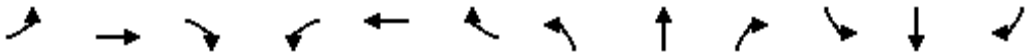


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	959	1	389	1484	0	399
Future Volume (vph)	959	1	389	1484	0	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.12	1.00		1.00
Satd. Flow (perm)	3432		213	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	999	1	405	1546	0	416
RTOR Reduction (vph)	0	0	0	0	0	291
Lane Group Flow (vph)	1000	0	405	1546	0	125
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	30.6		52.2	52.2		27.0
Effective Green, g (s)	30.6		52.2	52.2		27.0
Actuated g/C Ratio	0.34		0.58	0.58		0.30
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1172		426	2039		471
v/s Ratio Prot	0.29		c0.19	0.44		
v/s Ratio Perm			c0.37			c0.08
v/c Ratio	0.85		0.95	0.76		0.27
Uniform Delay, d1	27.4		24.9	14.0		23.8
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	8.0		31.2	1.7		1.4
Delay (s)	35.4		56.1	15.6		25.2
Level of Service	D		E	B		C
Approach Delay (s)	35.4			24.0	25.2	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	14.4
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Future Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	165.0		85.0	120.0		50.0	50.0		65.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	45.0			65.0			100.0			100.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.97			0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	1750	4421	1566	1750	4421	1566	1733	4421	1566
Flt Permitted	0.950			0.084			0.169			0.094		
Satd. Flow (perm)	3394	4378	1526	155	4421	1540	311	4421	1541	171	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			162			127			170
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			2139.5	
Travel Time (s)		30.4			42.0			38.7			128.4	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	

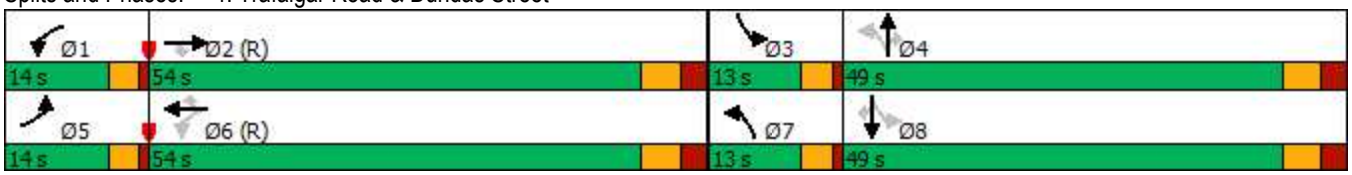


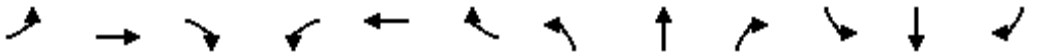
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	49.4	49.4	12.0	49.4	49.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	54.0	54.0	14.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	41.5%	41.5%	10.8%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	47.6	47.6	10.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		36.0	36.0		36.0	36.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	47.6	47.6	60.0	47.6	47.6	54.0	42.6	42.6	54.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.46	0.37	0.37	0.42	0.33	0.33	0.42	0.33	0.33
v/c Ratio	1.41	1.06	0.30	1.52	1.13	0.47	1.39	0.93	0.39	1.62	0.61	0.42
Control Delay	248.2	79.9	9.5	285.5	104.5	17.2	227.8	55.0	16.7	328.0	38.9	14.0
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	248.2	79.9	9.5	285.5	104.5	17.2	227.8	55.0	16.7	328.0	38.9	14.0
LOS	F	E	A	F	F	B	F	D	B	F	D	B
Approach Delay		101.3			115.1			79.3			92.8	
Approach LOS		F			F			E			F	
Queue Length 50th (m)	~65.1	~198.7	8.0	~89.8	~225.2	28.5	~79.6	139.6	19.0	~91.4	79.3	16.4
Queue Length 95th (m)	#96.1	#232.5	25.1	#146.6	#258.7	55.0	#137.4	#172.8	41.1	#147.0	96.1	39.8
Internal Link Dist (m)		568.0			792.3			620.9			2115.5	
Turn Bay Length (m)	110.0		85.0	165.0		85.0	120.0		50.0	50.0		65.0
Base Capacity (vph)	261	1603	651	194	1618	666	228	1448	590	179	1448	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	1.41	1.06	0.30	1.52	1.13	0.47	1.39	0.93	0.39	1.62	0.61	0.42

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.62	
Intersection Signal Delay: 98.7	Intersection LOS: F

Intersection Capacity Utilization 111.1%	ICU Level of Service H
Analysis Period (min) 15	
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 4: Trafalgar Road & Dundas Street

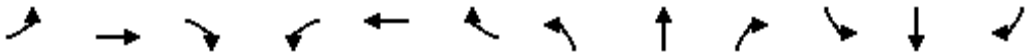




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Future Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1526	1750	4421	1540	1750	4421	1541	1733	4421	1538
Flt Permitted	0.95	1.00	1.00	0.08	1.00	1.00	0.17	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	3395	4378	1526	155	4421	1540	311	4421	1541	171	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
RTOR Reduction (vph)	0	0	93	0	0	103	0	0	85	0	0	114
Lane Group Flow (vph)	368	1698	101	295	1825	212	318	1353	145	290	886	146
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2	6		6	4		4	8		8
Actuated Green, G (s)	10.0	47.6	47.6	57.6	47.6	47.6	51.6	42.6	42.6	51.6	42.6	42.6
Effective Green, g (s)	10.0	47.6	47.6	57.6	47.6	47.6	51.6	42.6	42.6	51.6	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.44	0.37	0.37	0.40	0.33	0.33	0.40	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1603	558	191	1618	563	223	1448	504	176	1448	503
v/s Ratio Prot	0.11	0.39		c0.12	0.41		0.10	0.31		c0.11	0.20	
v/s Ratio Perm			0.07	c0.57		0.14	0.47		0.09	c0.54		0.09
v/c Ratio	1.41	1.06	0.18	1.54	1.13	0.38	1.43	0.93	0.29	1.65	0.61	0.29
Uniform Delay, d1	60.0	41.2	28.0	36.4	41.2	30.3	33.4	42.3	32.4	32.6	36.7	32.5
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	205.8	40.0	0.7	269.3	66.1	1.9	215.7	11.8	0.7	315.5	1.1	0.7
Delay (s)	265.8	81.2	28.7	305.8	107.3	32.2	249.1	54.1	33.1	348.1	37.9	33.1
Level of Service	F	F	C	F	F	C	F	D	C	F	D	C
Approach Delay (s)		106.8			121.6			84.2			99.7	
Approach LOS		F			F			F			F	

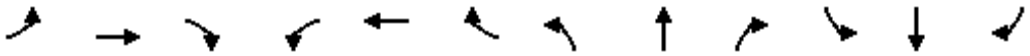
Intersection Summary			
HCM 2000 Control Delay	104.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



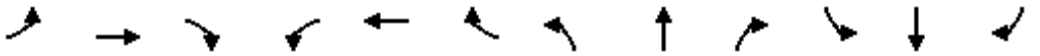
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	497	65	214	636	502	11	189	129	238	215	272
Future Volume (vph)	231	497	65	214	636	502	11	189	129	238	215	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.988			0.944			0.941			0.944	
Flt Protected		0.986			0.992			0.998			0.984	
Satd. Flow (prot)	0	3409	0	0	3277	0	0	3287	0	0	3251	0
Flt Permitted		0.986			0.992			0.998			0.984	
Satd. Flow (perm)	0	3409	0	0	3277	0	0	3287	0	0	3251	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			839.5			671.6			229.3	
Travel Time (s)		28.6			50.4			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	236	507	66	218	649	512	11	193	132	243	219	278
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	809	0	0	1379	0	0	336	0	0	740	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

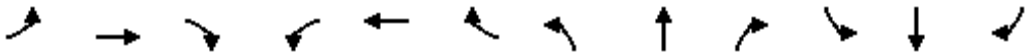


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	231	497	65	214	636	502	11	189	129	238	215	272
Future Volume (veh/h)	231	497	65	214	636	502	11	189	129	238	215	272
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	236	507	66	218	649	512	11	193	132	243	219	278
Approach Volume (veh/h)		809			1379			336			740	
Crossing Volume (veh/h)		680			440			986			878	
High Capacity (veh/h)		808			979			630			688	
High v/c (veh/h)		1.00			1.41			0.53			1.08	
Low Capacity (veh/h)		644			795			489			539	
Low v/c (veh/h)		1.26			1.73			0.69			1.37	

Intersection Summary				
Maximum v/c High	1.41			
Maximum v/c Low	1.73			
Intersection Capacity Utilization	107.0%	ICU Level of Service	G	



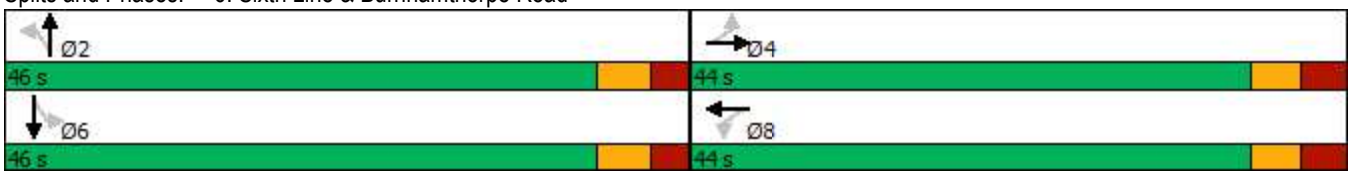
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	92	46	166	228	34	93	323	133	56	543	31
Future Volume (vph)	33	92	46	166	228	34	93	323	133	56	543	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.950			0.981			0.956			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3325	0	1750	3395	0	1750	3336	0	1750	3472	0
Flt Permitted	0.580			0.659			0.421			0.476		
Satd. Flow (perm)	1068	3325	0	1214	3395	0	776	3336	0	877	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			22			88			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	35	98	49	177	243	36	99	344	141	60	578	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	147	0	177	279	0	99	485	0	60	611	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

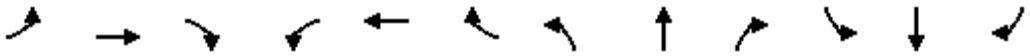


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	15.4	15.4		15.4	15.4		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.58	0.58		0.58	0.58	
v/c Ratio	0.15	0.19		0.65	0.36		0.22	0.24		0.12	0.30	
Control Delay	21.7	14.5		35.2	21.2		9.8	6.6		8.5	8.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.7	14.5		35.2	21.2		9.8	6.6		8.5	8.2	
LOS	C	B		D	C		A	A		A	A	
Approach Delay		15.9			26.6			7.1			8.3	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	3.6	5.2		20.3	14.3		5.2	10.8		3.0	17.5	
Queue Length 95th (m)	9.9	11.4		38.3	23.3		16.2	23.2		10.0	34.5	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			30.0			30.0			30.0		
Base Capacity (vph)	590	1861		671	1887		453	1985		512	2031	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.08		0.26	0.15		0.22	0.24		0.12	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 68.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

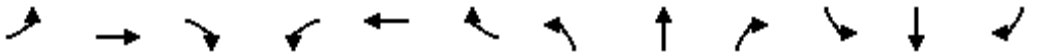
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



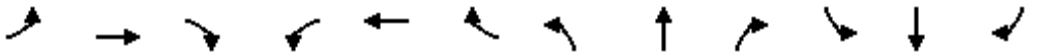


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	92	46	166	228	34	93	323	133	56	543	31
Future Volume (vph)	33	92	46	166	228	34	93	323	133	56	543	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3325		1750	3394		1750	3338		1750	3472	
Flt Permitted	0.58	1.00		0.66	1.00		0.42	1.00		0.48	1.00	
Satd. Flow (perm)	1069	3325		1213	3394		775	3338		876	3472	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	98	49	177	243	36	99	344	141	60	578	33
RTOR Reduction (vph)	0	38	0	0	17	0	0	37	0	0	3	0
Lane Group Flow (vph)	35	109	0	177	262	0	99	448	0	60	608	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.4	15.4		15.4	15.4		39.8	39.8		39.8	39.8	
Effective Green, g (s)	15.4	15.4		15.4	15.4		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	241	751		274	767		452	1950		511	2029	
v/s Ratio Prot		0.03			0.08			0.13			c0.18	
v/s Ratio Perm	0.03			c0.15			0.13			0.07		
v/c Ratio	0.15	0.15		0.65	0.34		0.22	0.23		0.12	0.30	
Uniform Delay, d1	21.1	21.1		23.9	22.1		6.7	6.8		6.3	7.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		5.2	0.3		1.1	0.3		0.5	0.4	
Delay (s)	21.4	21.2		29.0	22.4		7.9	7.1		6.8	7.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.2			25.0			7.2			7.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Future Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1537	1431	1750	3500	0	0	4980	0
Flt Permitted	0.390			0.950	0.953		0.094					
Satd. Flow (perm)	626	0	1331	1615	1537	1431	173	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	430	2	19	7	2679	0	0	1739	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	215	219	17	7	2679	0	0	1739	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



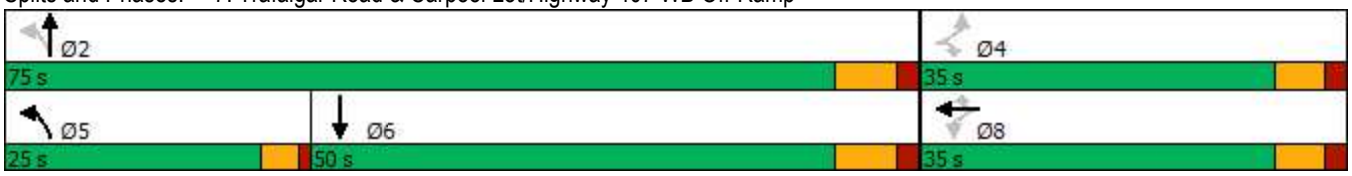
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.5		19.5	19.5	19.5	19.5	71.2	68.2			66.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.71	0.68			0.66	
v/c Ratio	0.06		0.02	0.69	0.73	0.05	0.03	1.13			0.53	
Control Delay	32.7		0.2	49.3	53.0	0.2	6.3	84.3			11.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	32.7		0.2	49.3	53.0	0.2	6.3	84.3			11.2	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		17.7			49.2			84.1			11.2	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	41.3	44.3	0.0	0.3	~319.5			54.3	
Queue Length 95th (m)	4.8		0.0	66.0	70.8	0.0	2.1	#416.4			111.0	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	180		440	465	443	469	451	2368			3279	
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		0.01	0.46	0.49	0.04	0.02	1.13			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 100.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 54.8		Intersection LOS: D	
Intersection Capacity Utilization 100.3%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

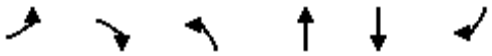
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Future Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1537	1431	1750	3500			4980	
Flt Permitted	0.39		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	627		1331	1615	1537	1431	173	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	430	2	19	7	2679	0	0	1739	0
RTOR Reduction (vph)	0	0	5	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	215	219	3	7	2679	0	0	1739	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.6		19.6	19.6	19.6	19.6	71.5	71.5			66.4	
Effective Green, g (s)	19.6		19.6	19.6	19.6	19.6	71.5	71.5			66.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.69	0.69			0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	118		250	304	289	269	135	2403			3176	
v/s Ratio Prot							0.00	c0.77			0.35	
v/s Ratio Perm	0.01		0.00	0.13	0.14	0.00	0.03					
v/c Ratio	0.06		0.00	0.71	0.76	0.01	0.05	1.11			0.55	
Uniform Delay, d1	34.7		34.3	39.6	40.0	34.4	6.7	16.3			10.5	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	7.3	10.8	0.0	0.2	58.1			0.2	
Delay (s)	34.9		34.3	46.9	50.8	34.4	6.8	74.4			10.7	
Level of Service	C		C	D	D	C	A	E			B	
Approach Delay (s)		34.6			48.3			74.3			10.7	
Approach LOS		C			D			E			B	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	104.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2579	2139	45
Future Volume (vph)	0	0	0	2579	2139	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	2686	2228	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2686	2228	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

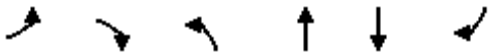
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2579	149	0	2139
Future Volume (vph)	0	0	2579	149	0	2139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	2686	155	0	2228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2686	155	0	2228
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



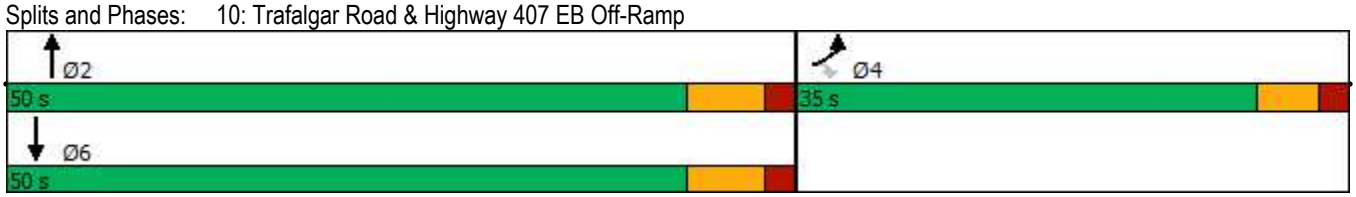
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	191	0	3001	1937	0
Future Volume (vph)	38	191	0	3001	1937	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		4				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	40	203	0	3193	2061	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	203	0	3193	2061	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

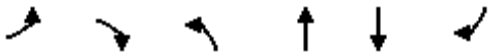
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	35.0	35.0		50.0	50.0	
Total Split (%)	41.2%	41.2%		58.8%	58.8%	
Maximum Green (s)	29.0	29.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	16.4	16.4		43.2	43.2	
Actuated g/C Ratio	0.23	0.23		0.59	0.59	
v/c Ratio	0.10	0.70		1.53	1.00	
Control Delay	21.8	38.2		262.8	37.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	21.8	38.2		262.8	37.6	
LOS	C	D		F	D	
Approach Delay	35.5			262.8	37.6	
Approach LOS	D			F	D	
Queue Length 50th (m)	4.3	24.9		~326.8	132.0	
Queue Length 95th (m)	11.0	45.1		#427.8	#236.3	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	701	514		2081	2060	
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	0.06	0.39		1.53	1.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 72.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.53			
Intersection Signal Delay: 168.3		Intersection LOS: F	
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

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

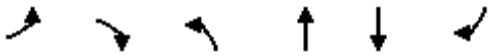
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	191	0	3001	1937	0
Future Volume (vph)	38	191	0	3001	1937	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	203	0	3193	2061	0
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	40	200	0	3193	2061	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.4	16.4		43.2	43.2	
Effective Green, g (s)	16.4	16.4		43.2	43.2	
Actuated g/C Ratio	0.23	0.23		0.60	0.60	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	395	288		2082	2062	
v/s Ratio Prot	0.02			c0.91	0.59	
v/s Ratio Perm		c0.16				
v/c Ratio	0.10	0.69		1.53	1.00	
Uniform Delay, d1	22.3	25.8		14.7	14.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.1		242.6	19.7	
Delay (s)	22.4	32.9		257.3	34.4	
Level of Service	C	C		F	C	
Approach Delay (s)	31.1			257.3	34.4	
Approach LOS	C			F	C	

Intersection Summary			
HCM 2000 Control Delay	163.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2725	1937	21
Future Volume (vph)	0	0	0	2725	1937	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	2899	2061	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2899	2061	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2725	1937	21
Future Volume (Veh/h)	0	0	0	2725	1937	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	2899	2061	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.53	0.77	0.77			
vC, conflicting volume	3510	1030	2083			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1969	426	1801			
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)	29	442	259			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1450	1450	1030	1030	22
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	22
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.85	0.85	0.61	0.61	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

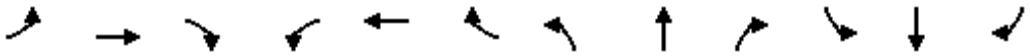
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3001	204	0	2128
Future Volume (vph)	0	0	3001	204	0	2128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3193	217	0	2264
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3193	217	0	2264
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

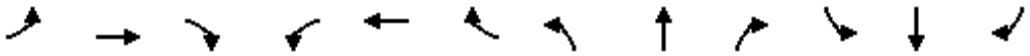
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



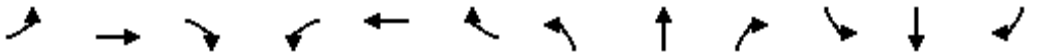
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1180	217	147	1295	137	415	673	240	117	347	117
Future Volume (vph)	43	1180	217	147	1295	137	415	673	240	117	347	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.977			0.987			0.973			0.970	
Flt Protected		0.999			0.995			0.985			0.990	
Satd. Flow (prot)	0	3374	0	0	3437	0	0	3344	0	0	3361	0
Flt Permitted		0.999			0.995			0.985			0.990	
Satd. Flow (perm)	0	3374	0	0	3437	0	0	3344	0	0	3361	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	45	1229	226	153	1349	143	432	701	250	122	361	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1500	0	0	1645	0	0	1383	0	0	605	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 153.6%		ICU Level of Service H	
Analysis Period (min) 15			

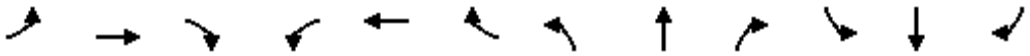


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	43	1180	217	147	1295	137	415	673	240	117	347	117
Future Volume (veh/h)	43	1180	217	147	1295	137	415	673	240	117	347	117
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	45	1229	226	153	1349	143	432	701	250	122	361	122
Approach Volume (veh/h)		1500			1645			1383			605	
Crossing Volume (veh/h)		636			1178			1396#			1934#	
High Capacity (veh/h)		837			538			448			284	
High v/c (veh/h)		1.79			3.06			3.09			2.13	
Low Capacity (veh/h)		669			410			335			201	
Low v/c (veh/h)		2.24			4.01			4.12			3.00	

Intersection Summary					
Maximum v/c High	3.09				
Maximum v/c Low	4.12				
Intersection Capacity Utilization	153.6%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Future Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	45.0		30.0	30.0		40.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	15.0			15.0			80.0			15.0		
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		0.878			0.850				0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1566	0	1750	5029	1566	1750	5029	1566
Flt Permitted	0.090						0.088			0.086		
Satd. Flow (perm)	166	1617	0	1842	1566	0	162	5029	1566	158	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		149			131				105			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2430	333	429	1852	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	852	0	41	2430	333	429	1852	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6



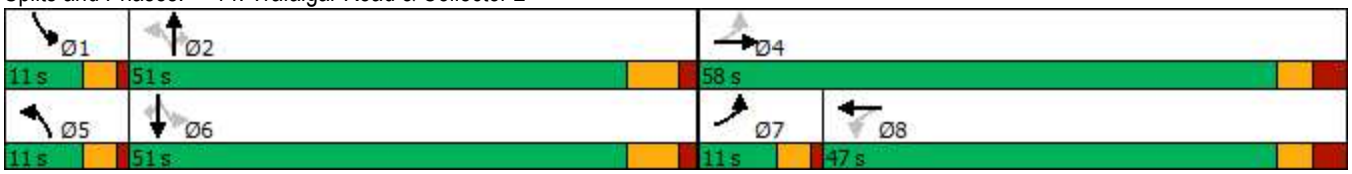
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	46.5		46.5	46.5		11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	11.0	58.0		47.0	47.0		11.0	51.0	51.0	11.0	51.0	51.0
Total Split (%)	9.2%	48.3%		39.2%	39.2%		9.2%	42.5%	42.5%	9.2%	42.5%	42.5%
Maximum Green (s)	7.0	51.5		40.5	40.5		7.0	44.5	44.5	7.0	44.5	44.5
Yellow Time (s)	3.0	3.3		3.3	3.3		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2		1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5		4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		33.0		33.0	33.0			22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)		0		0	0			0	0		0	0
Act Effct Green (s)	54.0	51.5			40.5		54.0	44.5	44.5	54.8	46.7	46.7
Actuated g/C Ratio	0.45	0.43			0.34		0.45	0.37	0.37	0.46	0.39	0.39
v/c Ratio	2.41	0.34			1.39		0.25	1.30	0.52	2.62	0.95	0.29
Control Delay	671.9	10.7			211.7		20.3	173.6	22.8	760.5	47.4	13.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	671.9	10.7			211.7		20.3	173.6	22.8	760.5	47.4	13.3
LOS	F	B			F		C	F	C	F	D	B
Approach Delay		411.4			211.7			153.4			168.3	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~142.0	16.1			~246.7		5.0	~268.7	40.8	~156.6	157.6	13.8
Queue Length 95th (m)	#203.3	34.8			#322.5		11.1	#296.9	68.3	#218.9	#194.4	31.1
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	30.0						45.0		30.0	30.0		40.0
Base Capacity (vph)	167	779			615		165	1864	646	164	1956	673
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	2.41	0.34			1.39		0.25	1.30	0.52	2.62	0.95	0.29

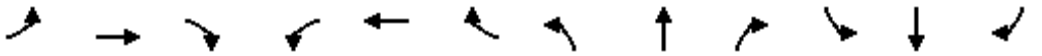
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.62			
Intersection Signal Delay: 191.4		Intersection LOS: F	
Intersection Capacity Utilization 148.7%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

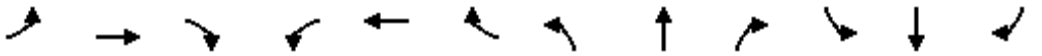




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Future Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5			6.5		4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.88			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)	1750	1617			1566		1750	5029	1566	1750	5029	1566
Flt Permitted	0.09	1.00			1.00		0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	166	1617			1566		163	5029	1566	158	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2430	333	429	1852	194
RTOR Reduction (vph)	0	85	0	0	87	0	0	0	66	0	0	64
Lane Group Flow (vph)	403	177	0	0	765	0	41	2430	267	429	1852	130
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	51.5	51.5			40.5		50.9	45.3	45.3	53.7	46.7	46.7
Effective Green, g (s)	51.5	51.5			40.5		50.9	45.3	45.3	53.7	46.7	46.7
Actuated g/C Ratio	0.43	0.43			0.34		0.42	0.37	0.37	0.44	0.39	0.39
Clearance Time (s)	4.0	6.5			6.5		4.0	6.5	6.5	4.0	6.5	6.5
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)	162	689			525		142	1885	587	162	1944	605
v/s Ratio Prot	c0.14	0.11			0.49		0.01	0.48		c0.15	0.37	
v/s Ratio Perm	c0.92						0.11		0.17	c1.02		0.08
v/c Ratio	2.49	0.26			1.46		0.29	1.29	0.46	2.65	0.95	0.21
Uniform Delay, d1	29.6	22.3			40.1		26.6	37.8	28.5	29.6	36.0	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	687.5	0.2			216.1		1.1	134.2	2.5	759.1	11.9	0.8
Delay (s)	717.1	22.5			256.2		27.8	172.0	31.0	788.7	47.9	25.6
Level of Service	F	C			F		C	F	C	F	D	C
Approach Delay (s)		443.5			256.2			153.1			174.6	
Approach LOS		F			F			F			F	

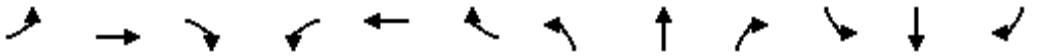
Intersection Summary			
HCM 2000 Control Delay	202.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.67		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	148.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	866	0	78	1315	0	26	0	0	0	0	0
Future Volume (vph)	0	866	0	78	1315	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)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		839.5			181.9			147.1			190.6	
Travel Time (s)		50.4			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	962	0	87	1461	0	29	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	87	1461	0	29	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

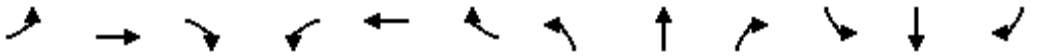
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	866	0	78	1315	0	26	0	0	0	0	0
Future Volume (Veh/h)	0	866	0	78	1315	0	26	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	962	0	87	1461	0	29	0	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					390							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	1466			967			1876	2607	491	2126	2607	740
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	970			967			1513	2480	491	1843	2480	10
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			88			48	100	100	100	100	100
cM capacity (veh/h)	531			705			55	19	518	31	19	800

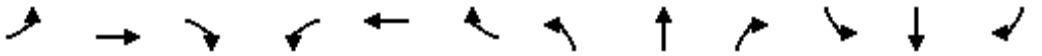
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	0	641	321	87	974	487	29	0	0	0
Volume Left	0	0	0	87	0	0	29	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	705	1700	1700	55	1700	1700	1700
Volume to Capacity	0.00	0.38	0.19	0.12	0.57	0.29	0.52	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	3.2	0.0	0.0	15.5	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	10.8	0.0	0.0	126.5	0.0	0.0	0.0
Lane LOS				B			F	A	A	A
Approach Delay (s)	0.0			0.6			126.5		0.0	
Approach LOS							F		A	

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	58.6%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	855	11	0	1354	152	0	0	245	0	0	39
Future Volume (vph)	0	855	11	0	1354	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			359.5	
Travel Time (s)		10.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	950	12	0	1504	169	0	0	272	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	0	1504	169	0	0	272	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

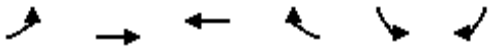
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	855	11	0	1354	152	0	0	245	0	0	39
Future Volume (Veh/h)	0	855	11	0	1354	152	0	0	245	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	950	12	0	1504	169	0	0	272	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					208							
pX, platoon unblocked	0.74						0.74	0.74		0.74	0.74	0.74
vC, conflicting volume	1678			967			1761	2639	491	2261	2476	762
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1205			967			1317	2510	491	1996	2288	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	48	100	100	95
cM capacity (veh/h)	421			705			79	20	518	12	28	791

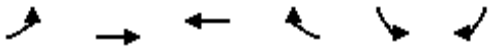
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	633	329	752	752	169	272	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	12	0	0	169	272	43
cSH	1700	1700	1700	1700	1700	518	791
Volume to Capacity	0.37	0.19	0.44	0.44	0.10	0.52	0.05
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	22.9	1.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	19.4	9.8
Lane LOS						C	A
Approach Delay (s)	0.0		0.0			19.4	9.8
Approach LOS						C	A

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	49.0%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (vph)	0	831	1408	84	0	448
Future Volume (vph)	0	831	1408	84	0	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	923	1564	93	0	498
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	923	1564	93	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

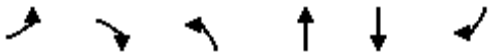
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	831	1408	84	0	448
Future Volume (Veh/h)	0	831	1408	84	0	448
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	923	1564	93	0	498
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228				
pX, platoon unblocked					0.83	
vC, conflicting volume	1662				2036	792
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1662				1845	792
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)	381				55	329

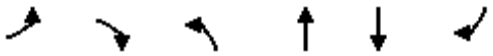
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	462	462	782	782	93	498
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	93	498
cSH	1700	1700	1700	1700	1700	329
Volume to Capacity	0.27	0.27	0.46	0.46	0.05	1.51
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	211.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	276.3
Lane LOS						F
Approach Delay (s)	0.0		0.0			276.3
Approach LOS						F

Intersection Summary			
Average Delay	44.7		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	100	0	1894	1695	125
Future Volume (vph)	0	100	0	1894	1695	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	4421	4421	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	4421	4421	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	111	0	2104	1883	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	111	0	2104	1883	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

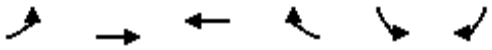
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	100	0	1894	1695	125
Future Volume (Veh/h)	0	100	0	1894	1695	125
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	111	0	2104	1883	139
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.84	0.71	0.71			
vC, conflicting volume	2594	638	2027			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	0	1000			
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)	732	759	484			

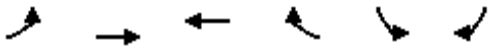
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	111	701	701	701	628	628	628	139
Volume Left	0	0	0	0	0	0	0	0
Volume Right	111	0	0	0	0	0	0	139
cSH	759	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.41	0.41	0.41	0.37	0.37	0.37	0.08
Queue Length 95th (m)	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.6	0.0			0.0			
Approach LOS	B							

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	48.1%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	811	1492	0	150	0
Future Volume (vph)	0	811	1492	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1750	1842
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	901	1658	0	167	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	901	1658	0	167	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

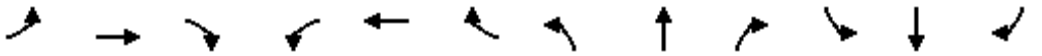
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			



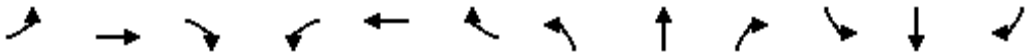
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	811	1492	0	150	0
Future Volume (Veh/h)	0	811	1492	0	150	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	901	1658	0	167	0
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		402				
pX, platoon unblocked					0.84	
vC, conflicting volume	1663				2118	839
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1663				1953	839
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				0	100
cM capacity (veh/h)	381				47	306

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	0	450	450	1105	553	167	0
Volume Left	0	0	0	0	0	167	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	47	1700
Volume to Capacity	0.00	0.27	0.27	0.65	0.33	3.57	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	Err	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	Err	0.0
Lane LOS						F	A
Approach Delay (s)	0.0			0.0		Err	
Approach LOS						F	

Intersection Summary			
Average Delay	612.6		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Future Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			123			89			168
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
Shared Lane Traffic (%)												
Lane Group Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	1.05	0.63	0.18	1.17	0.91	0.98	0.98	1.03	0.05	1.03	0.97	0.47
Control Delay	115.7	45.0	4.0	152.4	60.5	69.6	105.0	74.7	0.2	137.4	64.4	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	115.7	45.0	4.0	152.4	60.5	69.6	105.0	74.7	0.2	137.4	64.4	17.7
LOS	F	D	A	F	E	E	F	E	A	F	E	B
Approach Delay		67.1			84.8			78.8			64.7	
Approach LOS		E			F			E			E	
Queue Length 50th (m)	~66.9	84.0	0.0	~80.2	137.0	123.8	51.6	~208.2	0.0	~29.2	159.1	24.9
Queue Length 95th (m)	#100.3	104.8	8.5	#114.5	#174.8	#198.5	#83.5	#241.5	0.0	#54.3	#196.2	51.7
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	412	1065	559	404	1065	562	363	1629	622	186	1439	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	1.05	0.63	0.18	1.17	0.91	0.98	0.98	1.03	0.05	1.03	0.97	0.47

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 74.8	Intersection LOS: E

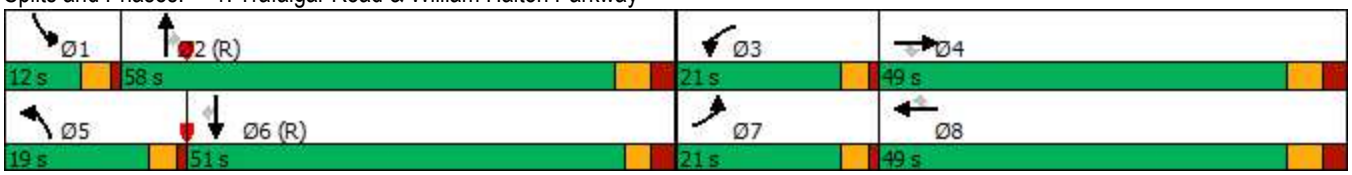
Intersection Capacity Utilization 95.0%	ICU Level of Service F
Analysis Period (min) 15	

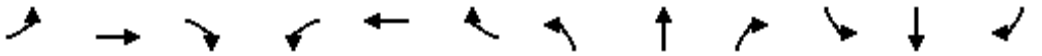
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

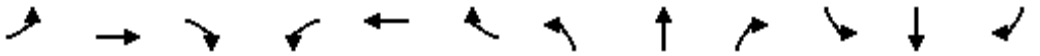




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Future Volume (vph)	402	622	91	440	906	510	332	1567	30	179	1301	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	432	669	98	473	974	548	357	1685	32	192	1399	288
RTOR Reduction (vph)	0	0	68	0	0	86	0	0	20	0	0	113
Lane Group Flow (vph)	432	669	30	473	974	462	357	1685	12	192	1399	175
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1629	566	186	1439	503
v/s Ratio Prot	0.13	0.19		c0.14	0.28		c0.11	c0.38		0.06	0.32	
v/s Ratio Perm			0.02			c0.30			0.01			0.11
v/c Ratio	1.05	0.63	0.06	1.17	0.91	0.97	0.98	1.03	0.02	1.03	0.97	0.35
Uniform Delay, d1	61.5	41.9	34.5	61.5	46.9	48.1	62.4	44.2	28.1	66.0	46.6	35.9
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	57.6	1.7	0.1	100.3	12.4	34.1	42.5	31.7	0.1	74.7	18.0	1.9
Delay (s)	119.1	43.5	34.7	161.8	59.4	82.2	104.9	75.9	28.2	140.7	64.5	37.8
Level of Service	F	D	C	F	E	F	F	E	C	F	E	D
Approach Delay (s)		70.0			89.9			80.2			68.2	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	78.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Future Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.956			0.944			0.991			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3346	0	1750	3304	0	1750	4375	0	1750	4286	0
Flt Permitted	0.403			0.532			0.129			0.052		
Satd. Flow (perm)	708	3346	0	980	3304	0	238	4375	0	96	4286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			105			10			39	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		468.0			810.8			2139.5			320.3	
Travel Time (s)		33.7			58.4			128.4			19.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	108	188	77	89	223	133	107	1756	107	134	1291	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	265	0	89	356	0	107	1863	0	134	1505	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		11.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		67.0	67.0		11.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.8%	55.8%		9.2%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		60.7	60.7		7.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	20.5	20.5		20.5	20.5		72.5	72.5		89.1	86.8	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.74	0.72	
v/c Ratio	0.89	0.43		0.53	0.55		0.75	0.70		0.63	0.48	
Control Delay	104.9	36.0		54.9	33.6		55.6	19.8		35.1	8.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	104.9	36.0		54.9	33.6		55.6	19.8		35.1	8.3	
LOS	F	D		D	C		E	B		D	A	
Approach Delay		56.0			37.9			21.8			10.5	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	25.1	23.5		19.3	28.4		17.3	119.4		14.5	54.0	
Queue Length 95th (m)	#43.6	32.7		32.9	39.0		#58.7	176.2		37.1	87.3	
Internal Link Dist (m)		444.0			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	210	1029		290	1054		143	2647		212	3110	
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	0.51	0.26		0.31	0.34		0.75	0.70		0.63	0.48	

Intersection Summary

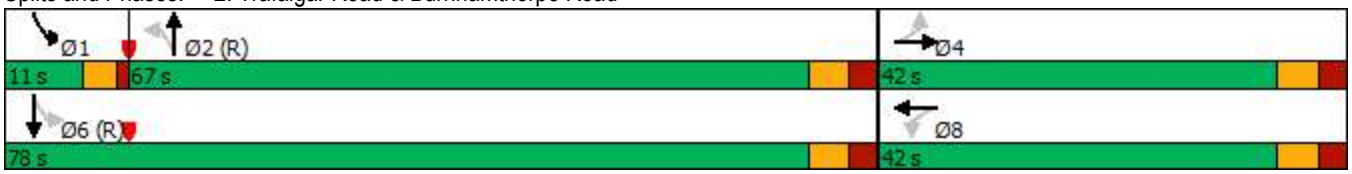
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 22.1 Intersection LOS: C
Intersection Capacity Utilization 79.0% ICU Level of Service D

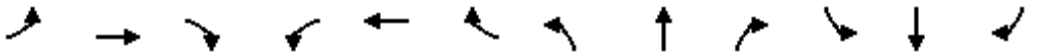
Analysis Period (min) 15

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Future Volume (vph)	103	179	73	85	212	126	102	1668	102	127	1226	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3347		1750	3304		1750	4377		1750	4285	
Flt Permitted	0.40	1.00		0.53	1.00		0.13	1.00		0.05	1.00	
Satd. Flow (perm)	708	3347		980	3304		238	4377		96	4285	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	188	77	89	223	133	107	1756	107	134	1291	214
RTOR Reduction (vph)	0	44	0	0	87	0	0	4	0	0	11	0
Lane Group Flow (vph)	108	221	0	89	269	0	107	1859	0	134	1494	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.5	20.5		20.5	20.5		72.5	72.5		86.8	86.8	
Effective Green, g (s)	20.5	20.5		20.5	20.5		72.5	72.5		86.8	86.8	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.72	0.72	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	120	571		167	564		143	2644		211	3099	
v/s Ratio Prot		0.07			0.08			0.42		c0.05	0.35	
v/s Ratio Perm	c0.15			0.09			c0.45			0.40		
v/c Ratio	0.90	0.39		0.53	0.48		0.75	0.70		0.64	0.48	
Uniform Delay, d1	48.7	44.2		45.4	44.9		17.2	16.3		26.2	7.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	52.4	0.4		3.2	0.6		29.7	1.6		6.1	0.5	
Delay (s)	101.1	44.6		48.6	45.5		46.8	17.9		32.3	7.6	
Level of Service	F	D		D	D		D	B		C	A	
Approach Delay (s)		61.0			46.2			19.5			9.6	
Approach LOS		E			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



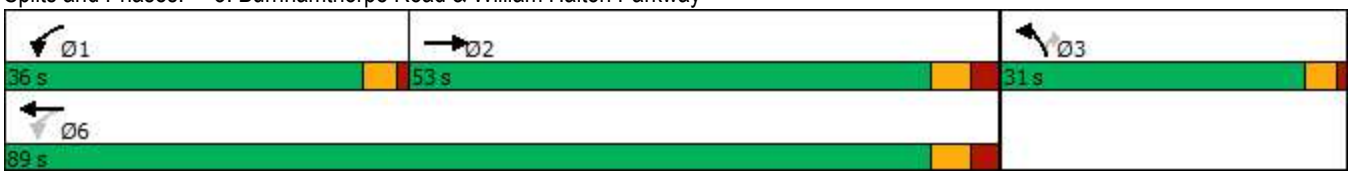
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	959	1	389	1484	0	399
Future Volume (vph)	959	1	389	1484	0	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.151			
Satd. Flow (perm)	3433	0	278	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						464
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	999	1	405	1546	0	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1000	0	405	1546	0	416
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	53.0		36.0	89.0	31.0	31.0
Total Split (%)	44.2%		30.0%	74.2%	25.8%	25.8%
Maximum Green (s)	46.6		32.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.8		75.7	73.3		27.1
Actuated g/C Ratio	0.42		0.68	0.66		0.24
v/c Ratio	0.69		0.83	0.67		0.57
Control Delay	30.2		33.9	13.0		5.2
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	30.2		33.9	13.0		5.2
LOS	C		C	B		A
Approach Delay	30.2			17.3	5.2	
Approach LOS	C			B	A	
Queue Length 50th (m)	91.6		50.8	96.6		0.0
Queue Length 95th (m)	130.7		86.0	116.7		14.7
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1449		616	2619		733
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	0.69		0.66	0.59		0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 110.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

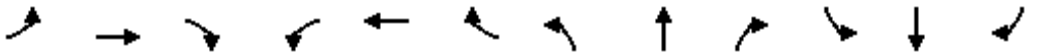
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



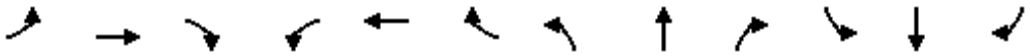


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	959	1	389	1484	0	399
Future Volume (vph)	959	1	389	1484	0	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.15	1.00		1.00
Satd. Flow (perm)	3432		278	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	999	1	405	1546	0	416
RTOR Reduction (vph)	0	0	0	0	0	314
Lane Group Flow (vph)	1000	0	405	1546	0	102
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	46.8		73.3	73.3		27.1
Effective Green, g (s)	46.8		73.3	73.3		27.1
Actuated g/C Ratio	0.42		0.66	0.66		0.24
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1449		482	2315		383
v/s Ratio Prot	0.29		c0.17	0.44		
v/s Ratio Perm			c0.38			c0.06
v/c Ratio	0.69		0.84	0.67		0.27
Uniform Delay, d1	26.1		23.0	11.4		33.8
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		12.5	0.7		1.7
Delay (s)	28.8		35.5	12.1		35.5
Level of Service	C		D	B		D
Approach Delay (s)	28.8			17.0	35.5	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	14.4
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Future Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	3395	4421	1566	3395	4421	1566	3362	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3394	4378	1527	3391	4421	1540	3389	4421	1541	3360	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			165			127			151
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			2139.5	
Travel Time (s)		30.4			42.0			38.7			128.4	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	1.41	1.04	0.29	1.26	1.13	0.47	1.35	0.93	0.39	1.25	0.61	0.43
Control Delay	248.2	72.6	9.0	192.8	104.5	16.9	228.8	55.0	16.7	191.2	38.9	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	248.2	72.6	9.0	192.8	104.5	16.9	228.8	55.0	16.7	191.2	38.9	16.2
LOS	F	E	A	F	F	B	F	D	B	F	D	B
Approach Delay		95.7			103.8			79.4			65.6	
Approach LOS		F			F			E			E	
Queue Length 50th (m)	~65.1	~195.0	7.6	~48.7	~225.2	27.8	~55.0	139.6	19.0	~47.6	79.3	20.3
Queue Length 95th (m)	#96.1	#228.7	24.4	#77.4	#258.7	54.3	#84.3	#172.8	41.1	#75.8	96.1	44.5
Internal Link Dist (m)		568.0			792.3			620.9			2115.5	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Base Capacity (vph)	261	1636	663	235	1618	668	235	1448	590	232	1448	605
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	1.41	1.04	0.29	1.26	1.13	0.47	1.35	0.93	0.39	1.25	0.61	0.43

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 88.9	Intersection LOS: F

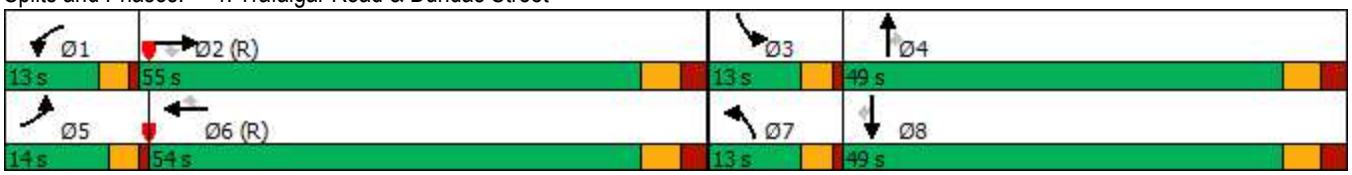
Intersection Capacity Utilization 98.8%	ICU Level of Service F
Analysis Period (min) 15	

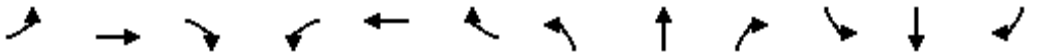
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

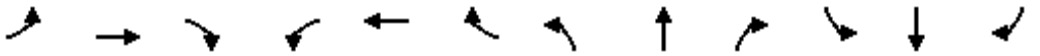




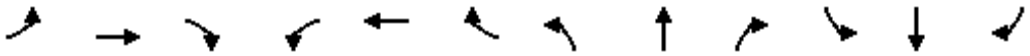
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Future Volume (vph)	357	1647	188	286	1770	306	308	1312	223	281	859	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Flt Permitted	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 (perm)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	368	1698	194	295	1825	315	318	1353	230	290	886	260
RTOR Reduction (vph)	0	0	93	0	0	105	0	0	85	0	0	102
Lane Group Flow (vph)	368	1698	101	295	1825	210	318	1353	145	290	886	158
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1636	570	235	1618	563	235	1448	504	232	1448	503
v/s Ratio Prot	c0.11	0.39		0.09	c0.41		c0.09	c0.31		0.09	0.20	
v/s Ratio Perm			0.07			0.14			0.09			0.10
v/c Ratio	1.41	1.04	0.18	1.26	1.13	0.37	1.35	0.93	0.29	1.25	0.61	0.32
Uniform Delay, d1	60.0	40.7	27.3	60.5	41.2	30.3	60.5	42.3	32.4	60.5	36.7	32.8
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	205.8	32.7	0.7	144.8	66.1	1.9	184.3	11.8	0.7	143.0	1.1	0.8
Delay (s)	265.8	73.4	28.0	205.3	107.3	32.1	244.8	54.1	33.1	203.5	37.9	33.5
Level of Service	F	E	C	F	F	C	F	D	C	F	D	C
Approach Delay (s)		100.9			109.5			83.5			70.5	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	93.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Future Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1537	1431	1750	3500	0	0	4980	0
Flt Permitted	0.398			0.950	0.953		0.093					
Satd. Flow (perm)	639	0	1331	1615	1537	1431	171	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	430	2	19	7	2679	0	0	1739	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	215	219	17	7	2679	0	0	1739	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	48.0		48.0	48.0	48.0	48.0	11.0	72.0			61.0	
Total Split (%)	40.0%		40.0%	40.0%	40.0%	40.0%	9.2%	60.0%			50.8%	
Maximum Green (s)	42.0		42.0	42.0	42.0	42.0	7.0	65.0			54.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	18.9		18.9	18.9	18.9	18.9	68.2	65.2			63.3	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.70	0.67			0.65	
v/c Ratio	0.06		0.02	0.68	0.73	0.05	0.03	1.14			0.54	
Control Delay	31.6		0.2	47.7	51.4	0.3	6.1	88.1			11.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	31.6		0.2	47.7	51.4	0.3	6.1	88.1			11.1	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		17.1			47.7			87.9			11.1	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	39.6	42.6	0.0	0.3	~310.3			53.3	
Queue Length 95th (m)	4.6		0.0	63.7	69.1	0.0	1.9	#398.3			106.7	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	277		618	700	666	661	234	2348			3247	
Starvation Cap Reductn	0		0	0	0	0	0	0			0	
Spillback Cap Reductn	0		0	0	0	0	0	0			0	
Storage Cap Reductn	0		0	0	0	0	0	0			0	
Reduced v/c Ratio	0.03		0.01	0.31	0.33	0.03	0.03	1.14			0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 97.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 56.7		Intersection LOS: E	
Intersection Capacity Utilization 100.3%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

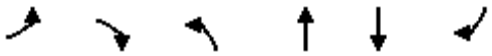
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Future Volume (vph)	7	0	6	413	2	18	7	2572	0	0	1669	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1537	1431	1750	3500			4980	
Flt Permitted	0.40		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	639		1331	1615	1537	1431	172	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	430	2	19	7	2679	0	0	1739	0
RTOR Reduction (vph)	0	0	5	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	215	219	3	7	2679	0	0	1739	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	18.9		18.9	18.9	18.9	18.9	68.4	68.4			63.3	
Effective Green, g (s)	18.9		18.9	18.9	18.9	18.9	68.4	68.4			63.3	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	120		250	304	289	269	134	2386			3142	
v/s Ratio Prot							0.00	c0.77			0.35	
v/s Ratio Perm	0.01		0.00	0.13	0.14	0.00	0.03					
v/c Ratio	0.06		0.00	0.71	0.76	0.01	0.05	1.12			0.55	
Uniform Delay, d1	33.4		33.1	38.1	38.5	33.1	6.6	15.9			10.5	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	7.3	10.8	0.0	0.2	61.5			0.2	
Delay (s)	33.6		33.1	45.4	49.3	33.1	6.8	77.4			10.7	
Level of Service	C		C	D	D	C	A	E			B	
Approach Delay (s)		33.4			46.9			77.2			10.7	
Approach LOS		C			D			E			B	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2579	2139	45
Future Volume (vph)	0	0	0	2579	2139	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	2686	2228	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2686	2228	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

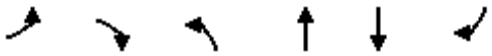
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2579	149	0	2139
Future Volume (vph)	0	0	2579	149	0	2139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	2686	155	0	2228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2686	155	0	2228
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



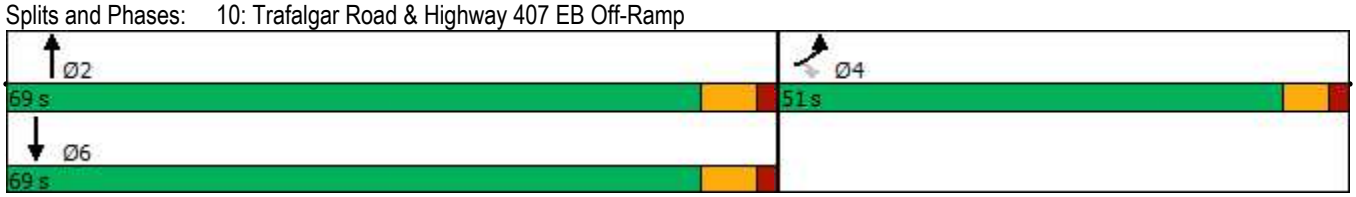
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	191	0	3001	1937	0
Future Volume (vph)	38	191	0	3001	1937	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		4				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	40	203	0	3193	2061	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	203	0	3193	2061	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

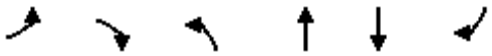
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.9	19.9		62.3	62.3	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
v/c Ratio	0.11	0.75		1.39	0.91	
Control Delay	30.0	52.1		201.0	23.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	30.0	52.1		201.0	23.0	
LOS	C	D		F	C	
Approach Delay	48.4			201.0	23.0	
Approach LOS	D			F	C	
Queue Length 50th (m)	6.0	34.4		~413.5	151.7	
Queue Length 95th (m)	14.0	58.1		#517.6	#271.5	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	830	608		2289	2266	
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	0.05	0.33		1.39	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 95.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay: 127.5		Intersection LOS: F	
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

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

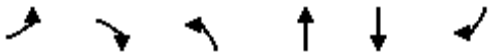
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





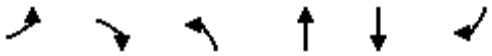
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	191	0	3001	1937	0
Future Volume (vph)	38	191	0	3001	1937	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	203	0	3193	2061	0
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	40	200	0	3193	2061	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.9	19.9		62.2	62.2	
Effective Green, g (s)	19.9	19.9		62.2	62.2	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	366	267		2289	2266	
v/s Ratio Prot	0.02			c0.91	0.59	
v/s Ratio Perm		c0.16				
v/c Ratio	0.11	0.75		1.39	0.91	
Uniform Delay, d1	30.4	35.3		16.4	14.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	10.9		180.5	6.8	
Delay (s)	30.6	46.2		196.9	20.9	
Level of Service	C	D		F	C	
Approach Delay (s)	43.6			196.9	20.9	
Approach LOS	D			F	C	

Intersection Summary			
HCM 2000 Control Delay	124.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	95.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2725	1937	21
Future Volume (vph)	0	0	0	2725	1937	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	2899	2061	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2899	2061	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2725	1937	21
Future Volume (Veh/h)	0	0	0	2725	1937	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	2899	2061	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.47	0.76	0.76			
vC, conflicting volume	3510	1030	2083			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1792	408	1793			
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)	34	450	259			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1450	1450	1030	1030	22
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	22
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.85	0.85	0.61	0.61	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

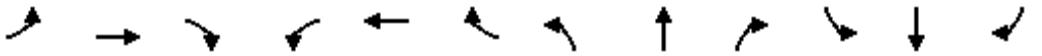
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		



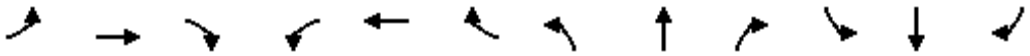
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3001	204	0	2128
Future Volume (vph)	0	0	3001	204	0	2128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3193	217	0	2264
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3193	217	0	2264
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Future Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			169			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2430	333	429	1852	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	852	41	2430	333	429	1852	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



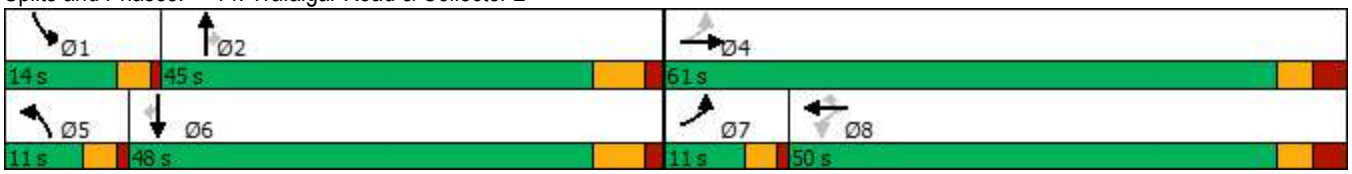
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.25	0.40	1.51	0.54	1.52	1.01	0.30
Control Delay	28.2	8.5				151.7	66.5	262.5	19.5	289.2	62.4	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				151.7	66.5	262.5	19.5	289.2	62.4	14.5
LOS	C	A				F	E	F	B	F	E	B
Approach Delay		20.4			151.7			230.8			97.9	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~222.6	9.5	~291.3	30.5	~72.6	~176.3	14.5
Queue Length 95th (m)	90.6	29.7				#298.4	21.2	#319.5	59.0	#104.2	#205.7	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	634	826				682	102	1613	617	282	1831	637
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	0.64	0.32				1.25	0.40	1.51	0.54	1.52	1.01	0.30

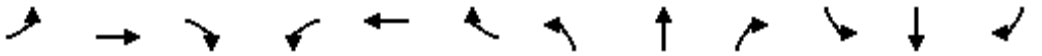
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.52			
Intersection Signal Delay: 151.9		Intersection LOS: F	
Intersection Capacity Utilization 124.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

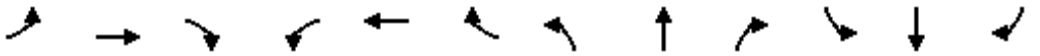




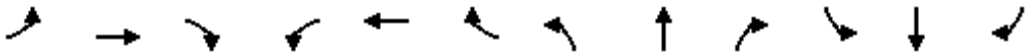
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Future Volume (vph)	363	44	192	0	0	767	37	2187	300	386	1667	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	5029	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2430	333	429	1852	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	114	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	737	41	2430	219	429	1852	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1636	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c0.48		c0.13	0.37	
v/s Ratio Perm	0.26					c0.47			0.14			0.08
v/c Ratio	0.67	0.23				1.31	0.51	1.49	0.43	1.53	1.02	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	32.0	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				151.4	4.9	221.7	2.6	254.3	25.8	0.9
Delay (s)	29.4	20.5				190.0	61.2	262.5	34.6	309.7	64.3	27.7
Level of Service	C	C				F	E	F	C	F	E	C
Approach Delay (s)		25.9			190.0			232.5			104.0	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	160.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	866	0	78	1315	0	26	0	0	0	0	0
Future Volume (vph)	0	866	0	78	1315	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)	30.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				1.00			1.00					
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.291			0.757					
Satd. Flow (perm)	1842	3500	0	535	3500	0	1388	1842	0	1842	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		839.5			181.9			147.1			190.6	
Travel Time (s)		50.4			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	962	0	87	1461	0	29	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	87	1461	0	29	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		70.1		70.1	70.1		13.2					
Actuated g/C Ratio		0.88		0.88	0.88		0.16					
v/c Ratio		0.31		0.19	0.48		0.13					
Control Delay		3.9		5.8	5.1		31.0					
Queue Delay		0.0		0.0	0.0		0.0					
Total Delay		3.9		5.8	5.1		31.0					
LOS		A		A	A		C					
Approach Delay		3.9			5.2			31.0				
Approach LOS		A			A			C				
Queue Length 50th (m)		0.0		0.0	0.0		3.4					
Queue Length 95th (m)		62.6		16.0	115.9		11.3					
Internal Link Dist (m)		815.5			157.9			123.1			166.6	
Turn Bay Length (m)				50.0			30.0					
Base Capacity (vph)		3067		469	3067		526					
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		0.19	0.48		0.06					

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	

Analysis Period (min) 15

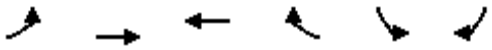
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	866	0	78	1315	0	26	0	0	0	0	0
Future Volume (vph)	0	866	0	78	1315	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)		5.1		5.1	5.1		5.4					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Frpb, ped/bikes		1.00		1.00	1.00		1.00					
Flpb, ped/bikes		1.00		1.00	1.00		1.00					
Frt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3500		1746	3500		1742					
Flt Permitted		1.00		0.29	1.00		0.76					
Satd. Flow (perm)		3500		535	3500		1389					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	962	0	87	1461	0	29	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	962	0	87	1461	0	29	0	0	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		66.6		66.6	66.6		6.3					
Effective Green, g (s)		66.6		66.6	66.6		6.3					
Actuated g/C Ratio		0.80		0.80	0.80		0.08					
Clearance Time (s)		5.1		5.1	5.1		5.4					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		2794		427	2794		104					
v/s Ratio Prot		0.27			c0.42							
v/s Ratio Perm				0.16			c0.02					
v/c Ratio		0.34		0.20	0.52		0.28					
Uniform Delay, d1		2.3		2.0	2.9		36.4					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		0.3		1.1	0.7		1.5					
Delay (s)		2.7		3.1	3.6		37.9					
Level of Service		A		A	A		D					
Approach Delay (s)		2.7			3.6			37.9			0.0	
Approach LOS		A			A			D			A	

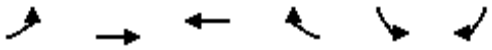
Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	831	1408	84	0	448
Future Volume (vph)	0	831	1408	84	0	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	923	1564	93	0	498
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	923	1564	93	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

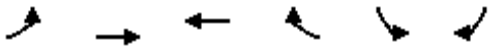
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			



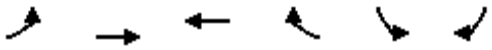
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	831	1408	84	0	448
Future Volume (Veh/h)	0	831	1408	84	0	448
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	923	1564	93	0	498
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.70				0.78	0.70
vC, conflicting volume	1662				2036	792
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1084				828	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	34
cM capacity (veh/h)	444				239	750

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	462	462	782	782	93	498
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	93	498
cSH	1700	1700	1700	1700	1700	750
Volume to Capacity	0.27	0.27	0.46	0.46	0.05	0.66
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	38.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	18.8
Lane LOS						C
Approach Delay (s)	0.0		0.0			18.8
Approach LOS						C

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	811	1492	0	150	0
Future Volume (vph)	0	811	1492	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1743	1842
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	901	1658	0	167	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	901	1658	0	167	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



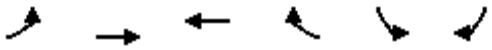
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max	None		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)		53.2	53.2		14.9	
Actuated g/C Ratio		0.69	0.69		0.19	
v/c Ratio		0.38	0.69		0.50	
Control Delay		7.1	11.4		31.4	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.1	11.4		31.4	
LOS		A	B		C	
Approach Delay		7.1	11.4		31.4	
Approach LOS		A	B		C	
Queue Length 50th (m)		20.7	53.8		20.5	
Queue Length 95th (m)		62.6	159.2		35.2	
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)					40.0	
Base Capacity (vph)		2398	2398		727	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.38	0.69		0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 24: William Halton Parkway & Collector 5

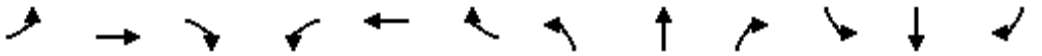




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	811	1492	0	150	0
Future Volume (vph)	0	811	1492	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3500	3500		1750	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3500	3500		1750	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	901	1658	0	167	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	901	1658	0	167	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		53.1	53.1		14.9	
Effective Green, g (s)		53.1	53.1		14.9	
Actuated g/C Ratio		0.69	0.69		0.19	
Clearance Time (s)		5.5	5.5		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2398	2398		336	
v/s Ratio Prot		0.26	c0.47		c0.10	
v/s Ratio Perm						
v/c Ratio		0.38	0.69		0.50	
Uniform Delay, d1		5.2	7.3		28.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.9		1.2	
Delay (s)		5.6	8.2		29.1	
Level of Service		A	A		C	
Approach Delay (s)		5.6	8.2		29.1	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	9.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



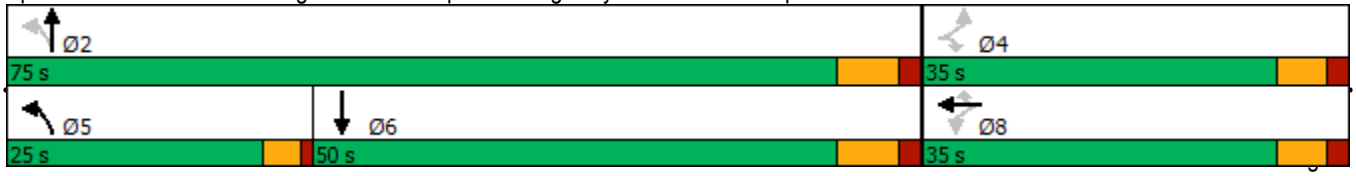
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Future Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.998	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1564	1487	1750	3500	0	0	5029	0
Flt Permitted	0.504			0.950	0.953		0.107					
Satd. Flow (perm)	473	0	1566	1630	1564	1487	197	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	339	0	24	1	2097	0	0	1658	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	169	172	22	1	2097	0	0	1658	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	15.0		15.0	15.0	15.0	15.0	64.8	61.7			60.0	
Actuated g/C Ratio	0.17		0.17	0.17	0.17	0.17	0.72	0.69			0.67	
v/c Ratio	0.01		0.01	0.62	0.53	0.07	0.00	0.87			0.49	
Control Delay	33.0		0.0	47.0	26.3	0.5	5.0	17.1			8.9	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	33.0		0.0	47.0	26.3	0.5	5.0	17.1			8.9	
LOS	C		A	D	C	A	A	B			A	
Approach Delay		8.3			34.4			17.1			8.9	
Approach LOS		A			C			B			A	
Queue Length 50th (m)	0.2		0.0	31.4	17.2	0.0	0.1	128.7			42.3	
Queue Length 95th (m)	1.6		0.0	52.9	38.9	0.0	0.6	210.2			86.4	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	155		568	537	568	542	512	2702			3352	
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	0.01		0.01	0.31	0.30	0.04	0.00	0.78			0.49	

Intersection Summary

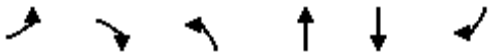
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 15.3 — Intersection LOS: B
Intersection Capacity Utilization 79.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Future Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.50		1.00	0.95	0.95	1.00	0.11	1.00			1.00	
Satd. Flow (perm)	474		1566	1630	1564	1487	198	3500			5029	
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)	1	0	3	339	0	24	1	2097	0	0	1658	0
RTOR Reduction (vph)	0	0	3	0	66	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	0	169	106	4	1	2097	0	0	1658	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	15.0		15.0	15.0	15.0	15.0	65.0	65.0			60.0	
Effective Green, g (s)	15.0		15.0	15.0	15.0	15.0	65.0	65.0			60.0	
Actuated g/C Ratio	0.16		0.16	0.16	0.16	0.16	0.70	0.70			0.65	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	76		252	262	252	239	155	2446			3244	
v/s Ratio Prot							0.00	c0.60			0.33	
v/s Ratio Perm	0.00		0.00	c0.10	0.07	0.00	0.00					
v/c Ratio	0.01		0.00	0.65	0.42	0.01	0.01	0.86			0.51	
Uniform Delay, d1	32.8		32.7	36.5	35.1	32.8	5.2	10.5			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		0.0	5.4	1.1	0.0	0.0	3.2			0.1	
Delay (s)	32.8		32.7	41.9	36.2	32.8	5.3	13.7			8.9	
Level of Service	C		C	D	D	C	A	B			A	
Approach Delay (s)		32.8			38.6			13.7			8.9	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	1930	1841	39
Future Volume (vph)	0	0	0	1930	1841	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2098	2001	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2098	2001	42
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

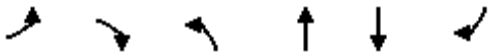
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1930	49	0	1841
Future Volume (vph)	0	0	1930	49	0	1841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2098	53	0	2001
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2098	53	0	2001
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



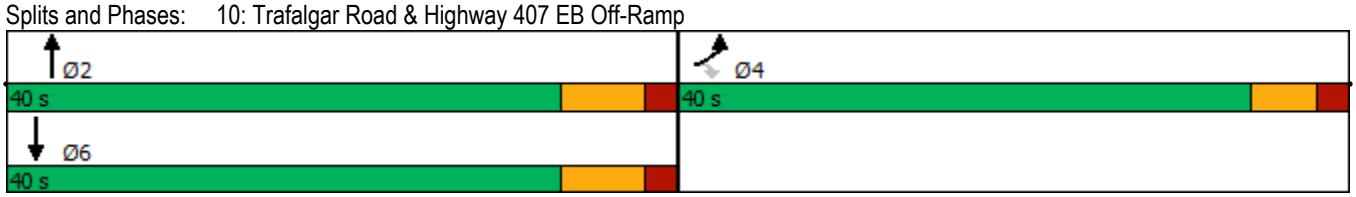
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	155	0	2241	1836	0
Future Volume (vph)	39	155	0	2241	1836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	42	167	0	2410	1974	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	167	0	2410	1974	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

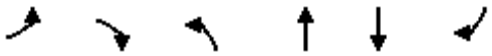
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	40.0	40.0		40.0	40.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	34.0	34.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	12.3	12.3		34.1	34.1	
Actuated g/C Ratio	0.21	0.21		0.57	0.57	
v/c Ratio	0.12	0.59		1.20	0.98	
Control Delay	18.7	29.3		112.9	32.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	18.7	29.3		112.9	32.2	
LOS	B	C		F	C	
Approach Delay	27.2			112.9	32.2	
Approach LOS	C			F	C	
Queue Length 50th (m)	3.6	16.0		~170.4	96.1	
Queue Length 95th (m)	9.9	31.5		#240.1	#181.1	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1003	789		2008	2008	
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	0.04	0.21		1.20	0.98	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 59.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 74.3		Intersection LOS: E	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

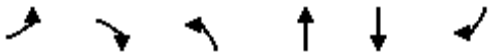
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	155	0	2241	1836	0
Future Volume (vph)	39	155	0	2241	1836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	167	0	2410	1974	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	42	166	0	2410	1974	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	12.3	12.3		34.1	34.1	
Effective Green, g (s)	12.3	12.3		34.1	34.1	
Actuated g/C Ratio	0.21	0.21		0.57	0.57	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	362	285		2009	2009	
v/s Ratio Prot	0.02			c0.69	0.56	
v/s Ratio Perm		c0.12				
v/c Ratio	0.12	0.58		1.20	0.98	
Uniform Delay, d1	19.1	21.2		12.6	12.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.0		94.9	16.4	
Delay (s)	19.3	24.3		107.6	28.7	
Level of Service	B	C		F	C	
Approach Delay (s)	23.3			107.6	28.7	
Approach LOS	C			F	C	

Intersection Summary			
HCM 2000 Control Delay	69.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1966	1836	15
Future Volume (vph)	0	0	0	1966	1836	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2114	1974	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2114	1974	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

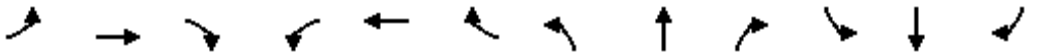
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2233	103	0	1979
Future Volume (vph)	0	0	2233	103	0	1979
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2401	111	0	2128
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2401	111	0	2128
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Future Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.998	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1564	1487	1750	3500	0	0	5029	0
Flt Permitted	0.504			0.950	0.953		0.107					
Satd. Flow (perm)	473	0	1566	1630	1564	1487	197	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	339	0	24	1	2097	0	0	1658	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	169	172	22	1	2097	0	0	1658	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

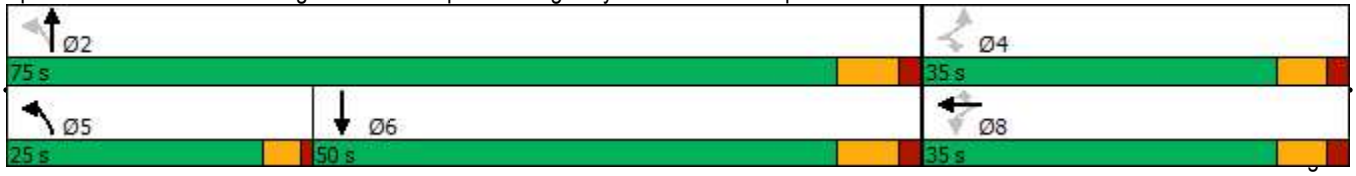
Lanes, Volumes, Timings
7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp 08-21-2024

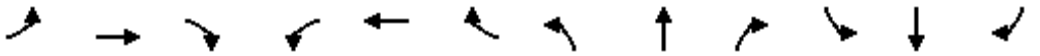
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	15.0		15.0	15.0	15.0	15.0	64.8	61.7			60.0	
Actuated g/C Ratio	0.17		0.17	0.17	0.17	0.17	0.72	0.69			0.67	
v/c Ratio	0.01		0.01	0.62	0.53	0.07	0.00	0.87			0.49	
Control Delay	33.0		0.0	47.0	26.3	0.5	5.0	17.1			8.9	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	33.0		0.0	47.0	26.3	0.5	5.0	17.1			8.9	
LOS	C		A	D	C	A	A	B			A	
Approach Delay		8.3			34.4			17.1			8.9	
Approach LOS		A			C			B			A	
Queue Length 50th (m)	0.2		0.0	31.4	17.2	0.0	0.1	128.7			42.3	
Queue Length 95th (m)	1.6		0.0	52.9	38.9	0.0	0.6	210.2			86.4	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	155		568	537	568	542	512	2702			3352	
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	0.01		0.01	0.31	0.30	0.04	0.00	0.78			0.49	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15

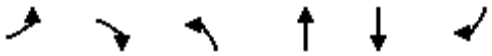
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Future Volume (vph)	1	0	3	312	0	22	1	1929	0	0	1525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.50		1.00	0.95	0.95	1.00	0.11	1.00			1.00	
Satd. Flow (perm)	474		1566	1630	1564	1487	198	3500			5029	
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)	1	0	3	339	0	24	1	2097	0	0	1658	0
RTOR Reduction (vph)	0	0	3	0	66	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	0	169	106	4	1	2097	0	0	1658	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	15.0		15.0	15.0	15.0	15.0	65.0	65.0			60.0	
Effective Green, g (s)	15.0		15.0	15.0	15.0	15.0	65.0	65.0			60.0	
Actuated g/C Ratio	0.16		0.16	0.16	0.16	0.16	0.70	0.70			0.65	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	76		252	262	252	239	155	2446			3244	
v/s Ratio Prot							0.00	c0.60			0.33	
v/s Ratio Perm	0.00		0.00	c0.10	0.07	0.00	0.00					
v/c Ratio	0.01		0.00	0.65	0.42	0.01	0.01	0.86			0.51	
Uniform Delay, d1	32.8		32.7	36.5	35.1	32.8	5.2	10.5			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		0.0	5.4	1.1	0.0	0.0	3.2			0.1	
Delay (s)	32.8		32.7	41.9	36.2	32.8	5.3	13.7			8.9	
Level of Service	C		C	D	D	C	A	B			A	
Approach Delay (s)		32.8			38.6			13.7			8.9	
Approach LOS		C			D			B			A	

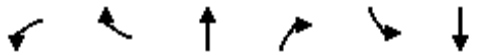
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	1930	1841	39
Future Volume (vph)	0	0	0	1930	1841	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2098	2001	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2098	2001	42
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

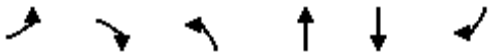
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	1930	49	0	1841
Future Volume (vph)	0	0	1930	49	0	1841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2098	53	0	2001
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2098	53	0	2001
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

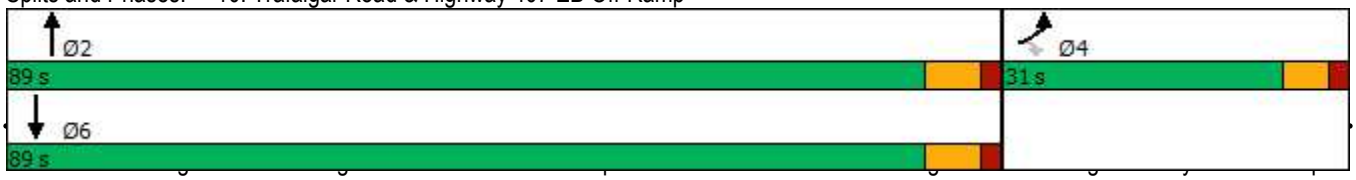


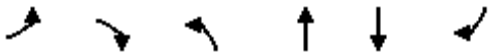
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	155	0	2241	1836	0
Future Volume (vph)	39	155	0	2241	1836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		21				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	42	167	0	2410	1974	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	167	0	2410	1974	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	31.0	31.0		89.0	89.0	
Total Split (%)	25.8%	25.8%		74.2%	74.2%	
Maximum Green (s)	25.0	25.0		82.0	82.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	17.1	17.1		82.2	82.2	
Actuated g/C Ratio	0.15	0.15		0.73	0.73	
v/c Ratio	0.16	0.74		0.94	0.77	
Control Delay	41.6	58.6		23.3	12.9	
Queue Delay	0.0	0.0		7.4	0.0	
Total Delay	41.6	58.6		30.7	12.9	
LOS	D	E		C	B	
Approach Delay	55.2			30.7	12.9	
Approach LOS	E			C	B	
Queue Length 50th (m)	8.1	30.9		208.4	121.8	
Queue Length 95th (m)	17.8	53.7		#353.6	195.3	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	390	323		2561	2561	
Starvation Cap Reductn	0	0		155	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.11	0.52		1.00	0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 112.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

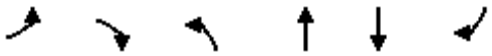
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	155	0	2241	1836	0
Future Volume (vph)	39	155	0	2241	1836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	167	0	2410	1974	0
RTOR Reduction (vph)	0	18	0	0	0	0
Lane Group Flow (vph)	42	149	0	2410	1974	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	17.1	17.1		82.2	82.2	
Effective Green, g (s)	17.1	17.1		82.2	82.2	
Actuated g/C Ratio	0.15	0.15		0.73	0.73	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	266	209		2561	2561	
v/s Ratio Prot	0.02			c0.69	0.56	
v/s Ratio Perm		c0.11				
v/c Ratio	0.16	0.71		0.94	0.77	
Uniform Delay, d1	41.3	45.3		13.0	9.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	11.0		8.5	2.3	
Delay (s)	41.6	56.2		21.5	11.6	
Level of Service	D	E		C	B	
Approach Delay (s)	53.3			21.5	11.6	
Approach LOS	D			C	B	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1966	1836	15
Future Volume (vph)	0	0	0	1966	1836	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2114	1974	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2114	1974	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

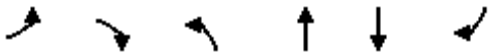
Intersection Sign configuration not allowed in HCM analysis.



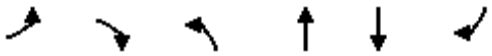
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2233	103	0	1979
Future Volume (vph)	0	0	2233	103	0	1979
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2401	111	0	2128
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2401	111	0	2128
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	407	461	150
Future Volume (vph)	320	148	0	407	461	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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					
Satd. Flow (prot)	1075	1401	1740	4885	4980	1566
Flt Permitted	0.950					
Satd. Flow (perm)	1075	1401	1740	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		161				163
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			228.1	145.5	
Travel Time (s)	16.2			10.3	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	348	161	0	442	501	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	161	0	442	501	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
v/c Ratio	1.65	0.40		0.14	0.15	0.15
Control Delay	340.3	8.6		6.1	6.2	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	340.3	8.6		6.1	6.2	1.3
LOS	F	A		A	A	A
Approach Delay	235.3			6.1	5.0	
Approach LOS	F			A	A	
Queue Length 50th (m)	~89.1	0.0		9.5	10.9	0.0
Queue Length 95th (m)	#140.1	15.6		13.2	14.9	5.9
Internal Link Dist (m)	88.4			204.1	121.5	
Turn Bay Length (m)						40.0
Base Capacity (vph)	211	404		3199	3261	1081
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	1.65	0.40		0.14	0.15	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 91			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.65			
Intersection Signal Delay: 77.9		Intersection LOS: E	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

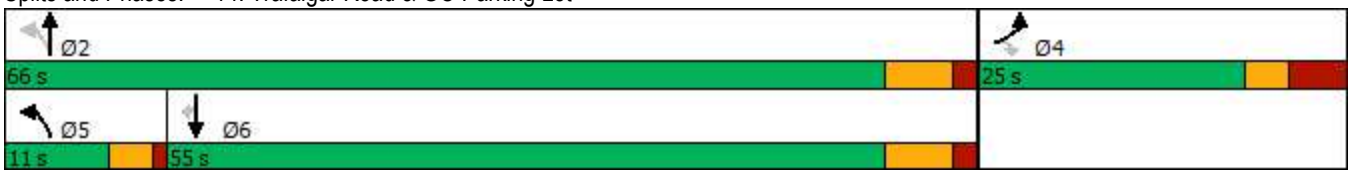
~ Volume exceeds capacity, queue is theoretically infinite.

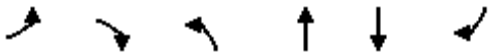
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 14: Trafalgar Road & GO Parking Lot





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	407	461	150
Future Volume (vph)	320	148	0	407	461	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		0.91	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	1.00
Satd. Flow (prot)	1075	1401		4885	4980	1566
Flt Permitted	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1075	1401		4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	161	0	442	501	163
RTOR Reduction (vph)	0	129	0	0	0	56
Lane Group Flow (vph)	348	32	0	442	501	107
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.9	17.9		59.6	59.6	59.6
Effective Green, g (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
Clearance Time (s)	7.1	7.1		6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2		4.0	4.0	4.0
Lane Grp Cap (vph)	211	275		3199	3261	1025
v/s Ratio Prot	c0.32			0.09	c0.10	
v/s Ratio Perm		0.02				0.07
v/c Ratio	1.65	0.12		0.14	0.15	0.10
Uniform Delay, d1	36.5	30.0		6.0	6.0	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	312.4	0.2		0.1	0.1	0.2
Delay (s)	349.0	30.2		6.0	6.1	6.0
Level of Service	F	C		A	A	A
Approach Delay (s)	248.2			6.0	6.1	
Approach LOS	F			A	A	

Intersection Summary			
HCM 2000 Control Delay	82.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2031 Future Background AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	48	2.0	48	2.0	0.733	41.6	LOS E	3.1	22.2	0.91	1.09	1.66	34.4
2	T1	All MCs	199	2.0	199	2.0	0.733	41.2	LOS E	3.1	22.2	0.91	1.09	1.66	34.9
3	R2	All MCs	220	2.0	220	2.0	0.733	38.7	LOS E	3.1	22.2	0.90	1.08	1.65	35.4
Approach			467	2.0	467	2.0	0.733	40.1	LOS E	3.1	22.2	0.90	1.09	1.65	35.1
East: William Halton Parkway															
4	L2	All MCs	74	2.0	74	2.0	0.428	10.5	LOS B	1.9	13.6	0.53	0.53	0.72	47.6
5	T1	All MCs	421	2.0	421	2.0	0.428	10.4	LOS B	1.9	13.6	0.52	0.52	0.71	48.8
6	R2	All MCs	148	2.0	148	2.0	0.428	10.3	LOS B	1.9	13.2	0.51	0.51	0.70	48.9
Approach			643	2.0	643	2.0	0.428	10.4	LOS B	1.9	13.6	0.52	0.52	0.71	48.6
North: Sixth Line															
7	L2	All MCs	892	2.0	892	2.0	1.182	113.0	LOS F	59.3	422.0	1.00	3.37	7.89	20.8
8	T1	All MCs	193	2.0	193	2.0	0.745	21.1	LOS C	7.6	54.1	0.76	0.97	1.64	43.0
9	R2	All MCs	353	2.0	353	2.0	0.745	21.1	LOS C	7.6	54.1	0.76	0.97	1.64	42.7
Approach			1439	2.0	1439	2.0	1.182	78.1	LOS F	59.3	422.0	0.91	2.46	5.51	25.6
West: William Halton Parkway															
10	L2	All MCs	290	2.0	290	2.0	1.011	69.9	LOS F	16.2	115.2	1.00	1.90	4.22	27.2
11	T1	All MCs	660	2.0	660	2.0	1.011	68.8	LOS F	16.6	118.5	1.00	1.92	4.28	27.9
12	R2	All MCs	106	2.0	106	2.0	1.011	68.2	LOS F	16.6	118.5	1.00	1.93	4.31	28.0
Approach			1056	2.0	1056	2.0	1.011	69.0	LOS F	16.6	118.5	1.00	1.92	4.26	27.7
All Vehicles			3604	2.0	3604	2.0	1.182	58.4	LOS F	59.3	422.0	0.86	1.78	3.79	29.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2031 Future Background AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	48	2.0	48	2.0	0.743	42.9	LOS E	3.2	22.7	0.91	1.10	1.70	34.0
2	T1	All MCs	199	2.0	199	2.0	0.743	42.6	LOS E	3.2	22.8	0.91	1.10	1.70	34.5
3	R2	All MCs	220	2.0	220	2.0	0.743	40.0	LOS E	3.2	22.8	0.90	1.10	1.70	35.0
Approach			467	2.0	467	2.0	0.743	41.4	LOS E	3.2	22.8	0.91	1.10	1.70	34.7
East: William Halton Parkway															
4	L2	All MCs	74	2.0	74	2.0	0.430	10.6	LOS B	1.9	13.7	0.53	0.54	0.73	47.6
5	T1	All MCs	421	2.0	421	2.0	0.430	10.5	LOS B	1.9	13.7	0.52	0.53	0.72	48.7
6	R2	All MCs	148	2.0	148	2.0	0.430	10.3	LOS B	1.9	13.3	0.51	0.51	0.71	48.9
Approach			643	2.0	643	2.0	0.430	10.5	LOS B	1.9	13.7	0.52	0.53	0.72	48.6
North: Sixth Line															
7	L2	All MCs	892	2.0	892	2.0	1.182	113.0	LOS F	59.3	422.0	1.00	3.37	7.89	20.8
8	T1	All MCs	193	2.0	193	2.0	0.263	7.9	LOS A	0.8	5.7	0.46	0.41	0.46	51.0
9	R2	All MCs	353	2.0	353	2.0	0.186	4.0	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1439	2.0	1439	2.0	1.182	72.1	LOS F	59.3	422.0	0.68	2.15	4.95	26.9
West: William Halton Parkway															
10	L2	All MCs	290	2.0	290	2.0	0.910	48.0	LOS E	9.1	65.0	0.93	1.42	2.70	32.0
11	T1	All MCs	660	2.0	660	2.0	0.910	46.8	LOS E	9.3	65.9	0.92	1.42	2.71	33.3
12	R2	All MCs	106	2.0	106	2.0	0.056	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1056	2.0	1056	2.0	0.910	42.7	LOS E	9.3	65.9	0.83	1.28	2.43	34.3
All Vehicles			3604	2.0	3604	2.0	1.182	48.5	LOS E	59.3	422.0	0.73	1.47	3.04	32.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2031 Future Background PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	12	2.0	12	2.0	0.363	13.3	LOS B	1.2	8.7	0.66	0.72	0.86	46.6
2	T1	All MCs	210	2.0	210	2.0	0.363	13.1	LOS B	1.2	8.7	0.66	0.71	0.86	47.4
3	R2	All MCs	143	2.0	143	2.0	0.363	12.7	LOS B	1.2	8.5	0.64	0.70	0.84	47.3
Approach			366	2.0	366	2.0	0.363	13.0	LOS B	1.2	8.7	0.65	0.71	0.85	47.3
East: William Halton Parkway															
4	L2	All MCs	238	2.0	238	2.0	0.962	45.1	LOS E	24.5	174.6	1.00	1.80	3.45	33.2
5	T1	All MCs	707	2.0	707	2.0	0.962	45.0	LOS E	24.8	176.3	1.00	1.80	3.46	33.7
6	R2	All MCs	558	2.0	558	2.0	0.962	44.5	LOS E	24.8	176.3	1.00	1.80	3.47	33.6
Approach			1502	2.0	1502	2.0	0.962	44.8	LOS E	24.8	176.3	1.00	1.80	3.46	33.6
North: Sixth Line															
7	L2	All MCs	264	2.0	264	2.0	0.734	26.4	LOS D	4.6	32.6	0.80	1.02	1.56	38.8
8	T1	All MCs	239	2.0	239	2.0	0.734	26.0	LOS D	4.6	32.6	0.79	1.01	1.55	40.0
9	R2	All MCs	302	2.0	302	2.0	0.734	25.4	LOS D	4.6	32.5	0.78	1.00	1.54	40.7
Approach			806	2.0	806	2.0	0.734	25.9	LOS D	4.6	32.6	0.79	1.01	1.55	39.8
West: William Halton Parkway															
10	L2	All MCs	257	2.0	257	2.0	0.685	20.3	LOS C	4.8	34.1	0.73	0.92	1.44	41.5
11	T1	All MCs	552	2.0	552	2.0	0.685	19.9	LOS C	4.8	34.1	0.71	0.91	1.42	43.4
12	R2	All MCs	72	2.0	72	2.0	0.685	19.8	LOS C	4.7	33.8	0.71	0.91	1.42	43.7
Approach			881	2.0	881	2.0	0.685	20.0	LOS C	4.8	34.1	0.72	0.92	1.43	42.8
All Vehicles			3554	2.0	3554	2.0	0.962	31.1	LOS D	24.8	176.3	0.85	1.29	2.26	38.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2031 Future Background PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	12	2.0	12	2.0	0.363	13.3	LOS B	1.2	8.8	0.66	0.72	0.87	46.6
2	T1	All MCs	210	2.0	210	2.0	0.363	13.1	LOS B	1.2	8.8	0.66	0.71	0.86	47.4
3	R2	All MCs	143	2.0	143	2.0	0.363	12.7	LOS B	1.2	8.5	0.64	0.70	0.84	47.3
Approach			366	2.0	366	2.0	0.363	13.0	LOS B	1.2	8.8	0.65	0.71	0.85	47.3
East: William Halton Parkway															
4	L2	All MCs	238	2.0	238	2.0	0.962	45.1	LOS E	24.6	174.8	1.00	1.80	3.45	33.2
5	T1	All MCs	707	2.0	707	2.0	0.962	44.9	LOS E	24.8	176.5	1.00	1.80	3.46	33.7
6	R2	All MCs	558	2.0	558	2.0	0.962	44.5	LOS E	24.8	176.5	1.00	1.81	3.48	33.6
Approach			1502	2.0	1502	2.0	0.962	44.8	LOS E	24.8	176.5	1.00	1.80	3.46	33.6
North: Sixth Line															
7	L2	All MCs	264	2.0	264	2.0	0.470	14.2	LOS B	1.8	13.1	0.65	0.73	0.94	43.2
8	T1	All MCs	239	2.0	239	2.0	0.446	14.2	LOS B	1.7	12.3	0.66	0.73	0.92	47.1
9	R2	All MCs	302	2.0	302	2.0	0.159	3.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			806	2.0	806	2.0	0.470	10.3	LOS B	1.8	13.1	0.41	0.46	0.58	48.6
West: William Halton Parkway															
10	L2	All MCs	257	2.0	257	2.0	0.629	17.8	LOS C	3.9	27.8	0.69	0.85	1.28	42.5
11	T1	All MCs	552	2.0	552	2.0	0.629	17.4	LOS C	3.9	27.8	0.68	0.84	1.26	44.8
12	R2	All MCs	72	2.0	72	2.0	0.038	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			881	2.0	881	2.0	0.629	16.3	LOS C	3.9	27.8	0.62	0.77	1.17	44.8
All Vehicles			3554	2.0	3554	2.0	0.962	26.7	LOS D	24.8	176.5	0.74	1.13	1.97	40.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2031 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	171	23.0	171	23.0	0.650	25.4	LOS D	3.1	24.1	0.75	0.93	1.35	39.9
2	T1	All MCs	392	2.0	392	2.0	0.650	20.9	LOS C	3.5	24.7	0.74	0.91	1.33	42.4
3	R2	All MCs	111	3.0	111	3.0	0.650	26.1	LOS D	3.5	24.7	0.73	0.90	1.32	43.1
Approach			674	7.5	674	7.5	0.650	22.9	LOS C	3.5	24.7	0.74	0.91	1.33	41.9
East: William Halton Parkway															
4	L2	All MCs	119	2.0	119	2.0	0.681	18.8	LOS C	5.2	37.4	0.71	0.88	1.40	43.0
5	T1	All MCs	722	3.0	722	3.0	0.681	18.7	LOS C	5.2	37.4	0.70	0.87	1.39	44.1
6	R2	All MCs	107	4.0	107	4.0	0.681	18.6	LOS C	5.1	37.0	0.69	0.86	1.38	44.2
Approach			948	3.0	948	3.0	0.681	18.7	LOS C	5.2	37.4	0.70	0.87	1.39	43.9
North: Ninth Line															
7	L2	All MCs	224	2.0	224	2.0	0.998	66.8	LOS F	15.5	110.2	1.00	1.87	4.12	27.8
8	T1	All MCs	706	2.0	706	2.0	0.998	65.7	LOS F	15.9	113.2	1.00	1.89	4.17	28.5
9	R2	All MCs	108	2.0	108	2.0	0.998	65.0	LOS F	15.9	113.2	1.00	1.90	4.21	28.6
Approach			1037	2.0	1037	2.0	0.998	65.9	LOS F	15.9	113.2	1.00	1.88	4.16	28.4
West: William Halton Parkway															
10	L2	All MCs	113	4.0	113	4.0	2.101	518.7	LOS F	185.0	1319.8	1.00	7.30	23.61	6.5
11	T1	All MCs	1291	2.0	1291	2.0	2.101	457.8	LOS F	185.0	1319.8	1.00	6.75	21.56	7.3
12	R2	All MCs	397	12.0	397	12.0	1.496	256.0	LOS F	77.7	579.8	1.00	4.93	14.81	11.6
Approach			1801	4.3	1801	4.3	2.101	417.2	LOS F	185.0	1319.8	1.00	6.38	20.20	7.8
All Vehicles			4461	4.0	4461	4.0	2.101	191.2	LOS F	185.0	1319.8	0.90	3.34	9.62	14.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2031 AM - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	171	23.0	171	23.0	0.910	67.7	LOS F	5.6	43.7	0.95	1.38	2.53	28.1
2	T1	All MCs	392	2.0	392	2.0	0.910	57.0	LOS F	6.7	48.1	0.95	1.37	2.54	30.1
3	R2	All MCs	111	3.0	111	3.0	0.910	65.8	LOS F	6.7	48.1	0.95	1.36	2.54	30.8
Approach			674	7.5	674	7.5	0.910	61.1	LOS F	6.7	48.1	0.95	1.37	2.54	29.7
East: William Halton Parkway															
4	L2	All MCs	119	2.0	119	2.0	0.699	20.1	LOS C	5.3	38.3	0.73	0.91	1.44	42.4
5	T1	All MCs	722	3.0	722	3.0	0.699	20.0	LOS C	5.3	38.3	0.72	0.91	1.44	43.4
6	R2	All MCs	107	4.0	107	4.0	0.699	19.8	LOS C	5.3	38.0	0.71	0.90	1.43	43.5
Approach			948	3.0	948	3.0	0.699	20.0	LOS C	5.3	38.3	0.72	0.91	1.44	43.3
North: Ninth Line															
7	L2	All MCs	224	2.0	224	2.0	0.443	14.8	LOS B	1.7	12.0	0.68	0.76	0.97	42.9
8	T1	All MCs	706	2.0	706	2.0	1.326	180.1	LOS F	61.3	436.2	1.00	4.12	12.14	15.4
9	R2	All MCs	108	2.0	108	2.0	0.057	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			1037	2.0	1037	2.0	1.326	126.0	LOS F	61.3	436.2	0.83	2.97	8.47	19.6
West: William Halton Parkway															
10	L2	All MCs	113	4.0	113	4.0	1.406	210.9	LOS F	82.8	590.6	1.00	4.77	13.79	13.7
11	T1	All MCs	1291	2.0	1291	2.0	1.406	150.1	LOS F	82.8	590.6	1.00	3.51	9.53	17.9
12	R2	All MCs	397	12.0	397	12.0	0.224	6.0	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1801	4.3	1801	4.3	1.406	122.2	LOS F	82.8	590.6	0.78	2.82	7.70	20.5
All Vehicles			4461	4.0	4461	4.0	1.406	92.1	LOS F	82.8	590.6	0.80	2.23	5.77	24.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2031 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	466	23.0	466	23.0	1.854	420.5	LOS F	97.6	782.6	1.00	6.10	19.25	7.9
2	T1	All MCs	756	2.0	756	2.0	1.854	412.7	LOS F	124.8	890.7	1.00	6.14	20.14	7.9
3	R2	All MCs	270	3.0	270	3.0	1.854	421.0	LOS F	124.8	890.7	1.00	6.16	20.43	7.9
Approach			1492	8.7	1492	8.7	1.854	416.6	LOS F	124.8	890.7	1.00	6.13	19.91	7.9
East: William Halton Parkway															
4	L2	All MCs	165	2.0	165	2.0	1.363	190.3	LOS F	81.8	586.6	1.00	4.49	12.11	14.7
5	T1	All MCs	1455	3.0	1455	3.0	1.363	190.1	LOS F	84.3	606.4	1.00	4.56	12.31	14.8
6	R2	All MCs	154	4.0	154	4.0	1.363	189.9	LOS F	84.3	606.4	1.00	4.62	12.50	14.7
Approach			1774	3.0	1774	3.0	1.363	190.1	LOS F	84.3	606.4	1.00	4.56	12.31	14.8
North: Ninth Line															
7	L2	All MCs	131	2.0	131	2.0	0.868	52.9	LOS F	5.2	37.2	0.94	1.25	2.16	31.0
8	T1	All MCs	390	2.0	390	2.0	0.868	51.4	LOS F	5.3	37.6	0.94	1.25	2.17	31.8
9	R2	All MCs	131	2.0	131	2.0	0.868	50.1	LOS F	5.3	37.6	0.93	1.25	2.17	32.2
Approach			653	2.0	653	2.0	0.868	51.4	LOS F	5.3	37.6	0.94	1.25	2.17	31.7
West: William Halton Parkway															
10	L2	All MCs	48	4.0	48	4.0	1.375	193.7	LOS F	93.2	664.3	1.00	4.72	12.43	14.5
11	T1	All MCs	1326	2.0	1326	2.0	1.375	153.3	LOS F	93.2	664.3	1.00	3.85	9.79	17.4
12	R2	All MCs	244	12.0	244	12.0	0.979	54.3	LOS F	20.3	149.4	1.00	1.88	3.78	31.2
Approach			1618	3.6	1618	3.6	1.375	139.6	LOS F	93.2	664.3	1.00	3.58	8.97	18.5
All Vehicles			5537	4.6	5537	4.6	1.854	220.0	LOS F	124.8	890.7	0.99	4.31	12.18	13.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
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Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2031 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	466	23.0	466	23.0	2.082	525.2	LOS F	107.6	864.3	1.00	6.33	20.70	6.5
2	T1	All MCs	756	2.0	756	2.0	2.082	516.1	LOS F	141.1	1007.6	1.00	6.41	21.79	6.5
3	R2	All MCs	270	3.0	270	3.0	2.082	526.9	LOS F	141.1	1007.6	1.00	6.43	22.13	6.5
Approach			1492	8.7	1492	8.7	2.082	520.8	LOS F	141.1	1007.6	1.00	6.39	21.51	6.5
East: Burnhamthorpe Road															
4	L2	All MCs	165	2.0	165	2.0	1.300	162.8	LOS F	73.9	529.6	1.00	4.12	10.60	16.5
5	T1	All MCs	1455	3.0	1455	3.0	1.300	162.7	LOS F	75.9	545.5	1.00	4.17	10.76	16.5
6	R2	All MCs	154	4.0	154	4.0	1.300	162.5	LOS F	75.9	545.5	1.00	4.22	10.90	16.5
Approach			1774	3.0	1774	3.0	1.300	162.7	LOS F	75.9	545.5	1.00	4.17	10.75	16.5
North: Ninth Line															
7	L2	All MCs	131	2.0	131	2.0	0.709	34.8	LOS D	3.0	21.6	0.88	1.03	1.49	36.0
8	T1	All MCs	390	2.0	390	2.0	0.709	33.3	LOS D	3.0	21.6	0.87	1.02	1.48	37.7
9	R2	All MCs	131	2.0	131	2.0	0.069	3.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			653	2.0	653	2.0	0.709	27.6	LOS D	3.0	21.6	0.70	0.82	1.18	39.9
West: William Halton Parkway															
10	L2	All MCs	48	4.0	48	4.0	1.161	107.7	LOS F	49.5	353.1	1.00	3.19	7.76	21.6
11	T1	All MCs	1326	2.0	1326	2.0	1.161	79.0	LOS F	49.5	353.1	0.93	2.35	5.36	26.9
12	R2	All MCs	244	12.0	244	12.0	0.138	3.9	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1618	3.6	1618	3.6	1.161	68.5	LOS F	49.5	353.1	0.80	2.02	4.63	28.9
All Vehicles			5537	4.6	5537	4.6	2.082	215.8	LOS F	141.1	1007.6	0.90	3.74	10.73	13.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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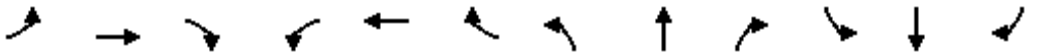
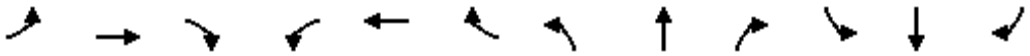
Appendix I

2036 Future Background Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Future Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159			137			120			120
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	421	1132	267	178	416	137	321	1804	26	321	1378	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	1132	267	178	416	137	321	1804	26	321	1378	151
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

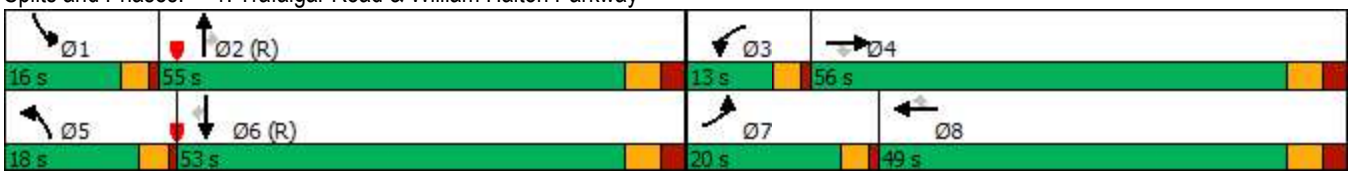


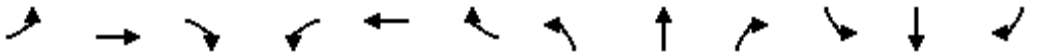
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.4	49.4	9.0	42.4	42.4	14.2	48.6	48.6	12.2	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.09	0.92	0.41	0.82	0.39	0.26	0.93	1.18	0.04	1.10	0.95	0.25
Control Delay	127.0	55.7	15.2	92.1	39.9	6.7	95.9	127.0	0.1	137.8	59.3	10.0
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	127.0	55.7	15.2	92.1	39.9	6.7	95.9	127.0	0.1	137.8	59.3	10.0
LOS	F	E	B	F	D	A	F	F	A	F	E	B
Approach Delay		66.3			46.4			120.9			68.9	
Approach LOS		E			D			F			E	
Queue Length 50th (m)	~67.2	156.8	20.8	25.5	47.9	0.0	46.2	~248.1	0.0	~52.3	154.7	5.8
Queue Length 95th (m)	#100.4	#197.1	44.7	#44.6	63.0	15.3	#75.0	#281.1	0.0	#82.5	#189.1	21.8
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	388	1240	657	218	1065	537	344	1534	596	293	1457	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.91	0.41	0.82	0.39	0.26	0.93	1.18	0.04	1.10	0.95	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 82.7		Intersection LOS: F	
Intersection Capacity Utilization 92.4%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

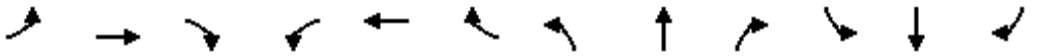
Splits and Phases: 1: Trafalgar Road & William Halton Parkway



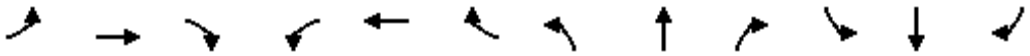


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Future Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	421	1132	267	178	416	137	321	1804	26	321	1378	151
RTOR Reduction (vph)	0	0	103	0	0	96	0	0	17	0	0	80
Lane Group Flow (vph)	421	1132	164	178	416	41	321	1804	9	321	1378	71
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.4	49.4	9.0	42.4	42.4	14.2	48.6	48.6	12.2	46.6	46.6
Effective Green, g (s)	16.0	49.4	49.4	9.0	42.4	42.4	14.2	48.6	48.6	12.2	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1235	552	218	1060	439	344	1534	518	292	1457	521
v/s Ratio Prot	c0.12	c0.32		0.05	0.12		0.09	c0.41		c0.10	0.31	
v/s Ratio Perm			0.10			0.03			0.01			0.05
v/c Ratio	1.09	0.92	0.30	0.82	0.39	0.09	0.93	1.18	0.02	1.10	0.95	0.14
Uniform Delay, d1	62.0	43.3	32.8	64.7	38.6	35.0	62.4	45.7	30.0	63.9	45.5	32.6
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	70.4	11.2	0.6	20.5	0.5	0.2	31.6	86.4	0.1	81.9	13.8	0.5
Delay (s)	132.4	54.6	33.4	85.2	39.1	35.2	94.0	132.1	30.1	145.8	59.2	33.2
Level of Service	F	D	C	F	D	D	F	F	C	F	E	C
Approach Delay (s)		69.5			49.6			125.2			72.1	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	86.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Future Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor		1.00		1.00								
Frt		0.955			0.936			0.988			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3329	0	1750	3204	0	1700	4362	0	1750	4348	0
Flt Permitted	0.500			0.368			0.113			0.055		
Satd. Flow (perm)	921	3329	0	678	3204	0	202	4362	0	101	4348	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			131			12			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		387.6			810.8			2139.5			320.3	
Travel Time (s)		27.9			58.4			128.4			19.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	160	292	127	97	174	131	134	1841	154	123	1521	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	419	0	97	305	0	134	1995	0	123	1585	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		56.0	56.0		22.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		46.7%	46.7%		18.3%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		49.7	49.7		18.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0		69.0	69.0		84.6	82.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.58	0.58		0.70	0.69	
v/c Ratio	0.84	0.58		0.69	0.40		1.16	0.79		0.62	0.53	
Control Delay	77.3	41.3		66.5	22.9		161.8	24.8		33.4	11.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	77.3	41.3		66.5	22.9		161.8	24.8		33.4	11.1	
LOS	E	D		E	C		F	C		C	B	
Approach Delay		51.2			33.4			33.4			12.7	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	36.5	43.2		21.3	18.2		~36.6	140.1		12.0	68.8	
Queue Length 95th (m)	55.9	52.5		36.7	27.5		#62.5	#240.4		33.5	108.4	
Internal Link Dist (m)		363.6			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	273	1012		201	1042		116	2514		318	2985	
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	0.59	0.41		0.48	0.29		1.16	0.79		0.39	0.53	

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: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.16	

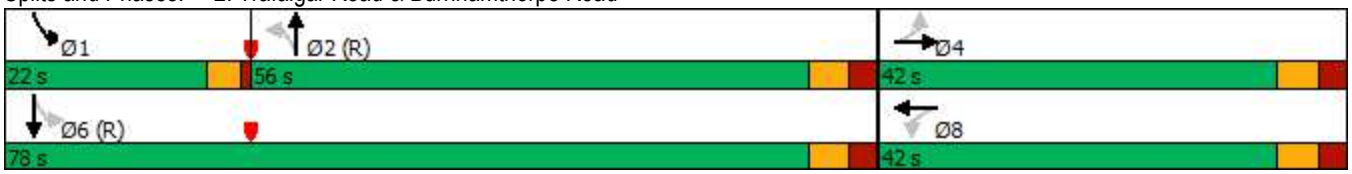
Intersection Signal Delay: 28.2	Intersection LOS: C
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

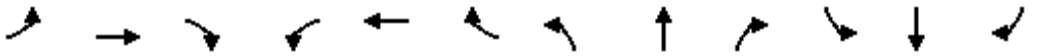
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Future Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3328		1749	3203		1700	4364		1750	4347	
Flt Permitted	0.50	1.00		0.37	1.00		0.11	1.00		0.05	1.00	
Satd. Flow (perm)	922	3328		677	3203		203	4364		101	4347	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	160	292	127	97	174	131	134	1841	154	123	1521	64
RTOR Reduction (vph)	0	28	0	0	104	0	0	5	0	0	3	0
Lane Group Flow (vph)	160	391	0	97	201	0	134	1990	0	123	1582	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		69.0	69.0		82.3	82.3	
Effective Green, g (s)	25.0	25.0		25.0	25.0		69.0	69.0		82.3	82.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.58	0.58		0.69	0.69	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	192	693		141	667		116	2509		197	2981	
v/s Ratio Prot		0.12			0.06			0.46		c0.05	0.36	
v/s Ratio Perm	c0.17			0.14			c0.66			0.38		
v/c Ratio	0.83	0.56		0.69	0.30		1.16	0.79		0.62	0.53	
Uniform Delay, d1	45.5	42.6		43.9	40.1		25.5	19.9		25.2	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.5	1.1		13.1	0.3		131.3	2.7		6.0	0.7	
Delay (s)	71.0	43.7		57.0	40.4		156.8	22.6		31.2	10.0	
Level of Service	E	D		E	D		F	C		C	A	
Approach Delay (s)		51.2			44.4			31.0			11.5	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1337	1	301	576	0	459
Future Volume (vph)	1337	1	301	576	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.067			
Satd. Flow (perm)	3500	0	121	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						330
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1453	1	327	626	0	499
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1454	0	327	626	0	499
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



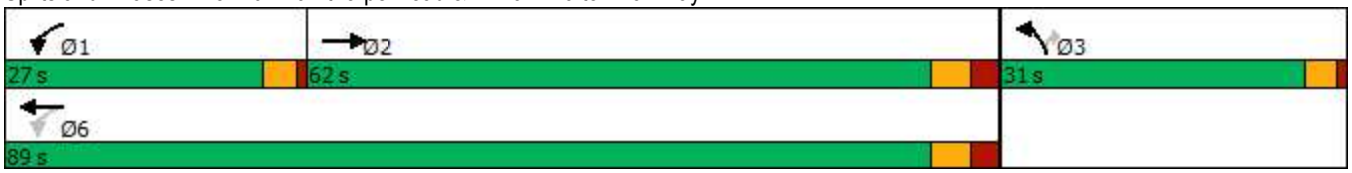
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	62.0		27.0	89.0	31.0	31.0
Total Split (%)	51.7%		22.5%	74.2%	25.8%	25.8%
Maximum Green (s)	55.6		23.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	55.6		82.8	80.4		27.0
Actuated g/C Ratio	0.47		0.70	0.68		0.23
v/c Ratio	0.88		0.89	0.26		0.81
Control Delay	36.1		59.6	7.5		26.3
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	36.1		59.6	7.5		26.3
LOS	D		E	A		C
Approach Delay	36.1			25.4	26.3	
Approach LOS	D			C	C	
Queue Length 50th (m)	161.4		58.1	26.6		39.5
Queue Length 95th (m)	195.3		#104.8	34.3		#95.1
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1652		396	2431		613
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	0.88		0.83	0.26		0.81

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 117.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 30.9		Intersection LOS: C	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

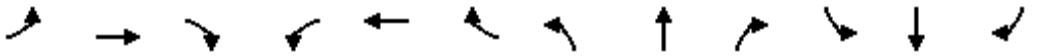
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



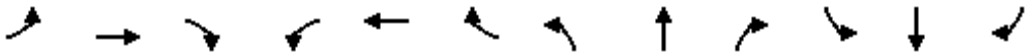


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1337	1	301	576	0	459
Future Volume (vph)	1337	1	301	576	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.07	1.00		1.00
Satd. Flow (perm)	3500		121	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1453	1	327	626	0	499
RTOR Reduction (vph)	0	0	0	0	0	254
Lane Group Flow (vph)	1454	0	327	626	0	245
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	55.6		80.4	80.4		27.0
Effective Green, g (s)	55.6		80.4	80.4		27.0
Actuated g/C Ratio	0.47		0.68	0.68		0.23
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1651		364	2365		358
v/s Ratio Prot	0.42		c0.16	0.18		
v/s Ratio Perm			c0.45			c0.16
v/c Ratio	0.88		0.90	0.26		0.68
Uniform Delay, d1	28.1		37.0	7.2		41.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	7.1		23.7	0.1		10.1
Delay (s)	35.2		60.7	7.3		51.6
Level of Service	D		E	A		D
Approach Delay (s)	35.2			25.6	51.6	
Approach LOS	D			C	D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	117.8	Sum of lost time (s)	14.4
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	501	2183	245	266	1249	299	197	1073	125	394	1486	284
Future Volume (vph)	501	2183	245	266	1249	299	197	1073	125	394	1486	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	3298	4214	1536	3330	4378	1566	3330	4378	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	4421	1529	3298	4214	1512	3327	4378	1543	3328	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			156			96			143
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			2139.5	
Travel Time (s)		28.8			31.0			36.1			128.4	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	522	2274	255	277	1301	311	205	1118	130	410	1548	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	522	2274	255	277	1301	311	205	1118	130	410	1548	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
v/c Ratio	2.00	1.32	0.37	1.37	0.83	0.47	1.00	0.78	0.23	2.01	1.08	0.50
Control Delay	493.4	182.9	13.0	239.4	42.3	17.3	124.5	44.0	11.1	501.4	89.9	20.7
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	493.4	182.9	13.0	239.4	42.3	17.3	124.5	44.0	11.1	501.4	89.9	20.7
LOS	F	F	B	F	D	B	F	D	B	F	F	C
Approach Delay		221.8			67.1			52.4			155.7	
Approach LOS		F			E			D			F	
Queue Length 50th (m)	~107.3	~313.5	17.7	~48.1	124.7	28.7	~27.5	107.5	6.0	~84.3	~184.2	30.4
Queue Length 95th (m)	#141.9	#345.4	38.9	#76.1	146.9	55.0	#53.0	127.5	20.4	#116.4	#217.9	57.7
Internal Link Dist (m)		536.5			579.0			577.7			2115.5	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Base Capacity (vph)	261	1720	686	202	1575	662	204	1434	570	204	1434	595
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	2.00	1.32	0.37	1.37	0.83	0.47	1.00	0.78	0.23	2.01	1.08	0.50

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.01	
Intersection Signal Delay: 142.3	Intersection LOS: F

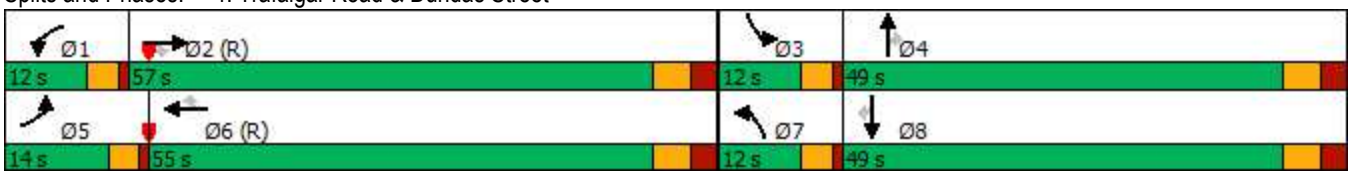
Intersection Capacity Utilization 104.0%	ICU Level of Service G
Analysis Period (min) 15	

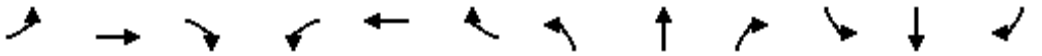
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

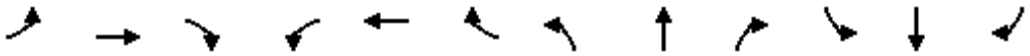




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	501	2183	245	266	1249	299	197	1073	125	394	1486	284
Future Volume (vph)	501	2183	245	266	1249	299	197	1073	125	394	1486	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Flt Permitted	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 (perm)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	522	2274	255	277	1301	311	205	1118	130	410	1548	296
RTOR Reduction (vph)	0	0	91	0	0	98	0	0	65	0	0	96
Lane Group Flow (vph)	522	2274	164	277	1301	213	205	1118	65	410	1548	200
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Effective Green, g (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	261	1720	595	202	1575	565	204	1434	505	204	1434	499
v/s Ratio Prot	c0.15	c0.51		0.08	0.31		0.06	0.26		c0.12	c0.35	
v/s Ratio Perm			0.11			0.14			0.04			0.13
v/c Ratio	2.00	1.32	0.28	1.37	0.83	0.38	1.00	0.78	0.13	2.01	1.08	0.40
Uniform Delay, d1	60.0	39.7	27.2	61.0	36.9	29.7	61.0	39.5	30.7	61.0	43.7	33.8
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	463.4	149.1	1.1	195.2	5.1	1.9	64.3	2.8	0.1	471.3	48.4	0.6
Delay (s)	523.4	188.8	28.3	256.2	42.0	31.6	125.3	42.3	30.8	532.3	92.1	34.4
Level of Service	F	F	C	F	D	C	F	D	C	F	F	C
Approach Delay (s)		232.6			71.7			53.0			164.6	
Approach LOS		F			E			D			F	

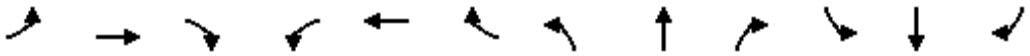
Intersection Summary			
HCM 2000 Control Delay	149.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



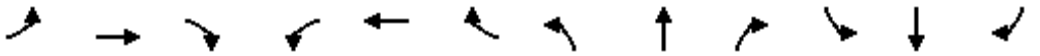
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	605	95	68	407	139	43	207	201	836	201	331
Future Volume (vph)	270	605	95	68	407	139	43	207	201	836	201	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.985			0.967			0.934			0.962	
Flt Protected		0.986			0.995			0.995			0.971	
Satd. Flow (prot)	0	3399	0	0	3367	0	0	3253	0	0	3269	0
Flt Permitted		0.986			0.995			0.995			0.971	
Satd. Flow (perm)	0	3399	0	0	3367	0	0	3253	0	0	3269	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			844.9			671.5			229.3	
Travel Time (s)		28.9			50.7			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	300	672	106	71	452	145	48	216	209	871	209	368
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1078	0	0	668	0	0	473	0	0	1448	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 118.3%		ICU Level of Service H	
Analysis Period (min) 15			

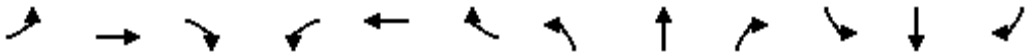


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	270	605	95	68	407	139	43	207	201	836	201	331
Future Volume (veh/h)	270	605	95	68	407	139	43	207	201	836	201	331
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	300	672	106	71	452	145	48	216	209	871	209	368
Approach Volume (veh/h)		1078			668			473			1448	
Crossing Volume (veh/h)		1151			564			1843#			571	
High Capacity (veh/h)		550			887			307			882	
High v/c (veh/h)		1.96			0.75			1.54			1.64	
Low Capacity (veh/h)		421			713			220			709	
Low v/c (veh/h)		2.56			0.94			2.15			2.04	

Intersection Summary					
Maximum v/c High	1.96				
Maximum v/c Low	2.56				
Intersection Capacity Utilization	118.3%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	139	49	126	196	20	184	568	134	75	471	11
Future Volume (vph)	58	139	49	126	196	20	184	568	134	75	471	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	40.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.961			0.986			0.971			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3363	0	1684	3364	0	1750	3373	0	1700	3456	0
Flt Permitted	0.601			0.620			0.450			0.338		
Satd. Flow (perm)	1107	3363	0	1099	3364	0	829	3373	0	605	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			12			49			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	156	55	142	220	22	207	638	151	84	529	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	211	0	142	242	0	207	789	0	84	541	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

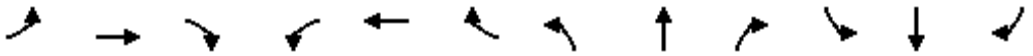


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	15.3	15.3		15.3	15.3		47.7	47.7		47.7	47.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
v/c Ratio	0.29	0.29		0.64	0.35		0.40	0.37		0.22	0.25	
Control Delay	28.7	19.3		41.4	25.7		11.0	7.6		9.4	7.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.7	19.3		41.4	25.7		11.0	7.6		9.4	7.2	
LOS	C	B		D	C		B	A		A	A	
Approach Delay		21.5			31.5			8.3			7.5	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	7.9	9.8		18.8	14.9		12.7	22.8		4.5	15.3	
Queue Length 95th (m)	17.7	18.0		35.6	23.8		33.3	42.6		14.1	29.2	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			40.0			30.0			30.0		
Base Capacity (vph)	431	1342		427	1317		520	2137		379	2172	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.16		0.33	0.18		0.40	0.37		0.22	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

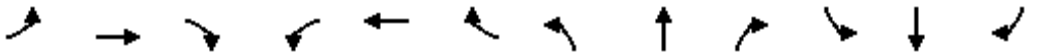
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	139	49	126	196	20	184	568	134	75	471	11
Future Volume (vph)	58	139	49	126	196	20	184	568	134	75	471	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3363		1684	3365		1750	3374		1700	3455	
Flt Permitted	0.60	1.00		0.62	1.00		0.45	1.00		0.34	1.00	
Satd. Flow (perm)	1108	3363		1098	3365		829	3374		605	3455	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	156	55	142	220	22	207	638	151	84	529	12
RTOR Reduction (vph)	0	44	0	0	10	0	0	18	0	0	1	0
Lane Group Flow (vph)	65	167	0	142	232	0	207	771	0	84	540	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		47.8	47.8		47.8	47.8	
Effective Green, g (s)	15.3	15.3		15.3	15.3		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	223	677		221	677		521	2122		380	2173	
v/s Ratio Prot		0.05			0.07			0.23			0.16	
v/s Ratio Perm	0.06			c0.13			c0.25			0.14		
v/c Ratio	0.29	0.25		0.64	0.34		0.40	0.36		0.22	0.25	
Uniform Delay, d1	25.8	25.5		27.8	26.0		7.0	6.8		6.1	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		6.3	0.3		2.3	0.5		1.3	0.3	
Delay (s)	26.5	25.7		34.1	26.3		9.2	7.3		7.4	6.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.9			29.2			7.7			6.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



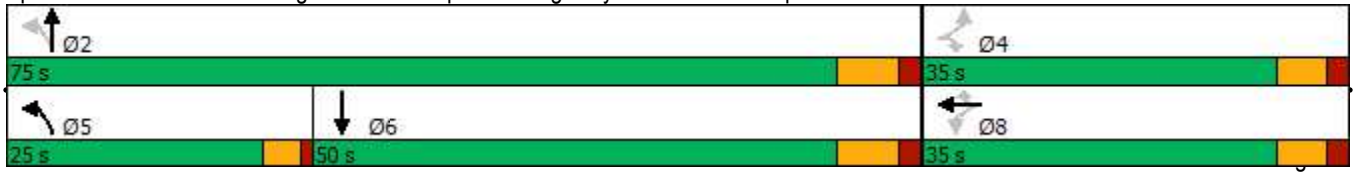
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Future Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.545			0.950	0.950		0.064					
Satd. Flow (perm)	613	0	1566	1449	1388	1487	80	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	329	0	3	2	1949	0	0	2020	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	164	165	3	2	1949	0	0	2020	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	16.5		16.5	16.5	16.5	16.5	62.8	59.7			58.0	
Actuated g/C Ratio	0.18		0.18	0.18	0.18	0.18	0.70	0.67			0.65	
v/c Ratio	0.03		0.01	0.62	0.65	0.01	0.02	0.89			0.66	
Control Delay	32.7		0.0	46.0	48.1	0.0	5.5	19.1			12.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	32.7		0.0	46.0	48.1	0.0	5.5	19.1			12.1	
LOS	C		A	D	D	A	A	B			B	
Approach Delay		19.6			46.6			19.1			12.1	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	0.5		0.0	30.0	31.7	0.0	0.1	125.2			64.4	
Queue Length 95th (m)	2.9		0.0	51.5	54.7	0.0	0.9	205.6			129.3	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	204		575	483	463	548	324	2560			3076	
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	0.01		0.00	0.34	0.36	0.01	0.01	0.76			0.66	

Intersection Summary

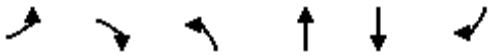
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 17.9 — Intersection LOS: B
Intersection Capacity Utilization 73.6% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Future Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.54		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	613		1566	1449	1388	1487	81	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	329	0	3	2	1949	0	0	2020	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	164	165	1	2	1949	0	0	2020	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	16.5		16.5	16.5	16.5	16.5	63.1	63.1			58.1	
Effective Green, g (s)	16.5		16.5	16.5	16.5	16.5	63.1	63.1			58.1	
Actuated g/C Ratio	0.18		0.18	0.18	0.18	0.18	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	109		279	258	247	264	67	2252			2979	
v/s Ratio Prot							0.00	c0.59			0.43	
v/s Ratio Perm	0.00		0.00	0.11	0.12	0.00	0.02					
v/c Ratio	0.03		0.00	0.64	0.67	0.00	0.03	0.87			0.68	
Uniform Delay, d1	31.4		31.3	35.3	35.5	31.3	7.1	11.5			11.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	5.1	6.7	0.0	0.2	3.8			0.6	
Delay (s)	31.5		31.3	40.3	42.2	31.3	7.3	15.2			11.8	
Level of Service	C		C	D	D	C	A	B			B	
Approach Delay (s)		31.4			41.2			15.2			11.8	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1737	2093	32
Future Volume (vph)	0	0	0	1737	2093	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	1952	2352	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1952	2352	36
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

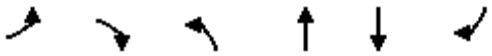
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1737	40	0	2093
Future Volume (vph)	0	0	1737	40	0	2093
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	1952	45	0	2352
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1952	45	0	2352
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



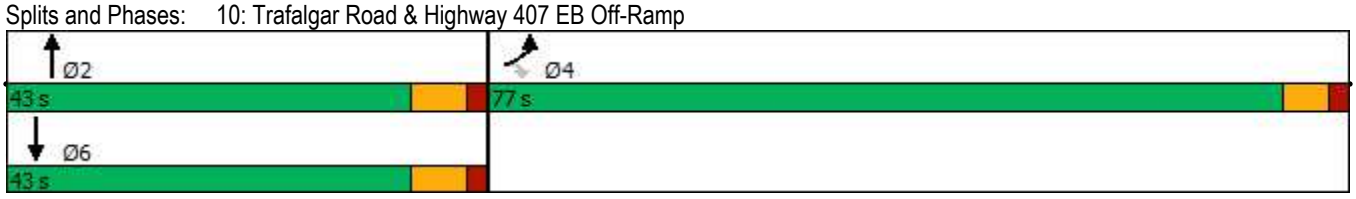
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	275	0	1748	1936	0
Future Volume (vph)	55	275	0	1748	1936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	60	302	0	1921	2127	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	302	0	1921	2127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

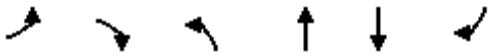
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	77.0	77.0		43.0	43.0	
Total Split (%)	64.2%	64.2%		35.8%	35.8%	
Maximum Green (s)	71.0	71.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.7	19.7		36.2	36.2	
Actuated g/C Ratio	0.29	0.29		0.52	0.52	
v/c Ratio	0.12	0.76		1.12	1.23	
Control Delay	18.0	35.0		81.6	127.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	18.0	35.0		81.6	127.6	
LOS	B	C		F	F	
Approach Delay	32.2			81.6	127.6	
Approach LOS	C			F	F	
Queue Length 50th (m)	5.7	35.0		~152.5	~181.0	
Queue Length 95th (m)	13.0	59.8		#227.6	#260.0	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1687	1377		1718	1734	
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	0.04	0.22		1.12	1.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 69			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 99.7		Intersection LOS: F	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

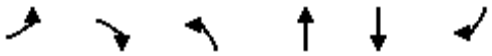
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	275	0	1748	1936	0
Future Volume (vph)	55	275	0	1748	1936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	302	0	1921	2127	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	60	302	0	1921	2127	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.7	19.7		36.2	36.2	
Effective Green, g (s)	19.7	19.7		36.2	36.2	
Actuated g/C Ratio	0.29	0.29		0.53	0.53	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	490	400		1720	1736	
v/s Ratio Prot	0.03			0.59	c0.64	
v/s Ratio Perm		c0.22				
v/c Ratio	0.12	0.76		1.12	1.23	
Uniform Delay, d1	18.2	22.4		16.4	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.9		61.2	106.7	
Delay (s)	18.3	30.3		77.5	123.1	
Level of Service	B	C		E	F	
Approach Delay (s)	28.3			77.5	123.1	
Approach LOS	C			E	F	

Intersection Summary			
HCM 2000 Control Delay	95.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	68.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1640	1791	24
Future Volume (vph)	0	0	0	1640	1791	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	1802	1968	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1802	1968	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

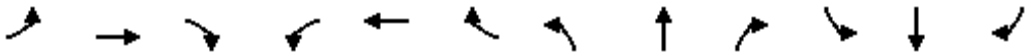
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1623	210	0	2055
Future Volume (vph)	0	0	1623	210	0	2055
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	1784	231	0	2258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1784	231	0	2258
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

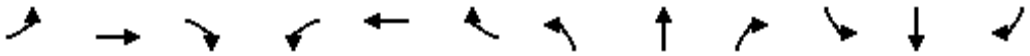
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



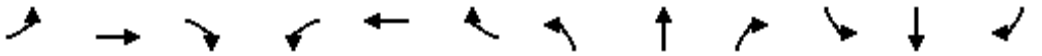
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	1110	328	97	635	87	142	320	90	182	575	90
Future Volume (vph)	94	1110	328	97	635	87	142	320	90	182	575	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.968			0.984			0.976			0.984	
Flt Protected		0.997			0.994			0.987			0.989	
Satd. Flow (prot)	0	3304	0	0	3390	0	0	3197	0	0	3406	0
Flt Permitted		0.997			0.994			0.987			0.989	
Satd. Flow (perm)	0	3304	0	0	3390	0	0	3197	0	0	3406	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	106	1247	369	109	713	98	160	360	101	204	646	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1722	0	0	920	0	0	621	0	0	951	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 120.3%		ICU Level of Service H	
Analysis Period (min) 15			

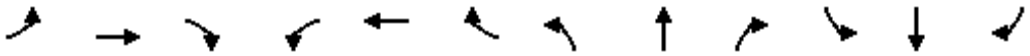


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	94	1110	328	97	635	87	142	320	90	182	575	90
Future Volume (veh/h)	94	1110	328	97	635	87	142	320	90	182	575	90
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	106	1247	369	109	713	98	160	360	101	204	646	101
Approach Volume (veh/h)		1722			920			621			951	
Crossing Volume (veh/h)		959			626			1557#			982	
High Capacity (veh/h)		644			844			392			632	
High v/c (veh/h)		2.67			1.09			1.59			1.51	
Low Capacity (veh/h)		501			675			288			491	
Low v/c (veh/h)		3.44			1.36			2.15			1.94	

Intersection Summary					
Maximum v/c High	2.67				
Maximum v/c Low	3.44				
Intersection Capacity Utilization	120.3%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1559	364	494	1427	232
Future Volume (vph)	124	22	83	0	0	235	39	1559	364	494	1427	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.544						0.950			0.950		
Satd. Flow (perm)	616	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				285			285			130
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	261	42	1695	404	549	1551	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	261	42	1695	404	549	1551	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	59.5		48.5	48.5	48.5	11.0	42.5	42.5	18.0	49.5	49.5
Total Split (%)	9.2%	49.6%		40.4%	40.4%	40.4%	9.2%	35.4%	35.4%	15.0%	41.3%	41.3%
Maximum Green (s)	7.0	53.0		42.0	42.0	42.0	7.0	36.0	36.0	14.0	43.0	43.0
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	23.7	21.2				10.2	7.0	36.0	36.0	14.0	47.4	47.4
Actuated g/C Ratio	0.27	0.24				0.12	0.08	0.41	0.41	0.16	0.54	0.54
v/c Ratio	0.67	0.27				0.60	0.32	0.85	0.50	1.02	0.58	0.28
Control Delay	45.9	10.8				10.0	45.5	28.9	8.1	82.1	15.7	7.1
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	10.8				10.0	45.5	28.9	8.1	82.1	15.7	7.1
LOS	D	B				B	D	C	A	F	B	A
Approach Delay		29.8			10.0			25.3			30.2	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	19.1	3.2				0.0	6.8	92.3	12.5	~49.4	67.9	10.9
Queue Length 95th (m)	#41.9	15.7				16.6	16.9	114.1	35.5	#82.7	84.6	25.1
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	202	929				895	131	1994	808	539	2677	902
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	0.67	0.12				0.29	0.32	0.85	0.50	1.02	0.58	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 88.2			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 27.1		Intersection LOS: C	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

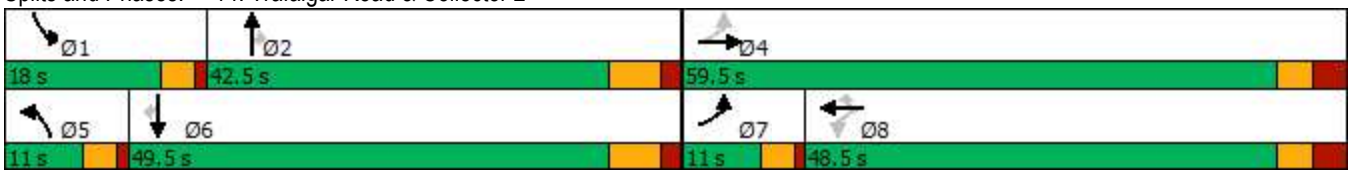
~ Volume exceeds capacity, queue is theoretically infinite.

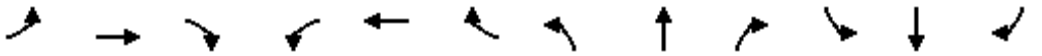
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

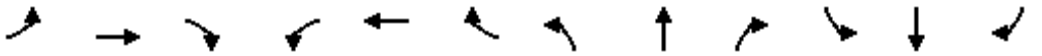
Splits and Phases: 14: Trafalgar Road & Collector 2



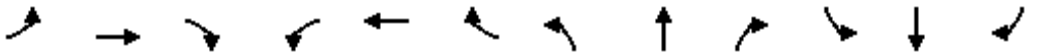


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	235	39	1559	364	494	1427	232
Future Volume (vph)	124	22	83	0	0	235	39	1559	364	494	1427	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.54	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	616	1486				1566	1653	4885	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	261	42	1695	404	549	1551	252
RTOR Reduction (vph)	0	69	0	0	0	231	0	0	166	0	0	61
Lane Group Flow (vph)	135	45	0	0	0	30	42	1695	238	549	1551	191
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	21.2	21.2				10.2	4.2	37.6	37.6	14.0	47.4	47.4
Effective Green, g (s)	21.2	21.2				10.2	4.2	37.6	37.6	14.0	47.4	47.4
Actuated g/C Ratio	0.24	0.24				0.11	0.05	0.42	0.42	0.16	0.53	0.53
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	181	350				177	77	2045	655	529	2628	826
v/s Ratio Prot	c0.06	0.03					0.03	c0.35		c0.16	0.31	
v/s Ratio Perm	c0.12					0.02			0.15			0.12
v/c Ratio	0.75	0.13				0.17	0.55	0.83	0.36	1.04	0.59	0.23
Uniform Delay, d1	31.2	27.0				36.0	41.9	23.2	17.9	37.9	14.5	11.4
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.3	0.2				0.4	7.7	4.0	1.6	49.3	1.0	0.7
Delay (s)	46.6	27.2				36.4	49.5	27.3	19.5	87.2	15.5	12.1
Level of Service	D	C				D	D	C	B	F	B	B
Approach Delay (s)		37.7			36.4			26.2			31.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1676	0	88	592	0	6	0	0	0	0	0
Future Volume (vph)	0	1676	0	88	592	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)	30.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.097			0.930					
Satd. Flow (perm)	1842	3500	0	179	3500	0	1705	1842	0	1842	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		844.9			181.9			147.1			190.6	
Travel Time (s)		50.7			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1862	0	98	658	0	7	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1862	0	98	658	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		71.1		71.1	71.1		13.1					
Actuated g/C Ratio		0.92		0.92	0.92		0.17					
v/c Ratio		0.58		0.59	0.20		0.02					
Control Delay		5.5		27.1	2.7		27.0					
Queue Delay		0.0		0.0	0.0		0.0					
Total Delay		5.5		27.1	2.7		27.0					
LOS		A		C	A		C					
Approach Delay		5.5			5.9			27.0				
Approach LOS		A			A			C				
Queue Length 50th (m)		0.0		0.0	0.0		0.8					
Queue Length 95th (m)		184.4		#50.6	39.5		4.5					
Internal Link Dist (m)		820.9			157.9			123.1			166.6	
Turn Bay Length (m)				50.0			30.0					
Base Capacity (vph)		3235		165	3235		673					
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		0.58		0.59	0.20		0.01					

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.9			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 78.4%		ICU Level of Service D	

Analysis Period (min) 15

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

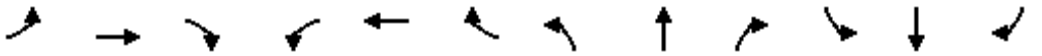
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1676	0	88	592	0	6	0	0	0	0	0
Future Volume (vph)	0	1676	0	88	592	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)		5.1		5.1	5.1		5.4					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Frpb, ped/bikes		1.00		1.00	1.00		1.00					
Flpb, ped/bikes		1.00		1.00	1.00		1.00					
Frt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3500		1749	3500		1743					
Flt Permitted		1.00		0.10	1.00		0.93					
Satd. Flow (perm)		3500		179	3500		1706					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1862	0	98	658	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	1862	0	98	658	0	7	0	0	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		66.6		66.6	66.6		4.3					
Effective Green, g (s)		66.6		66.6	66.6		4.3					
Actuated g/C Ratio		0.82		0.82	0.82		0.05					
Clearance Time (s)		5.1		5.1	5.1		5.4					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		2863		146	2863		90					
v/s Ratio Prot		0.53			0.19							
v/s Ratio Perm				c0.55			c0.00					
v/c Ratio		0.65		0.67	0.23		0.08					
Uniform Delay, d1		2.9		3.0	1.7		36.7					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		1.2		21.9	0.2		0.4					
Delay (s)		4.0		24.9	1.8		37.0					
Level of Service		A		C	A		D					
Approach Delay (s)		4.0			4.8			37.0			0.0	
Approach LOS		A			A			D			A	

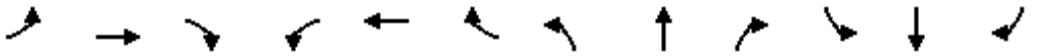
Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1643	33	0	671	146	0	0	80	0	0	9
Future Volume (vph)	0	1643	33	0	671	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			355.4	
Travel Time (s)		10.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1826	37	0	746	162	0	0	89	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1863	0	0	746	162	0	0	89	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

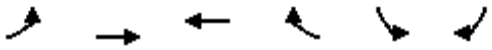
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1643	33	0	671	146	0	0	80	0	0	9
Future Volume (Veh/h)	0	1643	33	0	671	146	0	0	80	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1826	37	0	746	162	0	0	89	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		182			208							
pX, platoon unblocked	0.93			0.73			0.76	0.76	0.73	0.76	0.76	0.93
vC, conflicting volume	913			1868			2238	2762	942	1758	2619	383
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	749			1445			1574	2260	172	946	2073	177
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	99
cM capacity (veh/h)	789			337			55	31	607	139	40	767

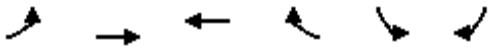
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1217	646	373	373	162	89	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	162	89	10
cSH	1700	1700	1700	1700	1700	607	767
Volume to Capacity	0.72	0.38	0.22	0.22	0.10	0.15	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	3.9	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.0	9.8
Lane LOS						B	A
Approach Delay (s)	0.0		0.0			12.0	9.8
Approach LOS						B	A

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (vph)	0	1351	509	39	0	155
Future Volume (vph)	0	1351	509	39	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1501	566	43	0	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1501	566	43	0	172
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

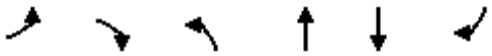
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1351	509	39	0	155
Future Volume (Veh/h)	0	1351	509	39	0	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1501	566	43	0	172
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.97				0.70	0.97
vC, conflicting volume	614				1326	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	549				437	219
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)	985				379	756

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	750	750	283	283	43	172
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	43	172
cSH	1700	1700	1700	1700	1700	756
Volume to Capacity	0.44	0.44	0.17	0.17	0.03	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.6
Control Delay (s)	0.0	0.0	0.0	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	0.8			
Intersection Capacity Utilization	48.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	37	0	1968	1476	153
Future Volume (vph)	0	37	0	1968	1476	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	4421	4421	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	4421	4421	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	41	0	2187	1640	170
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	41	0	2187	1640	170
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

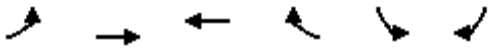
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.6%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			



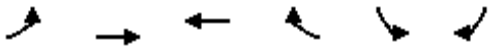
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	37	0	1968	1476	153
Future Volume (Veh/h)	0	37	0	1968	1476	153
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	41	0	2187	1640	170
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.82	0.71	0.71			
vC, conflicting volume	2379	557	1815			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	734			
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)	829	766	615			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	41	729	729	729	547	547	547	170
Volume Left	0	0	0	0	0	0	0	0
Volume Right	41	0	0	0	0	0	0	170
cSH	766	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.43	0.43	0.43	0.32	0.32	0.32	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)	10.0	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	49.6%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1289	548	0	75	0
Future Volume (vph)	0	1289	548	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1743	1842
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1432	609	0	83	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1432	609	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



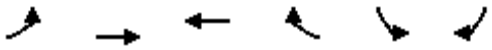
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)		61.5	61.5		12.7	
Actuated g/C Ratio		0.77	0.77		0.16	
v/c Ratio		0.53	0.23		0.30	
Control Delay		7.6	5.1		30.9	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.6	5.1		30.9	
LOS		A	A		C	
Approach Delay		7.6	5.1		30.9	
Approach LOS		A	A		C	
Queue Length 50th (m)		34.2	10.4		12.3	
Queue Length 95th (m)		121.6	39.4		19.8	
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)					40.0	
Base Capacity (vph)		2692	2692		706	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.53	0.23		0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 52.6%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 24: William Halton Parkway & Collector 5

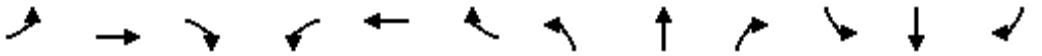




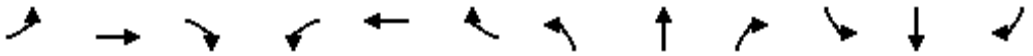
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1289	548	0	75	0
Future Volume (vph)	0	1289	548	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3500	3500		1750	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3500	3500		1750	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1432	609	0	83	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1432	609	0	83	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		60.2	60.2		11.1	
Effective Green, g (s)		60.2	60.2		11.1	
Actuated g/C Ratio		0.75	0.75		0.14	
Clearance Time (s)		5.5	5.5		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2607	2607		240	
v/s Ratio Prot		c0.41	0.17		c0.05	
v/s Ratio Perm						
v/c Ratio		0.55	0.23		0.35	
Uniform Delay, d1		4.4	3.2		31.6	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.2	0.2		0.9	
Delay (s)		4.7	3.4		32.4	
Level of Service		A	A		C	
Approach Delay (s)		4.7	3.4		32.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	9.5
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Future Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			166			137			120			120
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	421	1132	267	178	416	137	321	1804	26	321	1378	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	1132	267	178	416	137	321	1804	26	321	1378	151
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

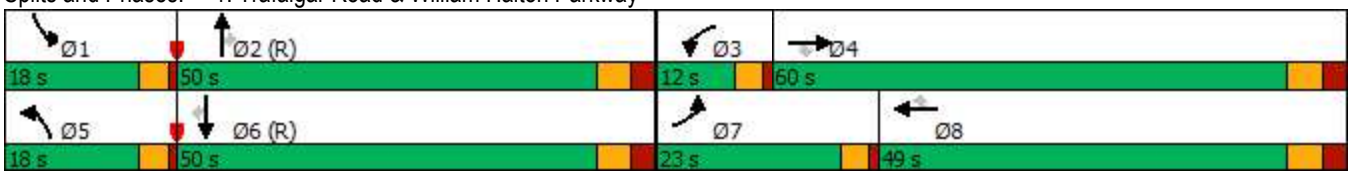


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	23.0	60.0	60.0	12.0	49.0	49.0	18.0	50.0	50.0	18.0	50.0	50.0
Total Split (%)	16.4%	42.9%	42.9%	8.6%	35.0%	35.0%	12.9%	35.7%	35.7%	12.9%	35.7%	35.7%
Maximum Green (s)	19.0	53.6	53.6	8.0	42.6	42.6	14.0	43.6	43.6	14.0	43.6	43.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	18.9	52.5	52.5	8.0	41.6	41.6	14.4	44.3	44.3	14.5	44.3	44.3
Actuated g/C Ratio	0.14	0.38	0.38	0.06	0.30	0.30	0.10	0.32	0.32	0.10	0.32	0.32
v/c Ratio	0.92	0.86	0.39	0.92	0.40	0.26	0.92	1.29	0.05	0.93	0.99	0.26
Control Delay	85.5	48.3	13.1	111.0	40.4	6.8	93.5	175.7	0.2	94.4	70.4	10.7
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	85.5	48.3	13.1	111.0	40.4	6.8	93.5	175.7	0.2	94.4	70.4	10.7
LOS	F	D	B	F	D	A	F	F	A	F	E	B
Approach Delay		51.8			51.3			161.3			69.7	
Approach LOS		D			D			F			E	
Queue Length 50th (m)	60.1	149.4	18.3	25.7	47.9	0.0	46.2	~267.0	0.0	46.3	~162.5	6.0
Queue Length 95th (m)	#89.5	178.5	40.8	#48.2	63.0	15.3	#75.0	#300.0	0.0	#75.4	#200.4	22.6
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Base Capacity (vph)	460	1340	702	194	1065	537	349	1397	553	347	1386	577
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.84	0.38	0.92	0.39	0.26	0.92	1.29	0.05	0.93	0.99	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 92.7		Intersection LOS: F	
Intersection Capacity Utilization 92.4%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

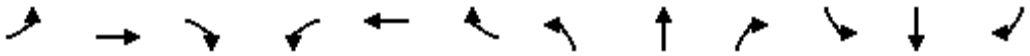
Splits and Phases: 1: Trafalgar Road & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Future Volume (vph)	387	1041	246	164	383	126	295	1660	24	295	1268	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	421	1132	267	178	416	137	321	1804	26	321	1378	151
RTOR Reduction (vph)	0	0	104	0	0	96	0	0	18	0	0	82
Lane Group Flow (vph)	421	1132	163	178	416	41	321	1804	8	321	1378	69
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.9	52.5	52.5	8.0	41.6	41.6	14.4	44.2	44.2	14.5	44.3	44.3
Effective Green, g (s)	18.9	52.5	52.5	8.0	41.6	41.6	14.4	44.2	44.2	14.5	44.3	44.3
Actuated g/C Ratio	0.13	0.38	0.38	0.06	0.30	0.30	0.10	0.32	0.32	0.10	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	458	1312	587	194	1040	431	349	1395	471	348	1385	495
v/s Ratio Prot	c0.12	c0.32		0.05	0.12		0.09	c0.41		c0.10	0.31	
v/s Ratio Perm			0.10			0.03			0.01			0.04
v/c Ratio	0.92	0.86	0.28	0.92	0.40	0.09	0.92	1.29	0.02	0.92	0.99	0.14
Uniform Delay, d1	59.8	40.4	30.5	65.7	39.2	35.6	62.2	47.9	33.0	62.2	47.7	34.2
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	23.3	6.6	0.5	41.6	0.5	0.2	28.4	137.4	0.1	29.2	23.0	0.6
Delay (s)	83.1	47.1	31.1	107.3	39.8	35.8	90.6	185.3	33.0	91.4	70.8	34.8
Level of Service	F	D	C	F	D	D	F	F	C	F	E	C
Approach Delay (s)		53.1			55.5			169.3			71.4	
Approach LOS		D			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	96.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Future Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor		1.00		1.00								
Frt		0.955			0.936			0.988			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3329	0	1750	3204	0	1700	4362	0	1750	4348	0
Flt Permitted	0.500			0.368			0.078			0.058		
Satd. Flow (perm)	921	3329	0	678	3204	0	140	4362	0	107	4348	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			131			12			6	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		387.6			810.8			2139.5			320.3	
Travel Time (s)		27.9			58.4			128.4			19.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	160	292	127	97	174	131	134	1841	154	123	1521	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	419	0	97	305	0	134	1995	0	123	1585	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		11.5	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		17.0	56.0		22.0	61.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		14.2%	46.7%		18.3%	50.8%	
Maximum Green (s)	35.6	35.6		35.6	35.6		13.0	49.7		18.0	54.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0			24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0		80.2	68.5		81.1	68.9	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.67	0.57		0.68	0.57	
v/c Ratio	0.84	0.57		0.69	0.40		0.62	0.80		0.59	0.63	
Control Delay	77.4	38.4		66.5	22.9		28.9	25.4		31.7	20.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	77.4	38.4		66.5	22.9		28.9	25.4		31.7	20.4	
LOS	E	D		E	C		C	C		C	C	
Approach Delay		49.2			33.5			25.6			21.2	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	36.5	40.4		21.3	18.2		9.4	144.0		11.7	96.1	
Queue Length 95th (m)	55.9	50.0		36.7	27.5		33.5	#242.3		33.2	152.2	
Internal Link Dist (m)		363.6			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	273	1028		201	1042		265	2493		321	2498	
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	0.59	0.41		0.48	0.29		0.51	0.80		0.38	0.63	

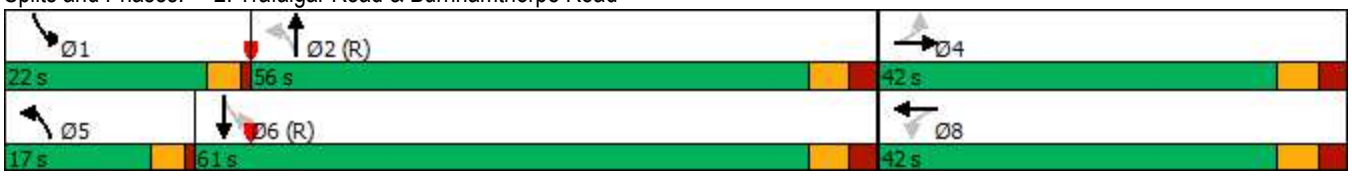
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	

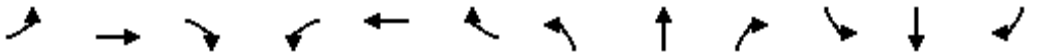
Intersection Signal Delay: 27.6	Intersection LOS: C
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Future Volume (vph)	144	263	114	87	157	118	121	1657	139	111	1369	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3328		1749	3203		1700	4364		1750	4347	
Flt Permitted	0.50	1.00		0.37	1.00		0.08	1.00		0.06	1.00	
Satd. Flow (perm)	922	3328		677	3203		139	4364		107	4347	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	160	292	127	97	174	131	134	1841	154	123	1521	64
RTOR Reduction (vph)	0	46	0	0	104	0	0	5	0	0	3	0
Lane Group Flow (vph)	160	373	0	97	201	0	134	1990	0	123	1582	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		77.9	68.4		78.7	68.8	
Effective Green, g (s)	25.0	25.0		25.0	25.0		77.9	68.4		78.7	68.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.65	0.57		0.66	0.57	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	192	693		141	667		213	2487		205	2492	
v/s Ratio Prot		0.11			0.06		c0.05	c0.46		0.05	0.36	
v/s Ratio Perm	c0.17			0.14			0.36			0.34		
v/c Ratio	0.83	0.54		0.69	0.30		0.63	0.80		0.60	0.64	
Uniform Delay, d1	45.5	42.4		43.9	40.1		14.1	20.4		23.1	17.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.5	0.8		13.1	0.3		5.7	2.8		4.7	1.2	
Delay (s)	71.0	43.2		57.0	40.4		19.8	23.2		27.8	18.4	
Level of Service	E	D		E	D		B	C		C	B	
Approach Delay (s)		50.8			44.4			23.0			19.1	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1337	1	301	576	0	459
Future Volume (vph)	1337	1	301	576	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	120.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.062			
Satd. Flow (perm)	3500	0	112	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						316
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1453	1	327	626	0	499
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1454	0	327	626	0	499
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



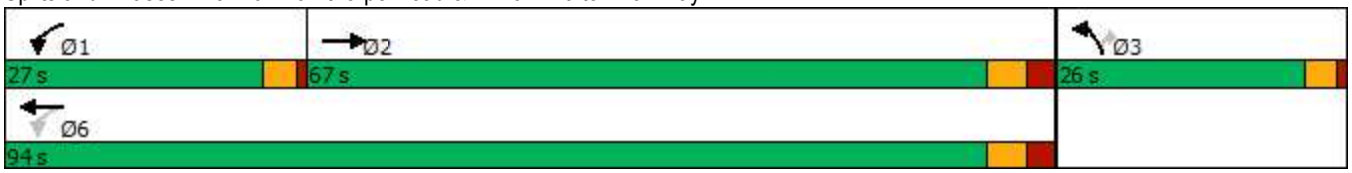
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	67.0		27.0	94.0	26.0	26.0
Total Split (%)	55.8%		22.5%	78.3%	21.7%	21.7%
Maximum Green (s)	60.6		23.0	87.6	22.0	22.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	60.6		88.0	85.6		27.0
Actuated g/C Ratio	0.49		0.72	0.70		0.22
v/c Ratio	0.84		0.93	0.26		0.85
Control Delay	33.1		68.4	7.2		31.2
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	33.1		68.4	7.2		31.2
LOS	C		E	A		C
Approach Delay	33.1			28.2	31.2	
Approach LOS	C			C	C	
Queue Length 50th (m)	161.4		62.3	26.6		46.4
Queue Length 95th (m)	193.8		#112.5	34.1		#105.2
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			120.0			
Base Capacity (vph)	1725		380	2469		590
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	0.84		0.86	0.25		0.85

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 123			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 31.2		Intersection LOS: C	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

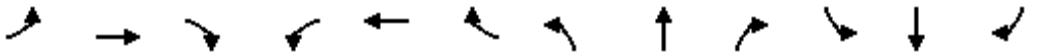
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1337	1	301	576	0	459
Future Volume (vph)	1337	1	301	576	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.06	1.00		1.00
Satd. Flow (perm)	3500		112	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1453	1	327	626	0	499
RTOR Reduction (vph)	0	0	0	0	0	247
Lane Group Flow (vph)	1454	0	327	626	0	252
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	60.6		85.6	85.6		27.0
Effective Green, g (s)	60.6		85.6	85.6		27.0
Actuated g/C Ratio	0.49		0.70	0.70		0.22
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1724		351	2412		343
v/s Ratio Prot	0.42		c0.16	0.18		
v/s Ratio Perm			c0.49			c0.16
v/c Ratio	0.84		0.93	0.26		0.74
Uniform Delay, d1	27.1		39.8	6.9		44.7
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.2		30.9	0.1		13.2
Delay (s)	32.3		70.7	7.0		57.8
Level of Service	C		E	A		E
Approach Delay (s)	32.3			28.9	57.8	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	123.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

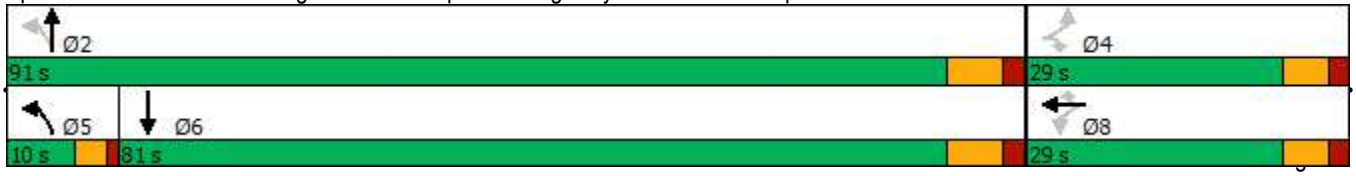


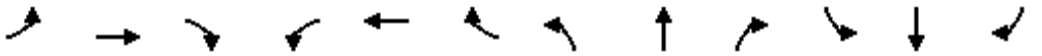
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Future Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.536			0.950	0.950		0.062					
Satd. Flow (perm)	603	0	1566	1449	1388	1487	78	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	329	0	3	2	1949	0	0	2020	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	164	165	3	2	1949	0	0	2020	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	29.0		29.0	29.0	29.0	29.0	10.0	91.0			81.0	
Total Split (%)	24.2%		24.2%	24.2%	24.2%	24.2%	8.3%	75.8%			67.5%	
Maximum Green (s)	23.0		23.0	23.0	23.0	23.0	6.0	84.0			74.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	16.4		16.4	16.4	16.4	16.4	64.7	61.5			60.0	
Actuated g/C Ratio	0.18		0.18	0.18	0.18	0.18	0.70	0.67			0.65	
v/c Ratio	0.03		0.01	0.64	0.67	0.01	0.02	0.88			0.65	
Control Delay	38.7		0.0	50.9	53.1	0.0	4.5	18.0			11.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	38.7		0.0	50.9	53.1	0.0	4.5	18.0			11.3	
LOS	D		A	D	D	A	A	B			B	
Approach Delay		23.2			51.5			17.9			11.3	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	0.5		0.0	28.3	30.0	0.0	0.1	125.2			64.4	
Queue Length 95th (m)	3.4		0.0	60.5	64.3	0.0	0.8	189.5			121.7	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	161		473	388	372	452	133	2881			3892	
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		0.00	0.42	0.44	0.01	0.02	0.68			0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 91.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

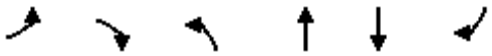
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Future Volume (vph)	3	0	2	293	0	3	2	1735	0	0	1798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.54		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	603		1566	1449	1388	1487	78	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	329	0	3	2	1949	0	0	2020	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	164	165	1	2	1949	0	0	2020	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	16.4		16.4	16.4	16.4	16.4	64.9	64.9			60.0	
Effective Green, g (s)	16.4		16.4	16.4	16.4	16.4	64.9	64.9			60.0	
Actuated g/C Ratio	0.17		0.17	0.17	0.17	0.17	0.69	0.69			0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	104		272	252	241	258	64	2274			3021	
v/s Ratio Prot							0.00	c0.59			0.43	
v/s Ratio Perm	0.00		0.00	0.11	0.12	0.00	0.02					
v/c Ratio	0.03		0.00	0.65	0.68	0.00	0.03	0.86			0.67	
Uniform Delay, d1	32.3		32.2	36.3	36.5	32.2	7.0	11.2			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		0.0	5.9	7.8	0.0	0.2	3.4			0.6	
Delay (s)	32.5		32.2	42.2	44.3	32.2	7.2	14.6			11.4	
Level of Service	C		C	D	D	C	A	B			B	
Approach Delay (s)		32.3			43.2			14.6			11.4	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1737	2093	32
Future Volume (vph)	0	0	0	1737	2093	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	1952	2352	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1952	2352	36
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

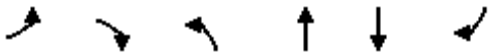
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	1737	40	0	2093
Future Volume (vph)	0	0	1737	40	0	2093
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	1952	45	0	2352
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1952	45	0	2352
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



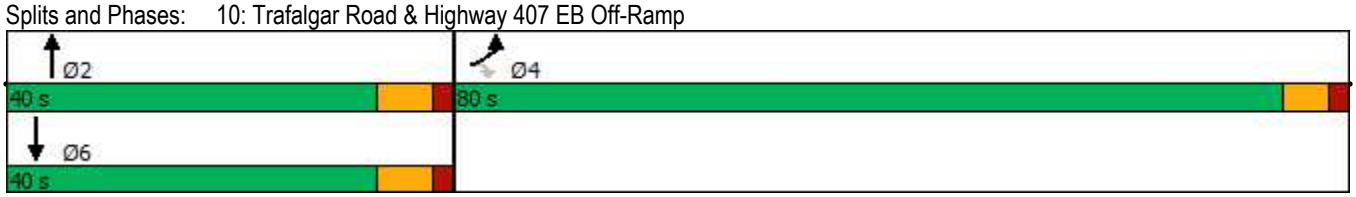
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	275	0	1748	1936	0
Future Volume (vph)	55	275	0	1748	1936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	60	302	0	1921	2127	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	302	0	1921	2127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

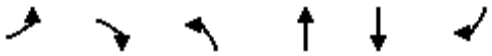
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	80.0	80.0		40.0	40.0	
Total Split (%)	66.7%	66.7%		33.3%	33.3%	
Maximum Green (s)	74.0	74.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	18.9	18.9		33.2	33.2	
Actuated g/C Ratio	0.29	0.29		0.51	0.51	
v/c Ratio	0.12	0.74		1.15	1.26	
Control Delay	16.8	32.7		95.7	143.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	16.8	32.7		95.7	143.9	
LOS	B	C		F	F	
Approach Delay	30.1			95.7	143.9	
Approach LOS	C			F	F	
Queue Length 50th (m)	5.3	32.5		~147.0	~173.8	
Queue Length 95th (m)	12.4	56.6		#219.4	#250.4	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1716	1401		1667	1683	
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	0.03	0.22		1.15	1.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 65.1			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 113.5		Intersection LOS: F	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

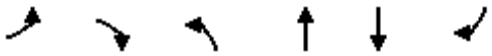
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	275	0	1748	1936	0
Future Volume (vph)	55	275	0	1748	1936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	302	0	1921	2127	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	60	302	0	1921	2127	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.9	18.9		33.2	33.2	
Effective Green, g (s)	18.9	18.9		33.2	33.2	
Actuated g/C Ratio	0.29	0.29		0.51	0.51	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	498	406		1670	1685	
v/s Ratio Prot	0.03			0.59	c0.64	
v/s Ratio Perm		c0.22				
v/c Ratio	0.12	0.74		1.15	1.26	
Uniform Delay, d1	17.0	20.9		15.9	15.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.2		75.1	123.0	
Delay (s)	17.1	28.1		91.0	138.9	
Level of Service	B	C		F	F	
Approach Delay (s)	26.3			91.0	138.9	
Approach LOS	C			F	F	

Intersection Summary			
HCM 2000 Control Delay	108.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1640	1791	24
Future Volume (vph)	0	0	0	1640	1791	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	1802	1968	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1802	1968	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

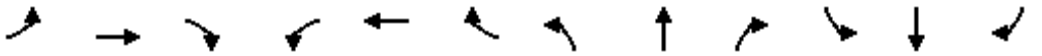
Intersection Sign configuration not allowed in HCM analysis.



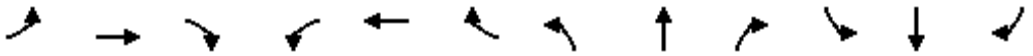
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1623	210	0	2055
Future Volume (vph)	0	0	1623	210	0	2055
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	1784	231	0	2258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1784	231	0	2258
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Future Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			123			89			155
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	1.06	0.66	0.18	1.18	0.94	1.02	1.00	1.11	0.05	1.08	1.09	0.49
Control Delay	119.3	46.0	4.6	154.9	63.8	81.9	108.3	101.1	0.2	148.9	96.3	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.3	46.0	4.6	154.9	63.8	81.9	108.3	101.1	0.2	148.9	96.3	20.5
LOS	F	D	A	F	E	F	F	F	A	F	F	C
Approach Delay		68.4			90.0			100.8			90.5	
Approach LOS		E			F			F			F	
Queue Length 50th (m)	~68.6	89.3	0.0	~81.0	142.1	~144.3	52.4	~238.9	0.0	~31.8	~202.9	30.7
Queue Length 95th (m)	#102.4	110.8	9.4	#115.4	#183.0	#215.4	#85.0	#271.9	0.0	#57.3	#236.5	58.4
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	412	1065	559	404	1065	562	363	1629	622	186	1439	607
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	0.66	0.18	1.18	0.94	1.02	1.00	1.11	0.05	1.08	1.09	0.49

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 89.7	Intersection LOS: F

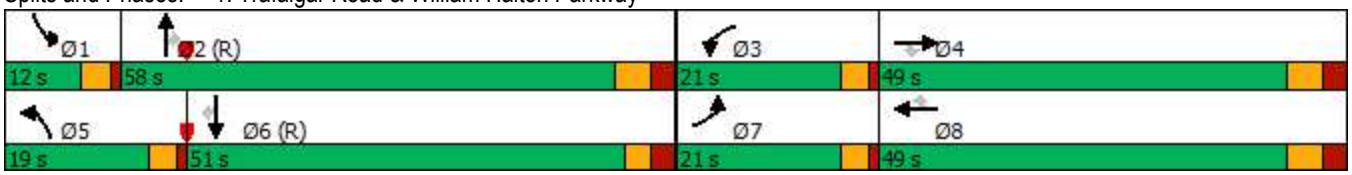
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

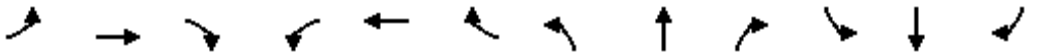
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway



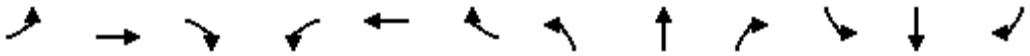


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Future Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
RTOR Reduction (vph)	0	0	71	0	0	86	0	0	21	0	0	105
Lane Group Flow (vph)	438	703	31	476	1000	490	362	1813	12	201	1568	193
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1629	566	186	1439	503
v/s Ratio Prot	0.13	0.20		c0.14	0.29		c0.11	c0.41		0.06	0.35	
v/s Ratio Perm			0.02			c0.31			0.01			0.13
v/c Ratio	1.06	0.66	0.07	1.18	0.94	1.03	1.00	1.11	0.02	1.08	1.09	0.38
Uniform Delay, d1	61.5	42.4	34.6	61.5	47.4	48.7	62.5	44.2	28.1	66.0	47.2	36.4
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	62.1	2.0	0.1	103.1	15.5	49.2	46.2	60.0	0.1	89.1	52.1	2.2
Delay (s)	123.6	44.4	34.7	164.6	62.9	97.9	108.7	104.2	28.2	155.1	99.3	38.6
Level of Service	F	D	C	F	E	F	F	F	C	F	F	D
Approach Delay (s)		71.5			96.3			103.8			96.0	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	94.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Future Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.955			0.946			0.991			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3342	0	1750	3311	0	1750	4375	0	1750	4294	0
Flt Permitted	0.390			0.498			0.103			0.053		
Satd. Flow (perm)	685	3342	0	917	3311	0	190	4375	0	98	4294	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			91			10			34	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		468.0			810.8			2139.5			320.3	
Travel Time (s)		33.7			58.4			128.4			19.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	112	206	87	104	240	134	116	1884	118	135	1457	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	293	0	104	374	0	116	2002	0	135	1674	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		11.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		67.0	67.0		11.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.8%	55.8%		9.2%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		60.7	60.7		7.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	21.6	21.6		21.6	21.6		71.7	71.7		88.0	85.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.60	0.60		0.73	0.71	
v/c Ratio	0.91	0.46		0.63	0.56		1.03	0.77		0.64	0.54	
Control Delay	107.2	38.6		60.7	35.6		122.6	22.2		36.0	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	107.2	38.6		60.7	35.6		122.6	22.2		36.0	9.6	
LOS	F	D		E	D		F	C		D	A	
Approach Delay		57.6			41.0			27.7			11.6	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	26.1	28.0		22.9	32.1		~29.4	139.6		14.6	66.6	
Queue Length 95th (m)	#45.1	37.0		37.7	42.3		#48.6	199.9		#41.1	107.4	
Internal Link Dist (m)		444.0			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	203	1020		272	1046		113	2616		210	3077	
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	0.55	0.29		0.38	0.36		1.03	0.77		0.64	0.54	

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: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	

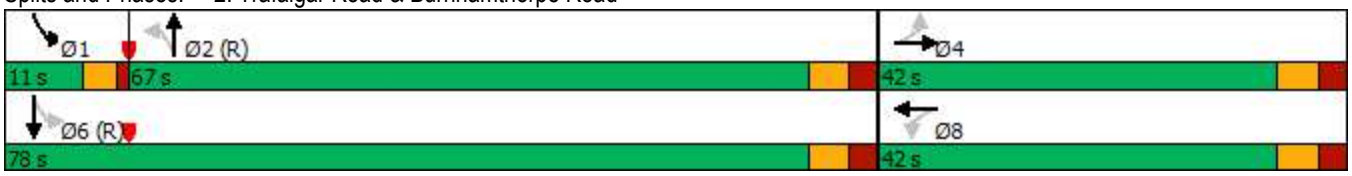
Analysis Period (min) 15

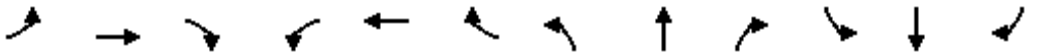
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Future Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3344		1750	3312		1750	4376		1750	4293	
Flt Permitted	0.39	1.00		0.50	1.00		0.10	1.00		0.05	1.00	
Satd. Flow (perm)	685	3344		917	3312		190	4376		97	4293	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	112	206	87	104	240	134	116	1884	118	135	1457	217
RTOR Reduction (vph)	0	34	0	0	75	0	0	4	0	0	10	0
Lane Group Flow (vph)	112	259	0	104	299	0	116	1998	0	135	1664	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		21.6	21.6		71.6	71.6		85.7	85.7	
Effective Green, g (s)	21.6	21.6		21.6	21.6		71.6	71.6		85.7	85.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.60	0.60		0.71	0.71	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	601		165	596		113	2611		208	3065	
v/s Ratio Prot		0.08			0.09			0.46		c0.05	0.39	
v/s Ratio Perm	c0.16			0.11			c0.61			0.41		
v/c Ratio	0.91	0.43		0.63	0.50		1.03	0.77		0.65	0.54	
Uniform Delay, d1	48.3	43.7		45.5	44.4		24.2	18.0		27.6	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	54.3	0.5		7.6	0.7		92.0	2.2		6.8	0.7	
Delay (s)	102.5	44.2		53.1	45.0		116.2	20.2		34.4	8.7	
Level of Service	F	D		D	D		F	C		C	A	
Approach Delay (s)		60.4			46.8			25.4			10.6	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



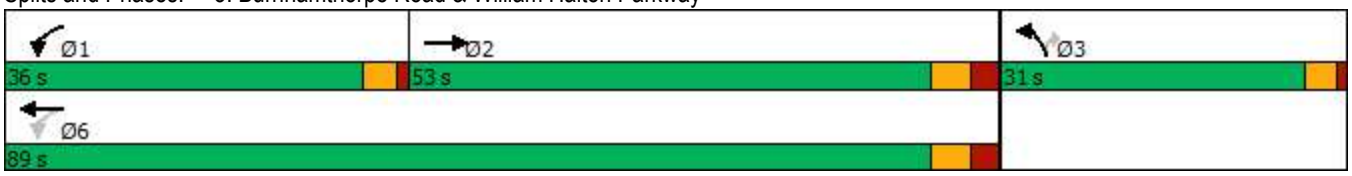
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1000	1	407	1536	0	437
Future Volume (vph)	1000	1	407	1536	0	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.130			
Satd. Flow (perm)	3433	0	239	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						461
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1042	1	424	1600	0	455
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1043	0	424	1600	0	455
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	53.0		36.0	89.0	31.0	31.0
Total Split (%)	44.2%		30.0%	74.2%	25.8%	25.8%
Maximum Green (s)	46.6		32.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.7		77.9	75.5		27.1
Actuated g/C Ratio	0.41		0.69	0.67		0.24
v/c Ratio	0.74		0.86	0.68		0.63
Control Delay	32.7		40.0	13.2		7.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	32.7		40.0	13.2		7.6
LOS	C		D	B		A
Approach Delay	32.7			18.8	7.6	
Approach LOS	C			B	A	
Queue Length 50th (m)	102.0		61.6	102.8		0.0
Queue Length 95th (m)	138.3		99.5	124.1		26.2
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1419		594	2565		725
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	0.74		0.71	0.62		0.63

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

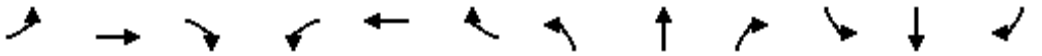
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



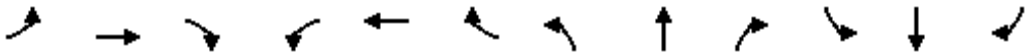


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1000	1	407	1536	0	437
Future Volume (vph)	1000	1	407	1536	0	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.13	1.00		1.00
Satd. Flow (perm)	3432		240	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1042	1	424	1600	0	455
RTOR Reduction (vph)	0	0	0	0	0	346
Lane Group Flow (vph)	1043	0	424	1600	0	109
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	46.8		75.6	75.6		27.1
Effective Green, g (s)	46.8		75.6	75.6		27.1
Actuated g/C Ratio	0.41		0.67	0.67		0.24
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1420		491	2339		375
v/s Ratio Prot	0.30		c0.19	0.46		
v/s Ratio Perm			c0.39			c0.07
v/c Ratio	0.73		0.86	0.68		0.29
Uniform Delay, d1	27.9		26.9	11.5		35.1
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.4		14.6	0.8		2.0
Delay (s)	31.3		41.4	12.3		37.1
Level of Service	C		D	B		D
Approach Delay (s)	31.3			18.4	37.1	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	14.4
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	1710	198	298	1848	317	324	1589	232	315	1053	337
Future Volume (vph)	442	1710	198	298	1848	317	324	1589	232	315	1053	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	3395	4421	1566	3395	4421	1566	3362	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3394	4378	1527	3391	4421	1540	3391	4421	1541	3361	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			163			109			150
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			2139.5	
Travel Time (s)		30.4			42.0			38.7			128.4	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	456	1763	204	307	1905	327	334	1638	239	325	1086	347
Shared Lane Traffic (%)												
Lane Group Flow (vph)	456	1763	204	307	1905	327	334	1638	239	325	1086	347
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



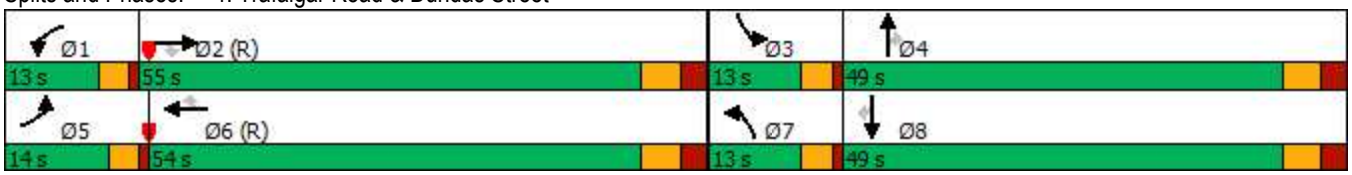
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	1.75	1.08	0.31	1.31	1.18	0.49	1.42	1.13	0.41	1.40	0.75	0.57
Control Delay	386.0	85.4	9.7	211.2	124.0	18.0	255.0	108.6	20.3	247.3	42.9	24.1
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	386.0	85.4	9.7	211.2	124.0	18.0	255.0	108.6	20.3	247.3	42.9	24.1
LOS	F	F	A	F	F	B	F	F	C	F	D	C
Approach Delay		135.6			120.9			121.1			77.0	
Approach LOS		F			F			F			E	
Queue Length 50th (m)	~89.2	~209.5	8.9	~52.0	~242.9	31.0	~59.3	~202.6	24.8	~57.2	103.1	41.3
Queue Length 95th (m)	#122.4	#242.7	26.3	#81.0	#276.2	58.6	#89.2	#236.0	48.2	#86.8	122.5	72.4
Internal Link Dist (m)		568.0			792.3			620.9			2115.5	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Base Capacity (vph)	261	1636	664	235	1618	667	235	1448	578	232	1448	604
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	1.75	1.08	0.31	1.31	1.18	0.49	1.42	1.13	0.41	1.40	0.75	0.57

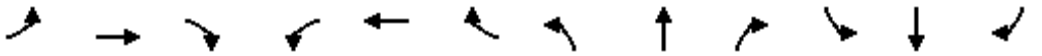
Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.75	
Intersection Signal Delay: 116.3	Intersection LOS: F

Intersection Capacity Utilization 106.8%	ICU Level of Service G
Analysis Period (min) 15	

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Trafalgar Road & Dundas Street

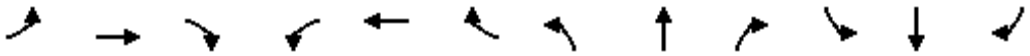




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	1710	198	298	1848	317	324	1589	232	315	1053	337
Future Volume (vph)	442	1710	198	298	1848	317	324	1589	232	315	1053	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Flt Permitted	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 (perm)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	456	1763	204	307	1905	327	334	1638	239	325	1086	347
RTOR Reduction (vph)	0	0	94	0	0	103	0	0	73	0	0	101
Lane Group Flow (vph)	456	1763	110	307	1905	224	334	1638	166	325	1086	246
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1636	570	235	1618	563	235	1448	504	232	1448	503
v/s Ratio Prot	c0.13	0.40		0.09	c0.43		c0.10	c0.37		0.10	0.25	
v/s Ratio Perm			0.07			0.15			0.11			0.16
v/c Ratio	1.75	1.08	0.19	1.31	1.18	0.40	1.42	1.13	0.33	1.40	0.75	0.49
Uniform Delay, d1	60.0	40.7	27.5	60.5	41.2	30.6	60.5	43.7	32.9	60.5	39.0	35.0
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	351.6	46.4	0.8	165.1	86.6	2.1	212.6	68.3	0.8	204.3	2.7	1.6
Delay (s)	411.6	87.1	28.2	225.6	127.8	32.7	273.1	112.0	33.7	264.8	41.6	36.6
Level of Service	F	F	C	F	F	C	F	F	C	F	D	D
Approach Delay (s)		143.2			127.4			127.9			81.9	
Approach LOS		F			F			F			F	

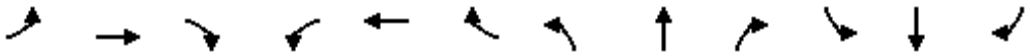
Intersection Summary			
HCM 2000 Control Delay	122.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



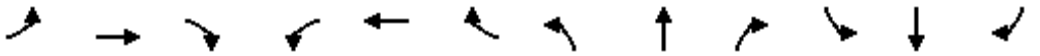
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	525	65	217	649	522	11	219	132	248	249	282
Future Volume (vph)	238	525	65	217	649	522	11	219	132	248	249	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.988			0.944			0.945			0.946	
Flt Protected		0.986			0.992			0.999			0.984	
Satd. Flow (prot)	0	3409	0	0	3277	0	0	3304	0	0	3258	0
Flt Permitted		0.986			0.992			0.999			0.984	
Satd. Flow (perm)	0	3409	0	0	3277	0	0	3304	0	0	3258	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			839.5			671.6			229.3	
Travel Time (s)		28.6			50.4			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	243	536	66	221	662	533	11	223	135	253	254	288
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	845	0	0	1416	0	0	369	0	0	795	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

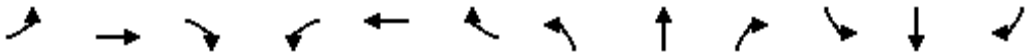


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	238	525	65	217	649	522	11	219	132	248	249	282
Future Volume (veh/h)	238	525	65	217	649	522	11	219	132	248	249	282
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	243	536	66	221	662	533	11	223	135	253	254	288
Approach Volume (veh/h)		845			1416			369			795	
Crossing Volume (veh/h)		728			477			1032			894	
High Capacity (veh/h)		777			951			606			679	
High v/c (veh/h)		1.09			1.49			0.61			1.17	
Low Capacity (veh/h)		617			770			469			531	
Low v/c (veh/h)		1.37			1.84			0.79			1.50	

Intersection Summary				
Maximum v/c High	1.49			
Maximum v/c Low	1.84			
Intersection Capacity Utilization	111.6%	ICU Level of Service	H	



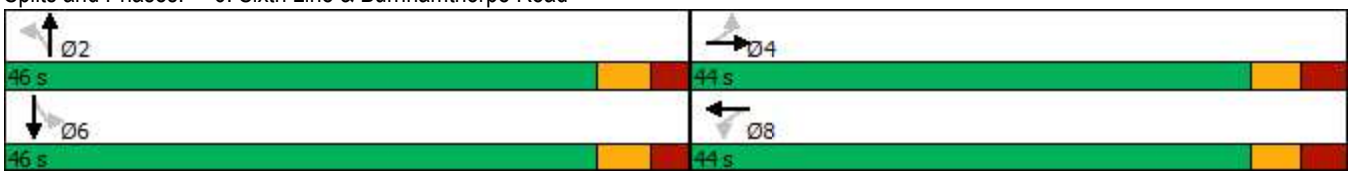
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	102	48	177	240	39	95	358	147	59	583	33
Future Volume (vph)	34	102	48	177	240	39	95	358	147	59	583	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	40.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.952			0.979			0.956			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3332	0	1750	3385	0	1750	3336	0	1750	3472	0
Flt Permitted	0.571			0.651			0.398			0.452		
Satd. Flow (perm)	1052	3332	0	1199	3385	0	733	3336	0	833	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			24			88			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	36	109	51	188	255	41	101	381	156	63	620	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	160	0	188	296	0	101	537	0	63	655	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

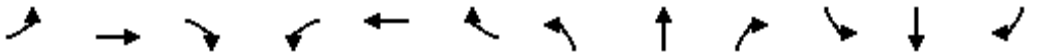


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.1	16.1		16.1	16.1		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.58	0.58		0.58	0.58	
v/c Ratio	0.15	0.20		0.67	0.37		0.24	0.27		0.13	0.33	
Control Delay	21.4	14.4		36.0	21.0		10.6	7.2		9.2	8.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.4	14.4		36.0	21.0		10.6	7.2		9.2	8.8	
LOS	C	B		D	C		B	A		A	A	
Approach Delay		15.7			26.8			7.7			8.9	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	3.7	5.8		21.9	15.3		5.6	13.0		3.3	19.9	
Queue Length 95th (m)	10.0	12.2		40.8	24.5		17.5	27.4		11.0	39.0	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			40.0			30.0			30.0		
Base Capacity (vph)	575	1846		656	1863		423	1964		481	2009	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.09		0.29	0.16		0.24	0.27		0.13	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 68.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

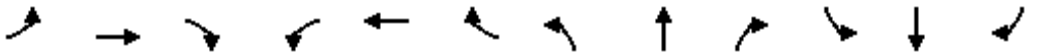
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



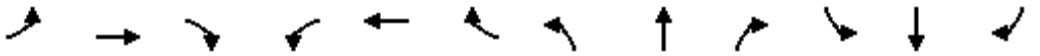


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	102	48	177	240	39	95	358	147	59	583	33
Future Volume (vph)	34	102	48	177	240	39	95	358	147	59	583	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3333		1750	3386		1750	3338		1750	3472	
Flt Permitted	0.57	1.00		0.65	1.00		0.40	1.00		0.45	1.00	
Satd. Flow (perm)	1052	3333		1198	3386		733	3338		833	3472	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	36	109	51	188	255	41	101	381	156	63	620	35
RTOR Reduction (vph)	0	39	0	0	18	0	0	37	0	0	3	0
Lane Group Flow (vph)	36	121	0	188	278	0	101	500	0	63	652	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.1	16.1		16.1	16.1		39.8	39.8		39.8	39.8	
Effective Green, g (s)	16.1	16.1		16.1	16.1		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	779		280	792		424	1930		481	2008	
v/s Ratio Prot		0.04			0.08			0.15			c0.19	
v/s Ratio Perm	0.03			c0.16			0.14			0.08		
v/c Ratio	0.15	0.16		0.67	0.35		0.24	0.26		0.13	0.32	
Uniform Delay, d1	20.9	20.9		23.9	22.0		7.1	7.2		6.6	7.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		6.2	0.3		1.3	0.3		0.6	0.4	
Delay (s)	21.2	21.0		30.1	22.3		8.4	7.5		7.2	8.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.1			25.3			7.7			7.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	12.9
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Future Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1538	1431	1750	3500	0	0	4980	0
Flt Permitted	0.388			0.950	0.953		0.072					
Satd. Flow (perm)	623	0	1331	1615	1538	1431	133	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	443	2	20	7	2825	0	0	1910	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	221	226	18	7	2825	0	0	1910	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	48.0		48.0	48.0	48.0	48.0	11.0	72.0			61.0	
Total Split (%)	40.0%		40.0%	40.0%	40.0%	40.0%	9.2%	60.0%			50.8%	
Maximum Green (s)	42.0		42.0	42.0	42.0	42.0	7.0	65.0			54.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.6		19.6	19.6	19.6	19.6	68.2	65.2			63.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.70	0.67			0.65	
v/c Ratio	0.06		0.02	0.69	0.74	0.05	0.04	1.21			0.59	
Control Delay	31.3		0.2	47.4	51.1	0.3	6.6	118.9			12.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	31.3		0.2	47.4	51.1	0.3	6.6	118.9			12.3	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		16.9			47.4			118.6			12.3	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	40.9	44.2	0.0	0.3	~343.5			63.0	
Queue Length 95th (m)	4.6		0.0	65.6	70.9	0.0	2.0	#440.9			127.5	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	268		615	695	662	658	208	2333			3226	
Starvation Cap Reductn	0		0	0	0	0	0	0			0	
Spillback Cap Reductn	0		0	0	0	0	0	0			0	
Storage Cap Reductn	0		0	0	0	0	0	0			0	
Reduced v/c Ratio	0.03		0.01	0.32	0.34	0.03	0.03	1.21			0.59	

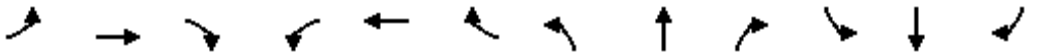
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 97.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 73.1		Intersection LOS: E	
Intersection Capacity Utilization 104.5%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

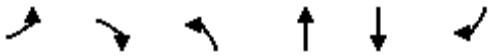
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Future Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1538	1431	1750	3500			4980	
Flt Permitted	0.39		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	622		1331	1615	1538	1431	133	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	443	2	20	7	2825	0	0	1910	0
RTOR Reduction (vph)	0	0	5	0	0	15	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	221	226	3	7	2825	0	0	1910	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.6		19.6	19.6	19.6	19.6	68.5	68.5			63.4	
Effective Green, g (s)	19.6		19.6	19.6	19.6	19.6	68.5	68.5			63.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	120		258	313	298	277	107	2371			3122	
v/s Ratio Prot							0.00	c0.81			0.38	
v/s Ratio Perm	0.01		0.00	0.14	0.15	0.00	0.04					
v/c Ratio	0.06		0.00	0.71	0.76	0.01	0.07	1.19			0.61	
Uniform Delay, d1	33.2		32.9	38.1	38.5	32.9	7.5	16.3			11.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	7.1	10.5	0.0	0.3	90.7			0.4	
Delay (s)	33.4		32.9	45.1	49.1	32.9	7.8	107.0			11.8	
Level of Service	C		C	D	D	C	A	F			B	
Approach Delay (s)		33.2			46.6			106.7			11.8	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2720	2318	47
Future Volume (vph)	0	0	0	2720	2318	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	2833	2415	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2833	2415	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

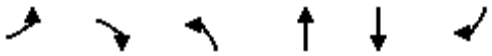
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2720	157	0	2318
Future Volume (vph)	0	0	2720	157	0	2318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	2833	164	0	2415
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2833	164	0	2415
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



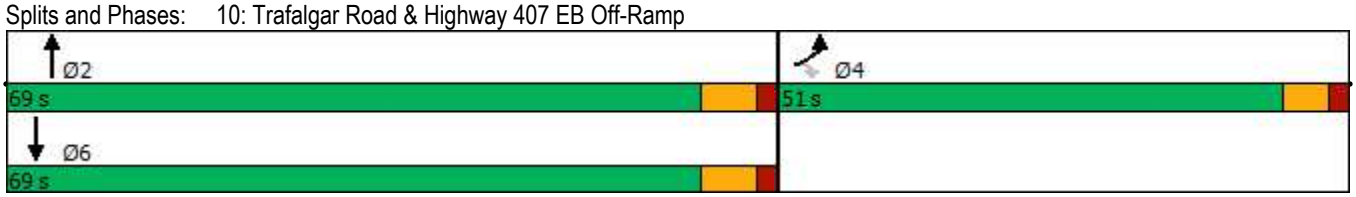
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	195	0	3147	2106	0
Future Volume (vph)	40	195	0	3147	2106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		3				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	43	207	0	3348	2240	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	207	0	3348	2240	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

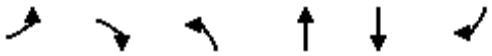
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	20.3	20.3		62.2	62.2	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
v/c Ratio	0.12	0.76		1.47	0.99	
Control Delay	29.9	52.4		234.4	35.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.9	52.4		234.4	35.8	
LOS	C	D		F	D	
Approach Delay	48.5			234.4	35.8	
Approach LOS	D			F	D	
Queue Length 50th (m)	6.4	35.4		~447.7	191.7	
Queue Length 95th (m)	14.7	59.2		#555.7	#313.9	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	827	605		2278	2256	
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	0.05	0.34		1.47	0.99	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 95.6			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.47			
Intersection Signal Delay: 150.3		Intersection LOS: F	
Intersection Capacity Utilization 102.8%		ICU Level of Service G	
Analysis Period (min) 15			

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

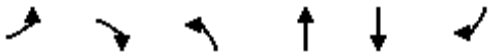
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





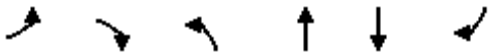
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	195	0	3147	2106	0
Future Volume (vph)	40	195	0	3147	2106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	207	0	3348	2240	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	43	205	0	3348	2240	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.3	20.3		62.2	62.2	
Effective Green, g (s)	20.3	20.3		62.2	62.2	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	371	271		2279	2257	
v/s Ratio Prot	0.02			c0.96	0.65	
v/s Ratio Perm		c0.16				
v/c Ratio	0.12	0.76		1.47	0.99	
Uniform Delay, d1	30.4	35.3		16.6	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	11.3		213.5	17.3	
Delay (s)	30.5	46.6		230.2	33.7	
Level of Service	C	D		F	C	
Approach Delay (s)	43.8			230.2	33.7	
Approach LOS	D			F	C	

Intersection Summary			
HCM 2000 Control Delay	146.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	95.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2636	1962	19
Future Volume (vph)	0	0	0	2636	1962	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	2804	2087	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2804	2087	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2636	1962	19
Future Volume (Veh/h)	0	0	0	2636	1962	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	2804	2087	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)				130	228	
pX, platoon unblocked	0.49	0.73	0.73			
vC, conflicting volume	3489	1044	2107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1505	314	1774			
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)	55	497	253			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1402	1402	1044	1044	20
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	20
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.82	0.82	0.61	0.61	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

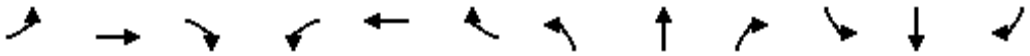
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2915	187	0	2147
Future Volume (vph)	0	0	2915	187	0	2147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3101	199	0	2284
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3101	199	0	2284
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

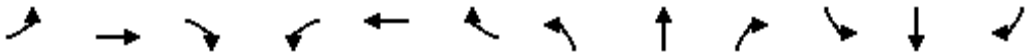
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



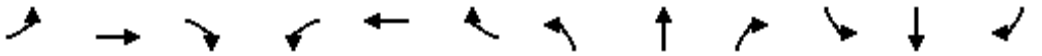
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1160	204	135	1245	125	387	616	220	107	317	109
Future Volume (vph)	40	1160	204	135	1245	125	387	616	220	107	317	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.978			0.988			0.973			0.969	
Flt Protected		0.999			0.996			0.984			0.990	
Satd. Flow (prot)	0	3379	0	0	3444	0	0	3341	0	0	3357	0
Flt Permitted		0.999			0.996			0.984			0.990	
Satd. Flow (perm)	0	3379	0	0	3444	0	0	3341	0	0	3357	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	42	1208	213	141	1297	130	403	642	229	111	330	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1463	0	0	1568	0	0	1274	0	0	555	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 146.0%		ICU Level of Service H	
Analysis Period (min) 15			

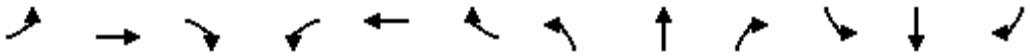


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	40	1160	204	135	1245	125	387	616	220	107	317	109
Future Volume (veh/h)	40	1160	204	135	1245	125	387	616	220	107	317	109
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	42	1208	212	141	1297	130	403	642	229	111	330	114
Approach Volume (veh/h)		1462			1568			1274			555	
Crossing Volume (veh/h)		582			1087			1361#			1841#	
High Capacity (veh/h)		874			580			462			308	
High v/c (veh/h)		1.67			2.71			2.76			1.80	
Low Capacity (veh/h)		702			446			346			220	
Low v/c (veh/h)		2.08			3.52			3.68			2.52	

Intersection Summary				
Maximum v/c High	2.76			
Maximum v/c Low	3.68			
Intersection Capacity Utilization	146.0%	ICU Level of Service	H	
# Crossing flow exceeds 1200, method is not applicable				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2095	300	386	1680	175
Future Volume (vph)	363	44	192	0	0	767	37	2095	300	386	1680	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			176			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2328	333	429	1867	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	852	41	2328	333	429	1867	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



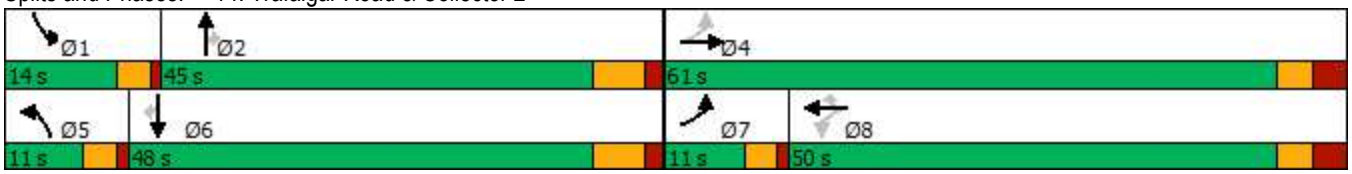
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.25	0.40	1.44	0.54	1.52	1.02	0.30
Control Delay	28.2	8.5				151.7	66.5	235.4	18.7	289.2	64.4	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				151.7	66.5	235.4	18.7	289.2	64.4	14.5
LOS	C	A				F	E	F	B	F	E	B
Approach Delay		20.4			151.7			206.1			99.2	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~222.6	9.5	~273.0	29.0	~72.6	~179.0	14.5
Queue Length 95th (m)	90.6	29.7				#298.4	21.2	#301.5	57.3	#104.2	#208.2	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	634	826				682	102	1613	621	282	1831	637
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	0.64	0.32				1.25	0.40	1.44	0.54	1.52	1.02	0.30

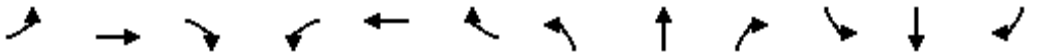
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.52			
Intersection Signal Delay: 141.1		Intersection LOS: F	
Intersection Capacity Utilization 122.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

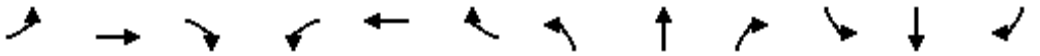




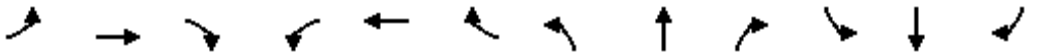
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	767	37	2095	300	386	1680	175
Future Volume (vph)	363	44	192	0	0	767	37	2095	300	386	1680	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	5029	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	852	41	2328	333	429	1867	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	119	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	737	41	2328	214	429	1867	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1636	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c0.46		c0.13	0.37	
v/s Ratio Perm	0.26					c0.47			0.14			0.08
v/c Ratio	0.67	0.23				1.31	0.51	1.42	0.42	1.53	1.03	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	31.9	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				151.4	4.9	194.0	2.5	254.3	28.1	0.9
Delay (s)	29.4	20.5				190.0	61.2	234.7	34.4	309.7	66.7	27.7
Level of Service	C	C				F	E	F	C	F	E	C
Approach Delay (s)		25.9			190.0			207.4			105.5	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	149.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	122.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	907	0	78	1353	0	26	0	0	0	0	0
Future Volume (vph)	0	907	0	78	1353	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)	30.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				1.00			1.00					
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1842	3500	0	1750	3500	0	1750	1842	0	1842	1842	0
Flt Permitted				0.276			0.757					
Satd. Flow (perm)	1842	3500	0	508	3500	0	1388	1842	0	1842	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		839.5			181.9			147.1			190.6	
Travel Time (s)		50.4			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1008	0	87	1503	0	29	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1008	0	87	1503	0	29	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



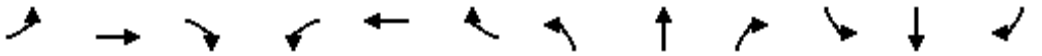
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		70.1		70.1	70.1		13.2					
Actuated g/C Ratio		0.88		0.88	0.88		0.16					
v/c Ratio		0.33		0.20	0.49		0.13					
Control Delay		4.0		6.0	5.3		31.0					
Queue Delay		0.0		0.0	0.0		0.0					
Total Delay		4.0		6.0	5.3		31.0					
LOS		A		A	A		C					
Approach Delay		4.0			5.3			31.0				
Approach LOS		A			A			C				
Queue Length 50th (m)		0.0		0.0	0.0		3.4					
Queue Length 95th (m)		66.6		16.4	121.7		11.3					
Internal Link Dist (m)		815.5			157.9			123.1			166.6	
Turn Bay Length (m)				50.0			30.0					
Base Capacity (vph)		3067		445	3067		526					
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		0.20	0.49		0.06					

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 5.1		Intersection LOS: A	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 15: Collector 1 & William Halton Parkway

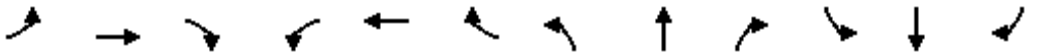




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	907	0	78	1353	0	26	0	0	0	0	0
Future Volume (vph)	0	907	0	78	1353	0	26	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1		5.4					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Frpb, ped/bikes		1.00		1.00	1.00		1.00					
Flpb, ped/bikes		1.00		1.00	1.00		1.00					
Frt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3500		1747	3500		1742					
Flt Permitted		1.00		0.28	1.00		0.76					
Satd. Flow (perm)		3500		508	3500		1389					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1008	0	87	1503	0	29	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	1008	0	87	1503	0	29	0	0	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm			Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		66.6		66.6	66.6		6.3					
Effective Green, g (s)		66.6		66.6	66.6		6.3					
Actuated g/C Ratio		0.80		0.80	0.80		0.08					
Clearance Time (s)		5.1		5.1	5.1		5.4					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		2794		405	2794		104					
v/s Ratio Prot		0.29			c0.43							
v/s Ratio Perm				0.17			c0.02					
v/c Ratio		0.36		0.21	0.54		0.28					
Uniform Delay, d1		2.4		2.0	3.0		36.4					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		0.4		1.2	0.7		1.5					
Delay (s)		2.7		3.3	3.7		37.9					
Level of Service		A		A	A		D					
Approach Delay (s)		2.7			3.7			37.9			0.0	
Approach LOS		A			A			D			A	

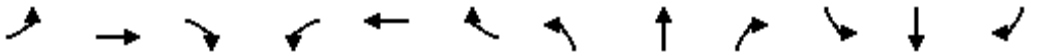
Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	896	11	0	1392	152	0	0	245	0	0	39
Future Volume (vph)	0	896	11	0	1392	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			359.5	
Travel Time (s)		10.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	996	12	0	1547	169	0	0	272	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1008	0	0	1547	169	0	0	272	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

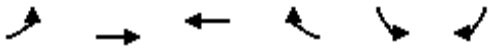
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	896	11	0	1392	152	0	0	245	0	0	39
Future Volume (Veh/h)	0	896	11	0	1392	152	0	0	245	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	996	12	0	1547	169	0	0	272	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		182			208							
pX, platoon unblocked	0.73			0.92			0.77	0.77	0.92	0.77	0.77	0.73
vC, conflicting volume	1721			1013			1828	2728	514	2327	2565	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1246			848			1025	2197	308	1674	1984	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	57	100	100	95
cM capacity (veh/h)	402			722			135	34	629	27	46	783

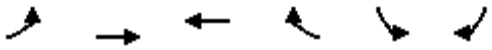
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	664	344	774	774	169	272	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	12	0	0	169	272	43
cSH	1700	1700	1700	1700	1700	629	783
Volume to Capacity	0.39	0.20	0.46	0.46	0.10	0.43	0.05
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	16.6	1.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	15.0	9.9
Lane LOS						C	A
Approach Delay (s)	0.0		0.0			15.0	9.9
Approach LOS						C	A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	50.0%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (vph)	0	872	1461	84	0	448
Future Volume (vph)	0	872	1461	84	0	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	969	1623	93	0	498
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	969	1623	93	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

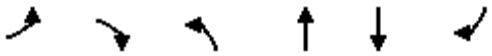
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	872	1461	84	0	448
Future Volume (Veh/h)	0	872	1461	84	0	448
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	969	1623	93	0	498
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.67				0.76	0.67
vC, conflicting volume	1721				2118	822
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1101				817	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	31
cM capacity (veh/h)	422				237	723

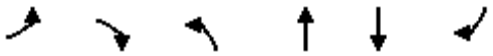
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	484	484	812	812	93	498
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	93	498
cSH	1700	1700	1700	1700	1700	723
Volume to Capacity	0.28	0.28	0.48	0.48	0.05	0.69
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	42.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	20.2
Lane LOS						C
Approach Delay (s)	0.0		0.0			20.2
Approach LOS						C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	100	0	2019	1859	125
Future Volume (vph)	0	100	0	2019	1859	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	4421	4421	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	4421	4421	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	111	0	2243	2066	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	111	0	2243	2066	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

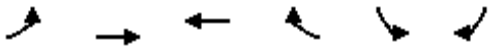
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			



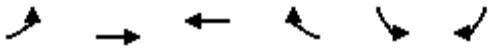
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	100	0	2019	1859	125
Future Volume (Veh/h)	0	100	0	2019	1859	125
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	111	0	2243	2066	139
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.84	0.69	0.69			
vC, conflicting volume	2824	699	2210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	20	0	1175			
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)	830	740	405			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	111	748	748	748	689	689	689	139
Volume Left	0	0	0	0	0	0	0	0
Volume Right	111	0	0	0	0	0	0	139
cSH	740	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.44	0.44	0.44	0.41	0.41	0.41	0.08
Queue Length 95th (m)	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.7	0.0			0.0			
Approach LOS	B							

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	50.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	852	1545	0	150	0
Future Volume (vph)	0	852	1545	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1842	3500	3500	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	3500	3500	0	1743	1842
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	947	1717	0	167	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	947	1717	0	167	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max	None		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)		53.2	53.2		14.9	
Actuated g/C Ratio		0.69	0.69		0.19	
v/c Ratio		0.39	0.72		0.50	
Control Delay		7.2	12.0		31.4	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.2	12.0		31.4	
LOS		A	B		C	
Approach Delay		7.2	12.0		31.4	
Approach LOS		A	B		C	
Queue Length 50th (m)		22.2	57.8		20.5	
Queue Length 95th (m)		66.6	#189.3		35.2	
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)					40.0	
Base Capacity (vph)		2398	2398		727	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.39	0.72		0.23	

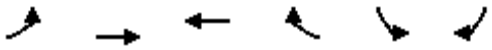
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	

Analysis Period (min) 15

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

Splits and Phases: 24: William Halton Parkway & Collector 5

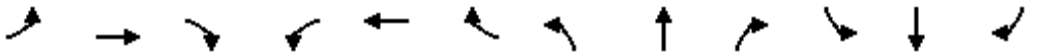




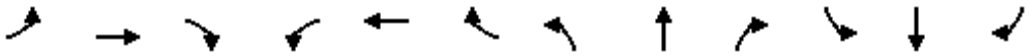
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	852	1545	0	150	0
Future Volume (vph)	0	852	1545	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3500	3500		1750	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3500	3500		1750	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	947	1717	0	167	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	947	1717	0	167	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		53.1	53.1		14.9	
Effective Green, g (s)		53.1	53.1		14.9	
Actuated g/C Ratio		0.69	0.69		0.19	
Clearance Time (s)		5.5	5.5		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2398	2398		336	
v/s Ratio Prot		0.27	c0.49		c0.10	
v/s Ratio Perm						
v/c Ratio		0.39	0.72		0.50	
Uniform Delay, d1		5.3	7.5		28.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	1.0		1.2	
Delay (s)		5.8	8.6		29.1	
Level of Service		A	A		C	
Approach Delay (s)		5.8	8.6		29.1	
Approach LOS		A	A		C	

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)	77.5	Sum of lost time (s)	9.5
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Future Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			162			89			165
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	24.0	49.0	49.0	27.0	52.0	52.0	20.0	50.0	50.0	14.0	44.0	44.0
Total Split (%)	17.1%	35.0%	35.0%	19.3%	37.1%	37.1%	14.3%	35.7%	35.7%	10.0%	31.4%	31.4%
Maximum Green (s)	20.0	42.6	42.6	23.0	45.6	45.6	16.0	43.6	43.6	10.0	38.6	38.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	19.8	42.9	42.9	22.4	45.5	45.5	16.2	43.7	43.7	10.2	38.7	38.7
Actuated g/C Ratio	0.14	0.31	0.31	0.16	0.32	0.32	0.12	0.31	0.31	0.07	0.28	0.28
v/c Ratio	0.91	0.66	0.18	0.89	0.88	0.93	0.92	1.31	0.06	0.84	1.28	0.55
Control Delay	83.3	45.7	4.6	77.6	54.8	55.8	90.2	185.3	0.2	93.1	175.2	22.7
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	83.3	45.7	4.6	77.6	54.8	55.8	90.2	185.3	0.2	93.1	175.2	22.7
LOS	F	D	A	E	D	E	F	F	A	F	F	C
Approach Delay		55.6			60.3			167.0			145.2	
Approach LOS		E			E			F			F	
Queue Length 50th (m)	62.3	89.3	0.0	67.1	137.4	119.1	52.0	~269.1	0.0	28.9	~229.4	30.6
Queue Length 95th (m)	#91.6	110.8	9.4	#94.2	165.5	#191.5	#81.4	#302.2	0.0	#50.4	#262.9	60.3
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Base Capacity (vph)	485	1072	562	547	1140	619	393	1380	540	238	1221	546
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	0.90	0.66	0.18	0.87	0.88	0.93	0.92	1.31	0.06	0.84	1.28	0.55

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 113.8	Intersection LOS: F

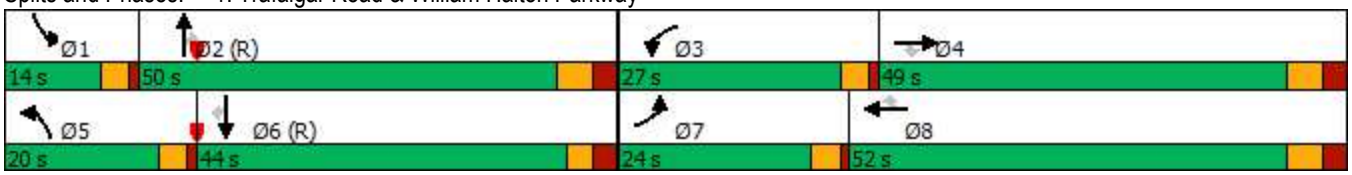
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

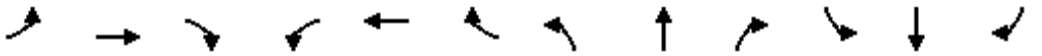
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

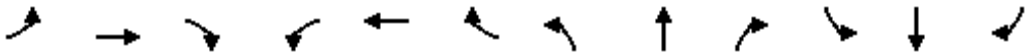




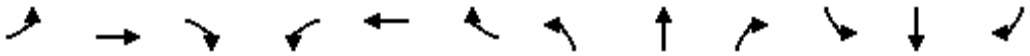
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Future Volume (vph)	407	654	95	443	930	536	337	1686	31	187	1458	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	438	703	102	476	1000	576	362	1813	33	201	1568	298
RTOR Reduction (vph)	0	0	71	0	0	109	0	0	23	0	0	119
Lane Group Flow (vph)	438	703	31	476	1000	467	362	1813	10	201	1568	179
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.8	42.9	42.9	22.4	45.5	45.5	16.2	43.7	43.7	10.2	38.7	38.7
Effective Green, g (s)	19.8	42.9	42.9	22.4	45.5	45.5	16.2	43.7	43.7	10.2	38.7	38.7
Actuated g/C Ratio	0.14	0.31	0.31	0.16	0.32	0.32	0.12	0.31	0.31	0.07	0.28	0.28
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	480	1072	479	532	1137	508	392	1379	479	238	1222	427
v/s Ratio Prot	0.13	0.20		c0.14	0.29		c0.11	c0.41		0.06	0.35	
v/s Ratio Perm			0.02			c0.30			0.01			0.12
v/c Ratio	0.91	0.66	0.07	0.89	0.88	0.92	0.92	1.31	0.02	0.84	1.28	0.42
Uniform Delay, d1	59.2	42.1	34.4	57.6	44.7	45.5	61.3	48.1	33.3	64.1	50.6	41.4
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	21.6	2.0	0.1	17.3	8.6	22.5	27.1	146.9	0.1	23.0	133.8	3.0
Delay (s)	80.9	44.1	34.5	75.0	53.3	68.0	88.3	195.0	33.4	87.1	184.4	44.4
Level of Service	F	D	C	E	D	E	F	F	C	F	F	D
Approach Delay (s)		56.3			62.4			175.1			154.8	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	119.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Future Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.955			0.946			0.991			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3342	0	1750	3311	0	1750	4375	0	1750	4294	0
Flt Permitted	0.389			0.497			0.072			0.055		
Satd. Flow (perm)	683	3342	0	915	3311	0	133	4375	0	101	4294	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			92			10			26	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		468.0			810.8			2139.5			320.3	
Travel Time (s)		33.7			58.4			128.4			19.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	112	206	87	104	240	134	116	1884	118	135	1457	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	293	0	104	374	0	116	2002	0	135	1674	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		11.5	37.3		11.0	37.3	
Total Split (s)	43.0	43.0		43.0	43.0		13.0	65.0		12.0	64.0	
Total Split (%)	35.8%	35.8%		35.8%	35.8%		10.8%	54.2%		10.0%	53.3%	
Maximum Green (s)	36.6	36.6		36.6	36.6		9.0	58.7		8.0	57.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0			24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	21.5	21.5		21.5	21.5		83.0	71.5		85.2	72.6	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.69	0.60		0.71	0.60	
v/c Ratio	0.92	0.45		0.63	0.56		0.54	0.77		0.63	0.64	
Control Delay	109.2	36.1		61.1	35.5		23.0	22.5		35.5	18.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	109.2	36.1		61.1	35.5		23.0	22.5		35.5	18.3	
LOS	F	D		E	D		C	C		D	B	
Approach Delay		56.4			41.1			22.5			19.6	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	26.1	26.2		22.9	31.9		6.8	138.9		14.3	95.3	
Queue Length 95th (m)	#46.5	35.4		37.7	42.2		26.5	#211.7		38.2	156.8	
Internal Link Dist (m)		444.0			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	208	1058		279	1073		230	2609		216	2608	
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	0.54	0.28		0.37	0.35		0.50	0.77		0.63	0.64	

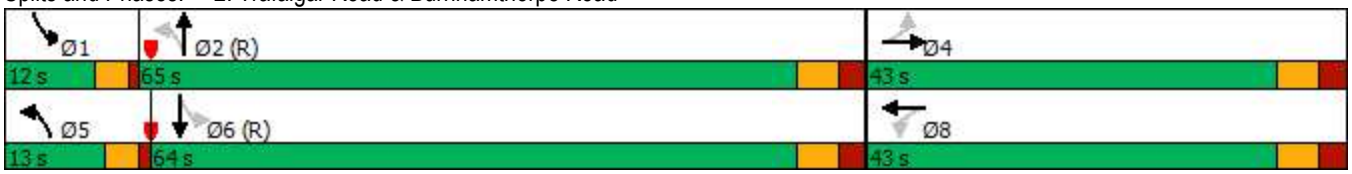
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	

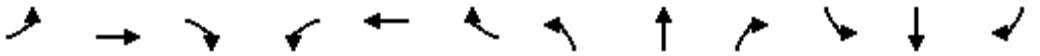
Analysis Period (min) 15

* User Entered Value

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Future Volume (vph)	106	196	83	99	228	127	110	1790	112	128	1384	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3344		1750	3312		1750	4376		1750	4293	
Flt Permitted	0.39	1.00		0.50	1.00		0.07	1.00		0.06	1.00	
Satd. Flow (perm)	684	3344		916	3312		132	4376		101	4293	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	112	206	87	104	240	134	116	1884	118	135	1457	217
RTOR Reduction (vph)	0	46	0	0	76	0	0	4	0	0	10	0
Lane Group Flow (vph)	112	247	0	104	298	0	116	1998	0	135	1664	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.5	21.5		21.5	21.5		80.7	71.5		82.9	72.6	
Effective Green, g (s)	21.5	21.5		21.5	21.5		80.7	71.5		82.9	72.6	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.67	0.60		0.69	0.60	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	122	599		164	593		212	2607		211	2597	
v/s Ratio Prot		0.07			0.09		0.04	c0.46		c0.05	0.39	
v/s Ratio Perm	c0.16			0.11			0.32			0.38		
v/c Ratio	0.92	0.41		0.63	0.50		0.55	0.77		0.64	0.64	
Uniform Delay, d1	48.4	43.7		45.6	44.4		12.2	18.0		26.2	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	56.1	0.5		7.8	0.7		2.9	2.2		6.2	1.2	
Delay (s)	104.5	44.1		53.4	45.1		15.1	20.3		32.4	16.5	
Level of Service	F	D		D	D		B	C		C	B	
Approach Delay (s)		60.8			46.9			20.0			17.7	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



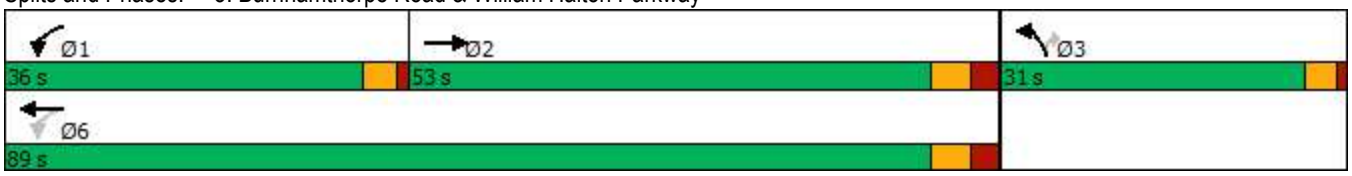
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1000	1	407	1536	0	437
Future Volume (vph)	1000	1	407	1536	0	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	120.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.130			
Satd. Flow (perm)	3433	0	239	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						461
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1042	1	424	1600	0	455
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1043	0	424	1600	0	455
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	53.0		36.0	89.0	31.0	31.0
Total Split (%)	44.2%		30.0%	74.2%	25.8%	25.8%
Maximum Green (s)	46.6		32.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.7		77.9	75.5		27.1
Actuated g/C Ratio	0.41		0.69	0.67		0.24
v/c Ratio	0.74		0.86	0.68		0.63
Control Delay	32.7		40.0	13.2		7.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	32.7		40.0	13.2		7.6
LOS	C		D	B		A
Approach Delay	32.7			18.8	7.6	
Approach LOS	C			B	A	
Queue Length 50th (m)	102.0		61.6	102.8		0.0
Queue Length 95th (m)	138.3		99.5	124.1		26.2
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			120.0			
Base Capacity (vph)	1419		594	2565		725
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	0.74		0.71	0.62		0.63

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

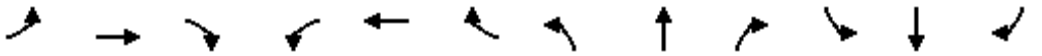
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



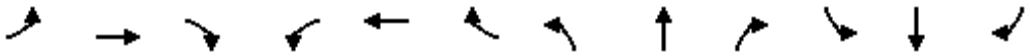


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1000	1	407	1536	0	437
Future Volume (vph)	1000	1	407	1536	0	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.13	1.00		1.00
Satd. Flow (perm)	3432		240	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1042	1	424	1600	0	455
RTOR Reduction (vph)	0	0	0	0	0	346
Lane Group Flow (vph)	1043	0	424	1600	0	109
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	46.8		75.6	75.6		27.1
Effective Green, g (s)	46.8		75.6	75.6		27.1
Actuated g/C Ratio	0.41		0.67	0.67		0.24
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1420		491	2339		375
v/s Ratio Prot	0.30		c0.19	0.46		
v/s Ratio Perm			c0.39			c0.07
v/c Ratio	0.73		0.86	0.68		0.29
Uniform Delay, d1	27.9		26.9	11.5		35.1
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.4		14.6	0.8		2.0
Delay (s)	31.3		41.4	12.3		37.1
Level of Service	C		D	B		D
Approach Delay (s)	31.3			18.4	37.1	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	14.4
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Future Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1538	1431	1750	3500	0	0	4980	0
Flt Permitted	0.390			0.950	0.953		0.072					
Satd. Flow (perm)	626	0	1331	1615	1538	1431	133	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	443	2	20	7	2825	0	0	1910	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	221	226	18	7	2825	0	0	1910	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	49.0		49.0	49.0	49.0	49.0	11.0	71.0			60.0	
Total Split (%)	40.8%		40.8%	40.8%	40.8%	40.8%	9.2%	59.2%			50.0%	
Maximum Green (s)	43.0		43.0	43.0	43.0	43.0	7.0	64.0			53.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.4		19.4	19.4	19.4	19.4	67.2	64.2			62.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.70	0.66			0.65	
v/c Ratio	0.06		0.02	0.68	0.73	0.05	0.04	1.22			0.59	
Control Delay	30.9		0.2	46.8	50.5	0.3	6.6	120.7			12.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	30.9		0.2	46.8	50.5	0.3	6.6	120.7			12.3	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		16.7			46.8			120.4			12.3	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	40.4	43.6	0.0	0.3	~339.8			62.5	
Queue Length 95th (m)	4.6		0.0	64.9	70.2	0.0	2.0	#436.5			127.0	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	279		634	721	686	679	210	2325			3214	
Starvation Cap Reductn	0		0	0	0	0	0	0			0	
Spillback Cap Reductn	0		0	0	0	0	0	0			0	
Storage Cap Reductn	0		0	0	0	0	0	0			0	
Reduced v/c Ratio	0.03		0.01	0.31	0.33	0.03	0.03	1.22			0.59	

Intersection Summary

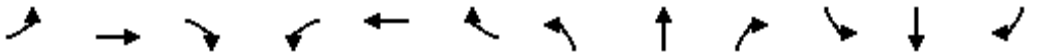
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 96.6
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 74.0 Intersection LOS: E
Intersection Capacity Utilization 104.5% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

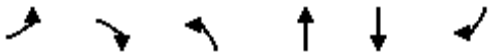
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Future Volume (vph)	7	0	6	425	2	19	7	2712	0	0	1834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1538	1431	1750	3500			4980	
Flt Permitted	0.39		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	627		1331	1615	1538	1431	132	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	443	2	20	7	2825	0	0	1910	0
RTOR Reduction (vph)	0	0	5	0	0	15	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	221	226	3	7	2825	0	0	1910	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.4		19.4	19.4	19.4	19.4	67.5	67.5			62.4	
Effective Green, g (s)	19.4		19.4	19.4	19.4	19.4	67.5	67.5			62.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.68			0.62	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	121		258	313	298	277	107	2364			3110	
v/s Ratio Prot							0.00	c0.81			0.38	
v/s Ratio Perm	0.01		0.00	0.14	0.15	0.00	0.04					
v/c Ratio	0.06		0.00	0.71	0.76	0.01	0.07	1.20			0.61	
Uniform Delay, d1	32.8		32.5	37.6	38.0	32.5	7.5	16.2			11.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	7.1	10.5	0.0	0.3	92.2			0.4	
Delay (s)	33.0		32.5	44.7	48.6	32.5	7.8	108.4			11.8	
Level of Service	C		C	D	D	C	A	F			B	
Approach Delay (s)		32.8			46.1			108.1			11.8	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	67.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2720	2318	47
Future Volume (vph)	0	0	0	2720	2318	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	2833	2415	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2833	2415	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

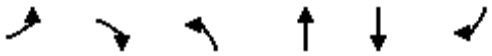
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2720	157	0	2318
Future Volume (vph)	0	0	2720	157	0	2318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	2833	164	0	2415
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2833	164	0	2415
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



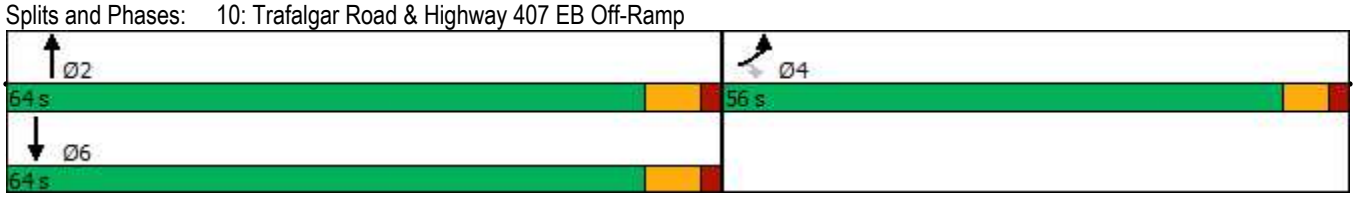
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	195	0	3147	2106	0
Future Volume (vph)	40	195	0	3147	2106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	43	207	0	3348	2240	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	207	0	3348	2240	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

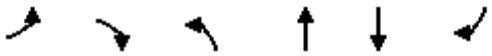
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	56.0	56.0		64.0	64.0	
Total Split (%)	46.7%	46.7%		53.3%	53.3%	
Maximum Green (s)	50.0	50.0		57.0	57.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.5	19.5		57.2	57.2	
Actuated g/C Ratio	0.22	0.22		0.64	0.64	
v/c Ratio	0.11	0.75		1.50	1.01	
Control Delay	27.8	49.3		248.1	41.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	27.8	49.3		248.1	41.2	
LOS	C	D		F	D	
Approach Delay	45.6			248.1	41.2	
Approach LOS	D			F	D	
Queue Length 50th (m)	6.0	33.2		~423.8	~193.3	
Queue Length 95th (m)	13.9	56.3		#528.5	#301.4	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	978	715		2231	2209	
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	0.04	0.29		1.50	1.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 89.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.50			
Intersection Signal Delay: 160.0		Intersection LOS: F	
Intersection Capacity Utilization 102.8%		ICU Level of Service G	
Analysis Period (min) 15			

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

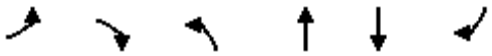
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





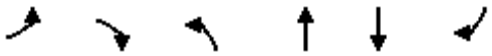
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	195	0	3147	2106	0
Future Volume (vph)	40	195	0	3147	2106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	207	0	3348	2240	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	43	206	0	3348	2240	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.5	19.5		57.2	57.2	
Effective Green, g (s)	19.5	19.5		57.2	57.2	
Actuated g/C Ratio	0.22	0.22		0.64	0.64	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	380	277		2231	2210	
v/s Ratio Prot	0.02			c0.96	0.65	
v/s Ratio Perm		c0.16				
v/c Ratio	0.11	0.74		1.50	1.01	
Uniform Delay, d1	28.2	32.8		16.2	16.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	10.4		227.7	22.6	
Delay (s)	28.3	43.1		243.9	38.8	
Level of Service	C	D		F	D	
Approach Delay (s)	40.6			243.9	38.8	
Approach LOS	D			F	D	

Intersection Summary			
HCM 2000 Control Delay	156.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2636	1962	19
Future Volume (vph)	0	0	0	2636	1962	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	2804	2087	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2804	2087	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2636	1962	19
Future Volume (Veh/h)	0	0	0	2636	1962	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	2804	2087	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)				130	228	
pX, platoon unblocked	0.51	0.73	0.73			
vC, conflicting volume	3489	1044	2107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1531	306	1771			
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)	54	501	253			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1402	1402	1044	1044	20
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	20
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.82	0.82	0.61	0.61	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

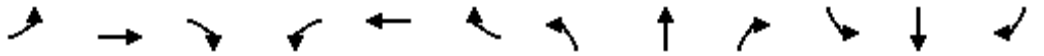
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		



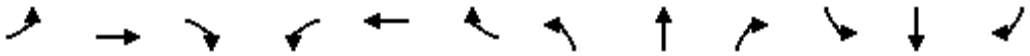
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2915	187	0	2147
Future Volume (vph)	0	0	2915	187	0	2147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3101	199	0	2284
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3101	199	0	2284
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	319	0	23	1	2037	0	0	1682	0
Future Volume (vph)	1	0	3	319	0	23	1	2037	0	0	1682	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.997	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1563	1487	1750	3500	0	0	5029	0
Flt Permitted	0.461			0.950	0.953		0.087					
Satd. Flow (perm)	433	0	1566	1630	1563	1487	160	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	347	0	25	1	2214	0	0	1828	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	173	177	22	1	2214	0	0	1828	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

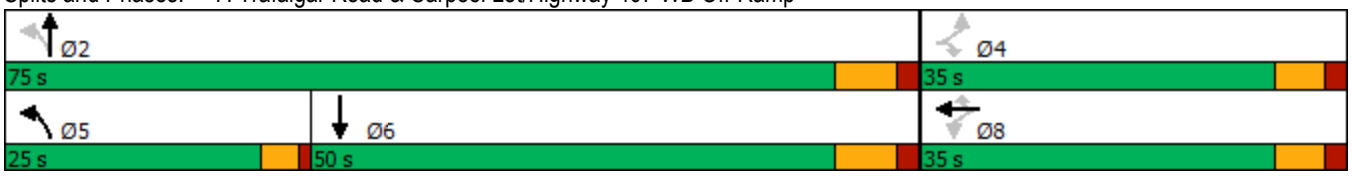


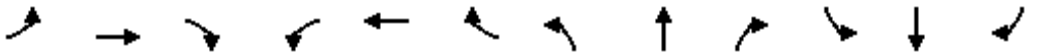
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	15.4		15.4	15.4	15.4	15.4	71.2	68.1			66.3	
Actuated g/C Ratio	0.16		0.16	0.16	0.16	0.16	0.74	0.70			0.69	
v/c Ratio	0.01		0.01	0.67	0.56	0.07	0.00	0.90			0.53	
Control Delay	33.0		0.0	50.8	27.6	0.5	5.0	18.8			9.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	33.0		0.0	50.8	27.6	0.5	5.0	18.8			9.2	
LOS	C		A	D	C	A	A	B			A	
Approach Delay		8.3			36.8			18.8			9.2	
Approach LOS		A			D			B			A	
Queue Length 50th (m)	0.2		0.0	32.3	18.2	0.0	0.1	150.2			49.8	
Queue Length 95th (m)	1.6		0.0	54.2	40.1	0.0	0.6	#275.0			100.8	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	130		526	490	525	502	464	2468			3453	
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	0.01		0.01	0.35	0.34	0.04	0.00	0.90			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 96.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

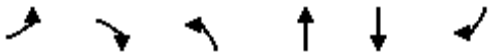
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	319	0	23	1	2037	0	0	1682	0
Future Volume (vph)	1	0	3	319	0	23	1	2037	0	0	1682	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.46		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	433		1566	1630	1564	1487	160	3500			5029	
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)	1	0	3	347	0	25	1	2214	0	0	1828	0
RTOR Reduction (vph)	0	0	3	0	67	19	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	0	173	110	3	1	2214	0	0	1828	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	15.4		15.4	15.4	15.4	15.4	71.4	71.4			66.3	
Effective Green, g (s)	15.4		15.4	15.4	15.4	15.4	71.4	71.4			66.3	
Actuated g/C Ratio	0.15		0.15	0.15	0.15	0.15	0.72	0.72			0.66	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	66		241	251	241	229	131	2504			3340	
v/s Ratio Prot							0.00	c0.63			0.36	
v/s Ratio Perm	0.00		0.00	c0.11	0.07	0.00	0.01					
v/c Ratio	0.02		0.00	0.69	0.46	0.01	0.01	0.88			0.55	
Uniform Delay, d1	35.8		35.7	39.9	38.4	35.8	5.5	11.0			8.8	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	7.7	1.4	0.0	0.0	4.1			0.2	
Delay (s)	35.9		35.7	47.6	39.8	35.8	5.5	15.1			9.0	
Level of Service	D		D	D	D	D	A	B			A	
Approach Delay (s)		35.7			43.2			15.1			9.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2038	2005	41
Future Volume (vph)	0	0	0	2038	2005	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2215	2179	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2215	2179	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

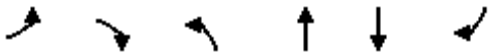
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2038	51	0	2005
Future Volume (vph)	0	0	2038	51	0	2005
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2215	55	0	2179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2215	55	0	2179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

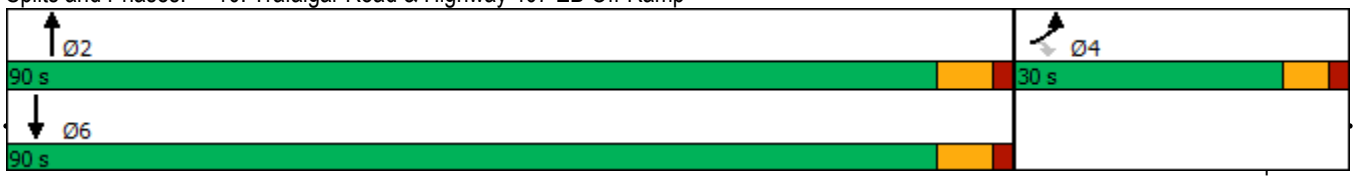


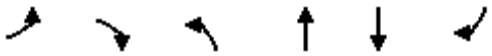
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	157	0	2348	2000	0
Future Volume (vph)	41	157	0	2348	2000	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		16				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	44	169	0	2525	2151	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	169	0	2525	2151	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	30.0	30.0		90.0	90.0	
Total Split (%)	25.0%	25.0%		75.0%	75.0%	
Maximum Green (s)	24.0	24.0		83.0	83.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	17.4	17.4		83.1	83.1	
Actuated g/C Ratio	0.15	0.15		0.73	0.73	
v/c Ratio	0.16	0.75		0.99	0.84	
Control Delay	42.2	62.2		31.0	15.7	
Queue Delay	0.0	0.0		17.1	0.0	
Total Delay	42.2	62.2		48.0	15.7	
LOS	D	E		D	B	
Approach Delay	58.1			48.0	15.7	
Approach LOS	E			D	B	
Queue Length 50th (m)	8.6	32.9		251.2	154.5	
Queue Length 95th (m)	18.9	56.0		#379.0	235.2	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	370	304		2561	2561	
Starvation Cap Reductn	0	0		142	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.12	0.56		1.04	0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 34.2		Intersection LOS: C	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

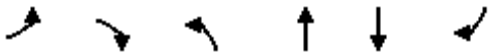
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	157	0	2348	2000	0
Future Volume (vph)	41	157	0	2348	2000	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	169	0	2525	2151	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	44	155	0	2525	2151	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	17.4	17.4		83.2	83.2	
Effective Green, g (s)	17.4	17.4		83.2	83.2	
Actuated g/C Ratio	0.15	0.15		0.73	0.73	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	268	210		2563	2563	
v/s Ratio Prot	0.03			c0.72	0.61	
v/s Ratio Perm		c0.11				
v/c Ratio	0.16	0.74		0.99	0.84	
Uniform Delay, d1	41.8	45.9		14.6	10.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	13.1		14.6	3.5	
Delay (s)	42.1	59.0		29.2	14.1	
Level of Service	D	E		C	B	
Approach Delay (s)	55.5			29.2	14.1	
Approach LOS	E			C	B	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1941	1870	14
Future Volume (vph)	0	0	0	1941	1870	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2087	2011	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2087	2011	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

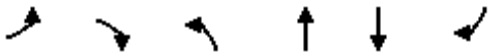
Intersection Sign configuration not allowed in HCM analysis.



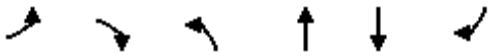
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2211	95	0	2009
Future Volume (vph)	0	0	2211	95	0	2009
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2377	102	0	2160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2377	102	0	2160
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	466	576	150
Future Volume (vph)	320	148	0	466	576	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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					
Satd. Flow (prot)	1075	1401	1740	4885	4980	1566
Flt Permitted	0.950					
Satd. Flow (perm)	1075	1401	1740	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		161				163
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			228.1	145.5	
Travel Time (s)	16.2			10.3	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	348	161	0	507	626	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	161	0	507	626	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
v/c Ratio	1.65	0.40		0.16	0.19	0.15
Control Delay	340.3	8.6		6.2	6.4	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	340.3	8.6		6.2	6.4	1.3
LOS	F	A		A	A	A
Approach Delay	235.3			6.2	5.3	
Approach LOS	F			A	A	
Queue Length 50th (m)	~89.1	0.0		11.0	14.0	0.0
Queue Length 95th (m)	#140.1	15.6		15.1	18.6	5.9
Internal Link Dist (m)	88.4			204.1	121.5	
Turn Bay Length (m)						40.0
Base Capacity (vph)	211	404		3199	3261	1081
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	1.65	0.40		0.16	0.19	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 91			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.65			
Intersection Signal Delay: 70.4		Intersection LOS: E	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

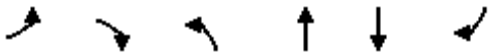
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 14: Trafalgar Road & GO Parking Lot





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	466	576	150
Future Volume (vph)	320	148	0	466	576	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		0.91	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	1.00
Satd. Flow (prot)	1075	1401		4885	4980	1566
Flt Permitted	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1075	1401		4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	161	0	507	626	163
RTOR Reduction (vph)	0	129	0	0	0	56
Lane Group Flow (vph)	348	32	0	507	626	107
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.9	17.9		59.6	59.6	59.6
Effective Green, g (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
Clearance Time (s)	7.1	7.1		6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2		4.0	4.0	4.0
Lane Grp Cap (vph)	211	275		3199	3261	1025
v/s Ratio Prot	c0.32			0.10	c0.13	
v/s Ratio Perm		0.02				0.07
v/c Ratio	1.65	0.12		0.16	0.19	0.10
Uniform Delay, d1	36.5	30.0		6.0	6.2	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	312.4	0.2		0.1	0.1	0.2
Delay (s)	349.0	30.2		6.2	6.3	6.0
Level of Service	F	C		A	A	A
Approach Delay (s)	248.2			6.2	6.3	
Approach LOS	F			A	A	

Intersection Summary			
HCM 2000 Control Delay	74.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2036 Future Background AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	48	2.0	48	2.0	0.797	49.5	LOS E	3.8	26.7	0.93	1.16	1.90	32.2
2	T1	All MCs	230	2.0	230	2.0	0.797	48.9	LOS E	3.8	26.9	0.93	1.16	1.90	32.6
3	R2	All MCs	223	2.0	223	2.0	0.797	46.3	LOS E	3.8	26.9	0.92	1.16	1.90	33.1
Approach			501	2.0	501	2.0	0.797	47.8	LOS E	3.8	26.9	0.92	1.16	1.90	32.8
East: William Halton Parkway															
4	L2	All MCs	76	2.0	76	2.0	0.469	11.7	LOS B	2.3	16.3	0.57	0.60	0.84	47.0
5	T1	All MCs	452	2.0	452	2.0	0.469	11.5	LOS B	2.3	16.3	0.56	0.59	0.83	48.1
6	R2	All MCs	154	2.0	154	2.0	0.469	11.4	LOS B	2.2	15.9	0.54	0.58	0.82	48.2
Approach			682	2.0	682	2.0	0.469	11.5	LOS B	2.3	16.3	0.55	0.59	0.83	48.0
North: Sixth Line															
7	L2	All MCs	929	2.0	929	2.0	1.259	144.0	LOS F	73.3	521.9	1.00	3.94	9.71	17.9
8	T1	All MCs	223	2.0	223	2.0	0.312	8.8	LOS A	1.0	7.2	0.49	0.45	0.51	50.4
9	R2	All MCs	368	2.0	368	2.0	0.194	4.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1520	2.0	1520	2.0	1.259	90.3	LOS F	73.3	521.9	0.68	2.47	6.01	23.9
West: William Halton Parkway															
10	L2	All MCs	300	2.0	300	2.0	0.941	54.1	LOS F	10.7	75.9	0.95	1.54	3.07	30.5
11	T1	All MCs	672	2.0	672	2.0	0.941	52.9	LOS F	10.9	77.3	0.95	1.55	3.09	31.7
12	R2	All MCs	106	2.0	106	2.0	0.056	2.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1078	2.0	1078	2.0	0.941	48.3	LOS E	10.9	77.3	0.86	1.40	2.78	32.7
All Vehicles			3781	2.0	3781	2.0	1.259	58.5	LOS F	73.3	521.9	0.74	1.65	3.61	29.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2036 Future Background AM - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	48	2.0	48	2.0	0.743	42.9	LOS E	3.2	22.7	0.91	1.10	1.70	34.0
2	T1	All MCs	199	2.0	199	2.0	0.743	42.6	LOS E	3.2	22.8	0.91	1.10	1.70	34.5
3	R2	All MCs	220	2.0	220	2.0	0.743	40.0	LOS E	3.2	22.8	0.90	1.10	1.70	35.0
Approach			467	2.0	467	2.0	0.743	41.4	LOS E	3.2	22.8	0.91	1.10	1.70	34.7
East: William Halton Parkway															
4	L2	All MCs	74	2.0	74	2.0	0.331	8.9	LOS A	1.1	8.0	0.49	0.44	0.52	48.4
5	T1	All MCs	421	2.0	421	2.0	0.331	8.8	LOS A	1.1	8.0	0.47	0.43	0.51	50.0
6	R2	All MCs	148	2.0	148	2.0	0.078	2.6	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			643	2.0	643	2.0	0.331	7.4	LOS A	1.1	8.0	0.37	0.33	0.39	51.1
North: Sixth Line															
7	L2	All MCs	892	2.0	892	2.0	1.182	113.0	LOS F	59.3	422.3	1.00	3.37	7.89	20.8
8	T1	All MCs	193	2.0	193	2.0	0.263	7.9	LOS A	0.8	5.7	0.46	0.41	0.46	51.0
9	R2	All MCs	353	2.0	353	2.0	0.186	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1439	2.0	1439	2.0	1.182	72.1	LOS F	59.3	422.3	0.68	2.15	4.96	26.9
West: William Halton Parkway															
10	L2	All MCs	290	2.0	290	2.0	0.910	48.0	LOS E	9.1	65.0	0.93	1.42	2.70	32.0
11	T1	All MCs	660	2.0	660	2.0	0.910	46.8	LOS E	9.3	65.9	0.92	1.42	2.71	33.3
12	R2	All MCs	106	2.0	106	2.0	0.056	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1056	2.0	1056	2.0	0.910	42.7	LOS E	9.3	65.9	0.83	1.28	2.43	34.3
All Vehicles			3604	2.0	3604	2.0	1.182	48.0	LOS E	59.3	422.3	0.70	1.43	2.98	32.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2036 Future Background PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	12	2.0	12	2.0	0.415	15.0	LOS B	1.5	10.5	0.70	0.77	0.96	45.7
2	T1	All MCs	243	2.0	243	2.0	0.415	14.8	LOS B	1.5	10.5	0.69	0.76	0.96	46.5
3	R2	All MCs	147	2.0	147	2.0	0.415	14.3	LOS B	1.4	10.3	0.67	0.75	0.94	46.3
Approach			402	2.0	402	2.0	0.415	14.6	LOS B	1.5	10.5	0.69	0.76	0.95	46.4
East: William Halton Parkway															
4	L2	All MCs	241	2.0	241	2.0	1.018	59.1	LOS F	30.7	218.8	1.00	2.18	4.37	29.7
5	T1	All MCs	721	2.0	721	2.0	1.018	58.9	LOS F	31.2	222.2	1.00	2.18	4.38	30.0
6	R2	All MCs	580	2.0	580	2.0	1.018	58.4	LOS F	31.2	222.2	1.00	2.20	4.42	29.9
Approach			1542	2.0	1542	2.0	1.018	58.7	LOS F	31.2	222.2	1.00	2.19	4.39	29.9
North: Sixth Line															
7	L2	All MCs	276	2.0	276	2.0	0.515	16.1	LOS C	2.2	15.6	0.69	0.79	1.03	42.4
8	T1	All MCs	277	2.0	277	2.0	0.492	14.8	LOS B	2.0	14.2	0.66	0.75	0.97	46.7
9	R2	All MCs	313	2.0	313	2.0	0.165	3.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			866	2.0	866	2.0	0.515	11.3	LOS B	2.2	15.6	0.43	0.49	0.64	48.0
West: William Halton Parkway															
10	L2	All MCs	264	2.0	264	2.0	0.683	20.8	LOS C	4.6	32.6	0.73	0.94	1.44	41.2
11	T1	All MCs	583	2.0	583	2.0	0.683	20.4	LOS C	4.6	32.6	0.72	0.92	1.43	43.3
12	R2	All MCs	72	2.0	72	2.0	0.038	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			920	2.0	920	2.0	0.683	19.1	LOS C	4.6	32.6	0.66	0.86	1.32	43.4
All Vehicles			3730	2.0	3730	2.0	1.018	33.2	LOS D	31.2	222.2	0.75	1.31	2.39	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2036 Future Background PM - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	12	2.0	12	2.0	0.363	13.3	LOS B	1.2	8.8	0.66	0.72	0.87	46.6
2	T1	All MCs	210	2.0	210	2.0	0.363	13.1	LOS B	1.2	8.8	0.66	0.71	0.86	47.4
3	R2	All MCs	143	2.0	143	2.0	0.363	12.7	LOS B	1.2	8.5	0.64	0.70	0.84	47.3
Approach			366	2.0	366	2.0	0.363	13.0	LOS B	1.2	8.8	0.65	0.71	0.85	47.3
East: William Halton Parkway															
4	L2	All MCs	238	2.0	238	2.0	0.605	14.4	LOS B	4.5	31.9	0.62	0.70	1.10	44.6
5	T1	All MCs	707	2.0	707	2.0	0.605	14.2	LOS B	4.5	31.9	0.61	0.68	1.09	46.5
6	R2	All MCs	558	2.0	558	2.0	0.294	4.5	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			1502	2.0	1502	2.0	0.605	10.6	LOS B	4.5	31.9	0.38	0.43	0.69	49.3
North: Sixth Line															
7	L2	All MCs	264	2.0	264	2.0	0.470	14.2	LOS B	1.9	13.4	0.65	0.74	0.97	43.3
8	T1	All MCs	239	2.0	239	2.0	0.446	14.2	LOS B	1.8	12.5	0.66	0.74	0.95	47.1
9	R2	All MCs	302	2.0	302	2.0	0.159	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			806	2.0	806	2.0	0.470	10.6	LOS B	1.9	13.4	0.41	0.46	0.60	48.6
West: William Halton Parkway															
10	L2	All MCs	257	2.0	257	2.0	0.629	17.8	LOS C	3.9	27.8	0.69	0.85	1.28	42.5
11	T1	All MCs	552	2.0	552	2.0	0.629	17.4	LOS C	3.9	27.8	0.68	0.84	1.26	44.8
12	R2	All MCs	72	2.0	72	2.0	0.038	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			881	2.0	881	2.0	0.629	16.3	LOS C	3.9	27.8	0.62	0.77	1.17	44.8
All Vehicles			3554	2.0	3554	2.0	0.629	12.3	LOS B	4.5	31.9	0.48	0.55	0.80	47.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2036 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	160	23.0	160	23.0	0.819	51.5	LOS F	3.9	30.7	0.91	1.18	1.91	31.7
2	T1	All MCs	360	2.0	360	2.0	0.819	42.0	LOS E	4.7	33.3	0.90	1.17	1.90	34.2
3	R2	All MCs	101	3.0	101	3.0	0.819	50.6	LOS F	4.7	33.3	0.90	1.16	1.90	35.0
Approach			620	7.6	620	7.6	0.819	45.8	LOS E	4.7	33.3	0.90	1.17	1.90	33.6
East: William Halton Parkway															
4	L2	All MCs	109	2.0	109	2.0	0.657	17.6	LOS C	4.7	34.0	0.69	0.84	1.30	43.6
5	T1	All MCs	713	3.0	713	3.0	0.657	17.5	LOS C	4.7	34.0	0.68	0.83	1.29	44.7
6	R2	All MCs	98	4.0	98	4.0	0.657	17.4	LOS C	4.7	33.6	0.67	0.82	1.28	44.8
Approach			920	3.0	920	3.0	0.657	17.5	LOS C	4.7	34.0	0.68	0.83	1.29	44.6
North: Ninth Line															
7	L2	All MCs	204	2.0	204	2.0	0.396	13.4	LOS B	1.4	10.2	0.65	0.72	0.89	43.6
8	T1	All MCs	646	2.0	646	2.0	1.188	124.8	LOS F	40.8	290.7	1.00	3.21	8.83	19.9
9	R2	All MCs	101	2.0	101	2.0	0.053	3.0	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			952	2.0	952	2.0	1.188	87.9	LOS F	40.8	290.7	0.82	2.33	6.18	24.4
West: William Halton Parkway															
10	L2	All MCs	106	4.0	106	4.0	1.335	181.1	LOS F	71.3	508.5	1.00	4.34	12.28	15.3
11	T1	All MCs	1247	2.0	1247	2.0	1.335	128.1	LOS F	71.3	508.5	0.98	3.15	8.32	19.9
12	R2	All MCs	369	12.0	369	12.0	0.208	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1721	4.3	1721	4.3	1.335	105.2	LOS F	71.3	508.5	0.77	2.55	6.78	22.5
All Vehicles			4213	4.0	4213	4.0	1.335	73.4	LOS F	71.3	508.5	0.78	1.92	4.73	27.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway - Copy (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2031 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	435	23.0	435	23.0	1.921	454.2	LOS F	91.9	738.9	1.00	5.93	19.19	7.4
2	T1	All MCs	692	2.0	692	2.0	1.921	444.8	LOS F	120.8	862.1	1.00	5.99	20.20	7.4
3	R2	All MCs	247	3.0	247	3.0	1.921	455.4	LOS F	120.8	862.1	1.00	6.01	20.51	7.4
Approach			1374	8.8	1374	8.8	1.921	449.6	LOS F	120.8	862.1	1.00	5.98	19.94	7.4
East: Burnhamthorpe Road															
4	L2	All MCs	152	2.0	152	2.0	1.240	138.7	LOS F	62.2	445.9	1.00	3.70	9.32	18.4
5	T1	All MCs	1399	3.0	1399	3.0	1.240	138.4	LOS F	63.8	458.9	1.00	3.75	9.45	18.5
6	R2	All MCs	140	4.0	140	4.0	1.240	138.2	LOS F	63.8	458.9	1.00	3.79	9.58	18.4
Approach			1691	3.0	1691	3.0	1.240	138.4	LOS F	63.8	458.9	1.00	3.75	9.45	18.5
North: Ninth Line															
7	L2	All MCs	120	2.0	120	2.0	0.652	30.5	LOS D	2.6	18.3	0.86	0.98	1.36	37.5
8	T1	All MCs	356	2.0	356	2.0	0.652	29.2	LOS D	2.6	18.3	0.85	0.97	1.35	39.3
9	R2	All MCs	122	2.0	122	2.0	0.065	3.6	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			599	2.0	599	2.0	0.652	24.3	LOS C	2.6	18.3	0.68	0.78	1.07	41.4
West: William Halton Parkway															
10	L2	All MCs	45	4.0	45	4.0	1.099	84.8	LOS F	40.5	288.7	1.00	2.73	6.20	24.9
11	T1	All MCs	1303	2.0	1303	2.0	1.099	63.8	LOS F	40.5	288.7	0.91	2.03	4.35	30.2
12	R2	All MCs	229	12.0	229	12.0	0.129	3.7	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1578	3.5	1578	3.5	1.099	55.7	LOS F	40.5	288.7	0.78	1.75	3.77	32.1
All Vehicles			5242	4.6	5242	4.6	1.921	182.1	LOS F	120.8	862.1	0.90	3.39	9.53	15.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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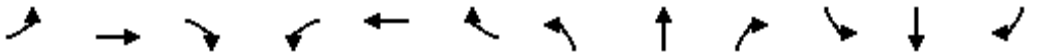
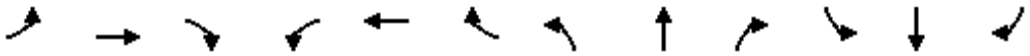
Appendix J

2041 Future Background Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	1134	277	238	347	123	565	1709	25	396	1550	304
Future Volume (vph)	563	1134	277	238	347	123	565	1709	25	396	1550	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			134			120			142
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	612	1233	301	259	377	134	614	1858	27	430	1685	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	612	1233	301	259	377	134	614	1858	27	430	1685	330
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	



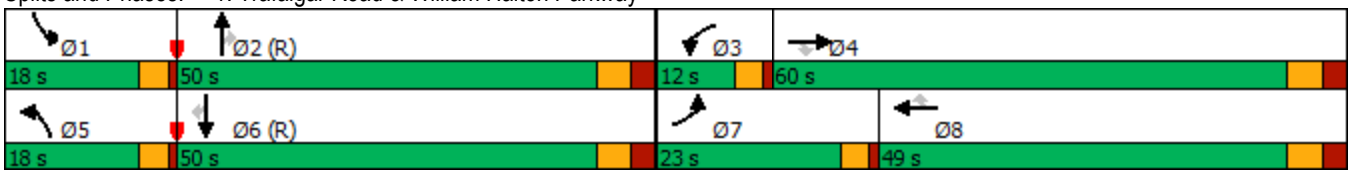
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	23.0	60.0	60.0	12.0	49.0	49.0	18.0	50.0	50.0	18.0	50.0	50.0
Total Split (%)	16.4%	42.9%	42.9%	8.6%	35.0%	35.0%	12.9%	35.7%	35.7%	12.9%	35.7%	35.7%
Maximum Green (s)	19.0	53.6	53.6	8.0	42.6	42.6	14.0	43.6	43.6	14.0	43.6	43.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	19.0	53.6	53.6	8.0	42.6	42.6	14.0	43.6	43.6	14.0	43.6	43.6
Actuated g/C Ratio	0.14	0.38	0.38	0.06	0.30	0.30	0.10	0.31	0.31	0.10	0.31	0.31
v/c Ratio	1.33	0.92	0.43	1.34	0.35	0.25	1.81	1.70	0.05	1.28	1.56	0.56
Control Delay	208.4	53.2	15.0	229.6	39.2	6.7	408.3	352.1	0.2	194.0	290.9	26.4
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	208.4	53.2	15.0	229.6	39.2	6.7	408.3	352.1	0.2	194.0	290.9	26.4
LOS	F	D	B	F	D	A	F	F	A	F	F	C
Approach Delay		92.1			97.6			362.1			238.1	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~112.9	169.9	24.5	~47.9	42.9	0.0	~131.5	~396.9	0.0	~77.5	~346.2	43.2
Queue Length 95th (m)	#149.7	#212.5	49.4	#76.0	57.1	15.0	#168.5	#438.6	0.0	#111.0	#388.3	74.6
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Base Capacity (vph)	460	1340	705	194	1065	535	340	1090	547	337	1079	585
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	1.33	0.92	0.43	1.34	0.35	0.25	1.81	1.70	0.05	1.28	1.56	0.56

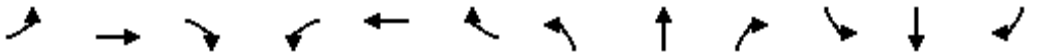
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.81			
Intersection Signal Delay: 223.9		Intersection LOS: F	
Intersection Capacity Utilization 114.4%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

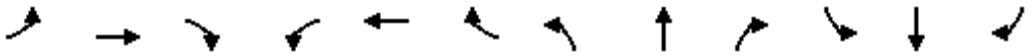
Splits and Phases: 1: Trafalgar Road & William Halton Parkway



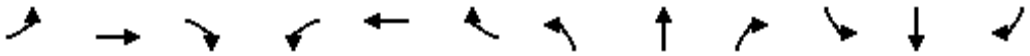


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	1134	277	238	347	123	565	1709	25	396	1550	304
Future Volume (vph)	563	1134	277	238	347	123	565	1709	25	396	1550	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	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)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
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)	612	1233	301	259	377	134	614	1858	27	430	1685	330
RTOR Reduction (vph)	0	0	106	0	0	93	0	0	19	0	0	98
Lane Group Flow (vph)	612	1233	195	259	377	41	614	1858	8	430	1685	232
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	19.0	53.6	53.6	8.0	42.6	42.6	14.0	43.6	43.6	14.0	43.6	43.6
Effective Green, g (s)	19.0	53.6	53.6	8.0	42.6	42.6	14.0	43.6	43.6	14.0	43.6	43.6
Actuated g/C Ratio	0.14	0.38	0.38	0.06	0.30	0.30	0.10	0.31	0.31	0.10	0.31	0.31
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	460	1340	599	194	1065	441	339	1090	464	336	1079	487
v/s Ratio Prot	c0.18	c0.35		0.08	0.11		c0.18	c0.53		0.13	0.49	
v/s Ratio Perm			0.12			0.03			0.01			0.15
v/c Ratio	1.33	0.92	0.33	1.34	0.35	0.09	1.81	1.70	0.02	1.28	1.56	0.48
Uniform Delay, d1	60.5	41.2	30.5	66.0	38.0	34.9	63.0	48.2	33.4	63.0	48.2	39.0
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	163.1	10.9	0.7	181.5	0.4	0.2	376.5	321.0	0.1	146.9	257.3	3.3
Delay (s)	223.6	52.1	31.1	247.5	38.4	35.1	439.5	369.2	33.4	209.9	305.5	42.3
Level of Service	F	D	C	F	D	D	F	F	C	F	F	D
Approach Delay (s)		98.0			108.1			382.9			253.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	237.8	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)	20.8
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	289	119	91	172	180	125	2000	145	145	1540	70
Future Volume (vph)	169	289	119	91	172	180	125	2000	145	145	1540	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00								
Frt		0.956			0.923			0.990			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3333	0	1750	3170	0	1700	3458	0	1750	3436	0
Flt Permitted	0.432			0.373			0.950			0.950		
Satd. Flow (perm)	796	3333	0	687	3170	0	1700	3458	0	1750	3436	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			200			8			5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		387.6			810.8			2139.5			320.3	
Travel Time (s)		27.9			58.4			128.4			19.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	188	321	132	101	191	200	139	2222	161	161	1711	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	453	0	101	391	0	139	2383	0	161	1789	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		11.5	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		14.0	56.0		22.0	64.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		11.7%	46.7%		18.3%	53.3%	
Maximum Green (s)	35.6	35.6		35.6	35.6		10.0	49.7		18.0	57.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0			24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	30.4	30.4		30.4	30.4		12.7	57.6		15.3	60.2	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.11	0.48		0.13	0.50	
v/c Ratio	0.93	0.51		0.58	0.41		0.77	1.43		0.73	1.04	
Control Delay	91.3	35.0		51.9	18.0		80.7	225.4		68.6	62.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	91.3	35.0		51.9	18.0		80.7	225.4		68.6	62.5	
LOS	F	D		D	B		F	F		E	E	
Approach Delay		51.5			25.0			217.4			63.0	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	42.0	41.1		20.2	18.2		32.5	~416.7		36.6	~248.2	
Queue Length 95th (m)	#79.8	55.2		38.3	30.8		#73.6	#474.2		58.6	#291.2	
Internal Link Dist (m)		363.6			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	236	1026		203	1081		180	1664		262	1724	
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	0.80	0.44		0.50	0.36		0.77	1.43		0.61	1.04	

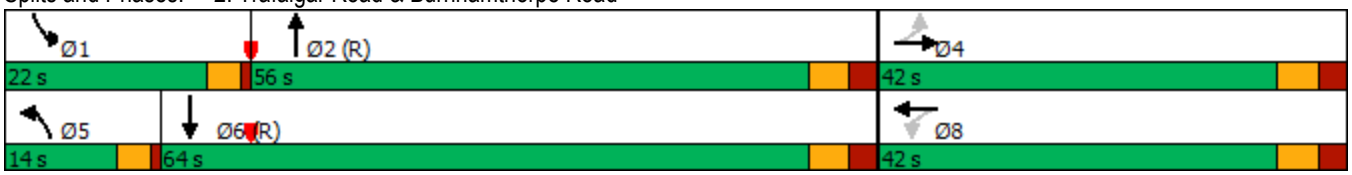
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.43	

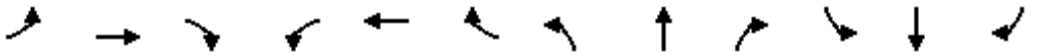
Intersection Signal Delay: 127.8	Intersection LOS: F
Intersection Capacity Utilization 107.9%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	289	119	91	172	180	125	2000	145	145	1540	70
Future Volume (vph)	169	289	119	91	172	180	125	2000	145	145	1540	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.92		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3334		1749	3171		1700	3457		1750	3438	
Flt Permitted	0.43	1.00		0.37	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	796	3334		687	3171		1700	3457		1750	3438	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	188	321	132	101	191	200	139	2222	161	161	1711	78
RTOR Reduction (vph)	0	40	0	0	149	0	0	4	0	0	2	0
Lane Group Flow (vph)	188	413	0	101	242	0	139	2379	0	161	1787	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	30.4	30.4		30.4	30.4		12.7	57.6		15.3	60.2	
Effective Green, g (s)	30.4	30.4		30.4	30.4		12.7	57.6		15.3	60.2	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.11	0.48		0.13	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	201	844		174	803		179	1659		223	1724	
v/s Ratio Prot		0.12			0.08		0.08	c0.69		c0.09	c0.52	
v/s Ratio Perm	c0.24			0.15								
v/c Ratio	0.94	0.49		0.58	0.30		0.78	1.43		0.72	1.04	
Uniform Delay, d1	43.8	38.2		39.2	36.2		52.3	31.2		50.3	29.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	45.1	0.4		4.9	0.2		18.8	198.8		10.9	31.7	
Delay (s)	88.9	38.6		44.1	36.4		71.1	230.0		61.3	61.6	
Level of Service	F	D		D	D		E	F		E	E	
Approach Delay (s)		53.4			38.0			221.2			61.6	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	130.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1445	1	369	567	0	535
Future Volume (vph)	1445	1	369	567	0	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	120.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.062			
Satd. Flow (perm)	3500	0	112	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						311
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1571	1	401	616	0	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1572	0	401	616	0	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	67.0		27.0	94.0	26.0	26.0
Total Split (%)	55.8%		22.5%	78.3%	21.7%	21.7%
Maximum Green (s)	60.6		23.0	87.6	22.0	22.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	60.6		90.0	87.6		27.0
Actuated g/C Ratio	0.48		0.72	0.70		0.22
v/c Ratio	0.93		1.07	0.25		1.00
Control Delay	40.9		103.2	7.1		60.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	40.9		103.2	7.1		60.5
LOS	D		F	A		E
Approach Delay	40.9			45.0	60.5	
Approach LOS	D			D	E	
Queue Length 50th (m)	185.2		~93.3	26.1		77.5
Queue Length 95th (m)	#237.1		#155.1	33.5		#154.0
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			120.0			
Base Capacity (vph)	1696		375	2428		582
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	0.93		1.07	0.25		1.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 125			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 45.8		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

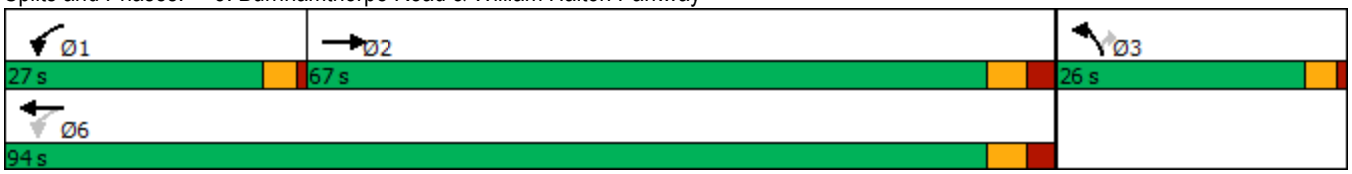
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

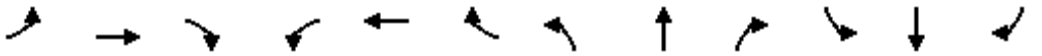
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



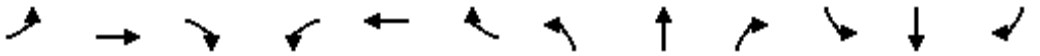


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1445	1	369	567	0	535
Future Volume (vph)	1445	1	369	567	0	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.06	1.00		1.00
Satd. Flow (perm)	3500		112	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1571	1	401	616	0	582
RTOR Reduction (vph)	0	0	0	0	0	244
Lane Group Flow (vph)	1572	0	401	616	0	338
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	60.6		87.6	87.6		27.0
Effective Green, g (s)	60.6		87.6	87.6		27.0
Actuated g/C Ratio	0.48		0.70	0.70		0.22
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1696		373	2428		338
v/s Ratio Prot	0.45		c0.20	0.18		
v/s Ratio Perm			c0.56			c0.22
v/c Ratio	0.93		1.08	0.25		1.00
Uniform Delay, d1	30.1		42.5	6.8		49.0
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	10.3		68.1	0.1		49.1
Delay (s)	40.4		110.5	6.9		98.1
Level of Service	D		F	A		F
Approach Delay (s)	40.4			47.7	98.1	
Approach LOS	D			D	F	

Intersection Summary			
HCM 2000 Control Delay	53.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	605	2286	257	276	1294	352	207	1267	131	424	1613	309
Future Volume (vph)	605	2286	257	276	1294	352	207	1267	131	424	1613	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		85.0	90.0		85.0	90.0		50.0	120.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1551	3298	3336	1536	3330	3466	1566	3330	3466	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3392	3500	1529	3298	3336	1512	3327	3466	1543	3327	3466	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			110			155			96			173
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			2139.5	
Travel Time (s)		28.8			31.0			36.1			128.4	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	630	2381	268	288	1348	367	216	1320	136	442	1680	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	630	2381	268	288	1348	367	216	1320	136	442	1680	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	17.0	51.0	51.0	17.0	51.0	51.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	13.1%	39.2%	39.2%	13.1%	39.2%	39.2%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	13.0	44.6	44.6	13.0	44.6	44.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	13.0	44.6	44.6	13.0	44.6	44.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.10	0.34	0.34	0.10	0.34	0.34	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	1.86	1.98	0.45	0.88	1.18	0.59	0.94	1.16	0.24	1.92	1.48	0.52
Control Delay	429.3	471.7	21.6	83.9	128.0	24.1	105.4	122.8	12.0	461.8	253.9	19.1
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	429.3	471.7	21.6	83.9	128.0	24.1	105.4	122.8	12.0	461.8	253.9	19.1
LOS	F	F	C	F	F	C	F	F	B	F	F	B
Approach Delay		426.8			102.6			111.5			260.6	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~126.2	~498.7	30.4	38.0	~217.3	44.4	28.9	~210.6	7.1	~89.6	~311.5	29.7
Queue Length 95th (m)	#162.4	#538.5	55.4	#62.3	#259.5	76.9	#53.1	#253.2	21.9	#122.5	#354.1	58.3
Internal Link Dist (m)		536.5			579.0			577.7			2115.5	
Turn Bay Length (m)	150.0		85.0	90.0		85.0	90.0		50.0	120.0		80.0
Base Capacity (vph)	339	1200	596	329	1144	620	230	1135	570	230	1135	615
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	1.86	1.98	0.45	0.88	1.18	0.59	0.94	1.16	0.24	1.92	1.48	0.52

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.98	
Intersection Signal Delay: 258.4	Intersection LOS: F

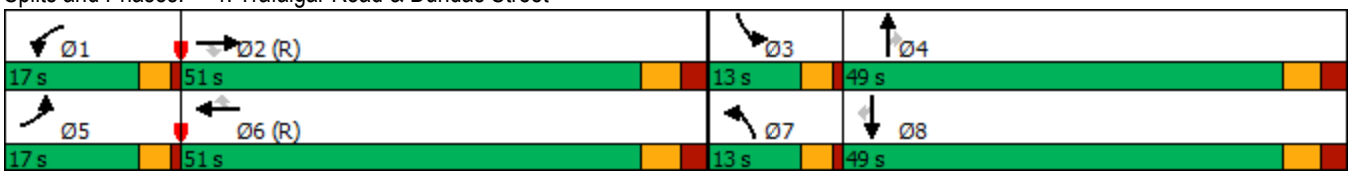
Intersection Capacity Utilization 138.9% ICU Level of Service H

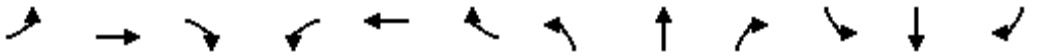
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

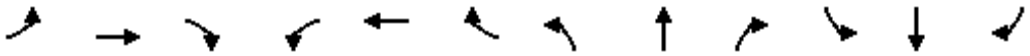




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	605	2286	257	276	1294	352	207	1267	131	424	1613	309
Future Volume (vph)	605	2286	257	276	1294	352	207	1267	131	424	1613	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1529	3298	3336	1512	3330	3466	1543	3330	3466	1523
Flt Permitted	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 (perm)	3395	3500	1529	3298	3336	1512	3330	3466	1543	3330	3466	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	630	2381	268	288	1348	367	216	1320	136	442	1680	322
RTOR Reduction (vph)	0	0	72	0	0	102	0	0	65	0	0	116
Lane Group Flow (vph)	630	2381	196	288	1348	265	216	1320	71	442	1680	206
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	13.0	44.6	44.6	13.0	44.6	44.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	13.0	44.6	44.6	13.0	44.6	44.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.10	0.34	0.34	0.10	0.34	0.34	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	339	1200	524	329	1144	518	230	1135	505	230	1135	499
v/s Ratio Prot	c0.19	c0.68		0.09	0.40		0.06	0.38		c0.13	c0.48	
v/s Ratio Perm			0.13			0.18			0.05			0.14
v/c Ratio	1.86	1.98	0.37	0.88	1.18	0.51	0.94	1.16	0.14	1.92	1.48	0.41
Uniform Delay, d1	58.5	42.7	32.2	57.7	42.7	34.0	60.2	43.7	30.8	60.5	43.7	34.0
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	397.5	445.9	2.0	22.3	89.6	3.6	42.6	83.3	0.2	430.5	220.9	0.7
Delay (s)	456.0	488.6	34.2	80.0	132.3	37.6	102.8	127.0	31.0	491.0	264.6	34.6
Level of Service	F	F	C	F	F	D	F	F	C	F	F	C
Approach Delay (s)		445.2			107.4			116.1			275.2	
Approach LOS		F			F			F			F	

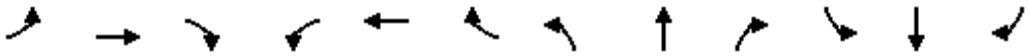
Intersection Summary			
HCM 2000 Control Delay	270.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	138.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



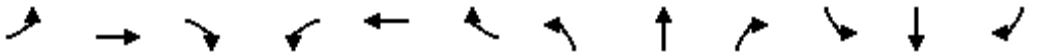
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	634	95	69	359	153	43	239	204	920	232	345
Future Volume (vph)	279	634	95	69	359	153	43	239	204	920	232	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.986			0.962			0.937			0.964	
Flt Protected		0.986			0.994			0.995			0.971	
Satd. Flow (prot)	0	3403	0	0	3347	0	0	3263	0	0	3276	0
Flt Permitted		0.986			0.994			0.995			0.971	
Satd. Flow (perm)	0	3403	0	0	3347	0	0	3263	0	0	3276	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			844.9			671.5			229.3	
Travel Time (s)		28.9			50.7			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	310	704	106	72	399	159	48	249	213	958	242	383
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1120	0	0	630	0	0	510	0	0	1583	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 124.2%		ICU Level of Service H	
Analysis Period (min) 15			

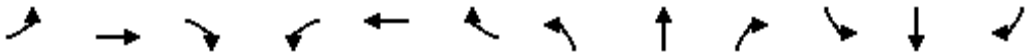


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	279	634	95	69	359	153	43	239	204	920	232	345
Future Volume (veh/h)	279	634	95	69	359	153	43	239	204	920	232	345
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	310	704	106	72	399	159	48	249	212	958	242	383
Approach Volume (veh/h)		1120			630			509			1583	
Crossing Volume (veh/h)		1272#			607			1972#			519	
High Capacity (veh/h)		497			857			275			919	
High v/c (veh/h)		2.25			0.74			1.85			1.72	
Low Capacity (veh/h)		376			687			194			742	
Low v/c (veh/h)		2.98			0.92			2.62			2.13	

Intersection Summary					
Maximum v/c High	2.25				
Maximum v/c Low	2.98				
Intersection Capacity Utilization	124.2%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	152	52	141	214	22	187	614	165	80	507	12
Future Volume (vph)	58	152	52	141	214	22	187	614	165	80	507	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962			0.986			0.968			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3367	0	1684	3363	0	1750	3360	0	1700	3456	0
Flt Permitted	0.588			0.609			0.432			0.299		
Satd. Flow (perm)	1083	3367	0	1079	3363	0	796	3360	0	535	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			13			57			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	171	58	158	240	25	210	690	185	90	570	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	229	0	158	265	0	210	875	0	90	583	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

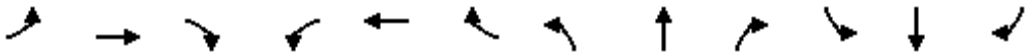


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.6	16.6		16.6	16.6		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.62	0.62		0.62	0.62	
v/c Ratio	0.28	0.30		0.68	0.36		0.43	0.42		0.27	0.27	
Control Delay	27.8	19.5		43.1	25.4		12.6	8.6		11.3	7.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.8	19.5		43.1	25.4		12.6	8.6		11.3	7.9	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		21.3			32.0			9.3			8.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	8.0	11.1		21.3	16.5		14.0	28.0		5.3	17.8	
Queue Length 95th (m)	17.6	19.3		39.4	25.7		37.4	52.2		17.0	34.2	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	414	1323		413	1295		491	2097		330	2136	
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	0.16	0.17		0.38	0.20		0.43	0.42		0.27	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

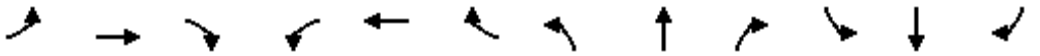
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



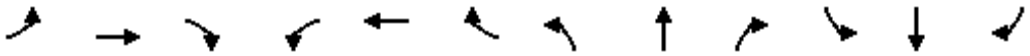


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	152	52	141	214	22	187	614	165	80	507	12
Future Volume (vph)	58	152	52	141	214	22	187	614	165	80	507	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3367		1684	3363		1750	3361		1700	3455	
Flt Permitted	0.59	1.00		0.61	1.00		0.43	1.00		0.30	1.00	
Satd. Flow (perm)	1084	3367		1079	3363		796	3361		535	3455	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	171	58	158	240	25	210	690	185	90	570	13
RTOR Reduction (vph)	0	43	0	0	10	0	0	22	0	0	2	0
Lane Group Flow (vph)	65	186	0	158	255	0	210	853	0	90	581	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.6	16.6		16.6	16.6		47.8	47.8		47.8	47.8	
Effective Green, g (s)	16.6	16.6		16.6	16.6		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.62	0.62		0.62	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	723		231	722		492	2078		330	2136	
v/s Ratio Prot		0.06			0.08			0.25			0.17	
v/s Ratio Perm	0.06			c0.15			c0.26			0.17		
v/c Ratio	0.28	0.26		0.68	0.35		0.43	0.41		0.27	0.27	
Uniform Delay, d1	25.4	25.2		27.9	25.8		7.6	7.5		6.8	6.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		8.1	0.3		2.7	0.6		2.0	0.3	
Delay (s)	26.0	25.4		36.0	26.1		10.3	8.1		8.8	7.1	
Level of Service	C	C		D	C		B	A		A	A	
Approach Delay (s)		25.5			29.8			8.6			7.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	12.9
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	418	0	3	2	1964	0	0	2217	0
Future Volume (vph)	3	0	2	418	0	3	2	1964	0	0	2217	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.321			0.950	0.950		0.049					
Satd. Flow (perm)	361	0	1566	1449	1388	1487	61	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	470	0	3	2	2207	0	0	2491	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	235	235	3	2	2207	0	0	2491	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

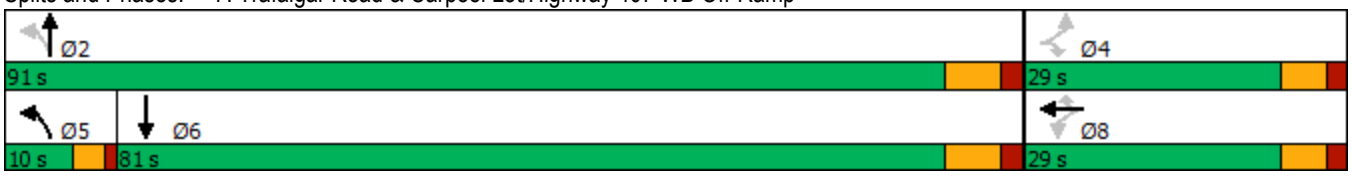


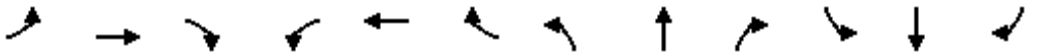
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	29.0		29.0	29.0	29.0	29.0	10.0	91.0			81.0	
Total Split (%)	24.2%		24.2%	24.2%	24.2%	24.2%	8.3%	75.8%			67.5%	
Maximum Green (s)	23.0		23.0	23.0	23.0	23.0	6.0	84.0			74.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	21.7		21.7	21.7	21.7	21.7	83.0	79.9			78.1	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.72	0.70			0.68	
v/c Ratio	0.04		0.01	0.86	0.89	0.01	0.02	0.96			0.77	
Control Delay	41.7		0.0	74.7	81.2	0.0	5.0	28.1			15.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	41.7		0.0	74.7	81.2	0.0	5.0	28.1			15.1	
LOS	D		A	E	F	A	A	C			B	
Approach Delay		25.0			77.5			28.1			15.1	
Approach LOS		C			E			C			B	
Queue Length 50th (m)	0.6		0.0	56.7	59.6	0.0	0.1	221.7			121.6	
Queue Length 95th (m)	3.4		0.0	#99.5	#107.1	0.0	0.8	#279.1			179.5	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	73		375	292	281	359	103	2442			3330	
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		0.01	0.80	0.84	0.01	0.02	0.90			0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 114.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

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

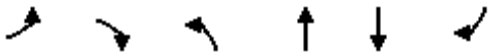
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	418	0	3	2	1964	0	0	2217	0
Future Volume (vph)	3	0	2	418	0	3	2	1964	0	0	2217	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.32		1.00	0.95	0.95	1.00	0.05	1.00			1.00	
Satd. Flow (perm)	361		1566	1449	1388	1487	61	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	470	0	3	2	2207	0	0	2491	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	235	235	1	2	2207	0	0	2491	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	21.7		21.7	21.7	21.7	21.7	83.1	83.1			78.0	
Effective Green, g (s)	21.7		21.7	21.7	21.7	21.7	83.1	83.1			78.0	
Actuated g/C Ratio	0.18		0.18	0.18	0.18	0.18	0.71	0.71			0.66	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	66		288	266	255	273	53	2331			3144	
v/s Ratio Prot							0.00	c0.67			0.52	
v/s Ratio Perm	0.01		0.00	0.16	0.17	0.00	0.03					
v/c Ratio	0.05		0.00	0.88	0.92	0.00	0.04	0.95			0.79	
Uniform Delay, d1	39.5		39.2	46.8	47.2	39.2	11.3	15.4			14.1	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.3		0.0	27.3	35.9	0.0	0.3	9.0			1.4	
Delay (s)	39.8		39.2	74.1	83.1	39.2	11.6	24.4			15.6	
Level of Service	D		D	E	F	D	B	C			B	
Approach Delay (s)		39.6			78.3			24.4			15.6	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	117.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1966	2636	34
Future Volume (vph)	0	0	0	1966	2636	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	2209	2962	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2209	2962	38
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

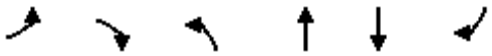
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	1966	42	0	2636
Future Volume (vph)	0	0	1966	42	0	2636
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	2209	47	0	2962
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2209	47	0	2962
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	421	0	1996	2471	0
Future Volume (vph)	58	421	0	1996	2471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	64	463	0	2193	2715	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	463	0	2193	2715	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

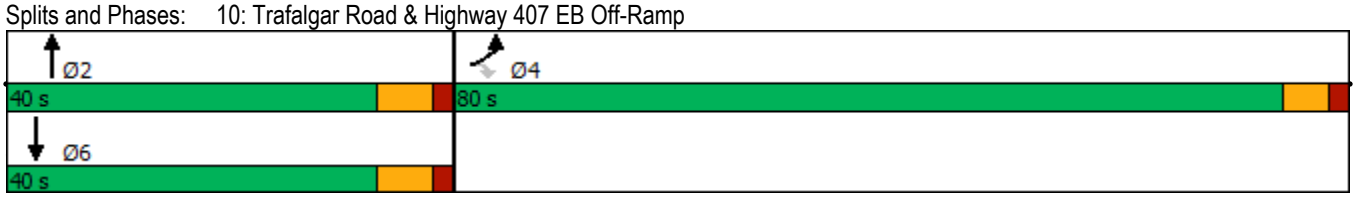
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	80.0	80.0		40.0	40.0	
Total Split (%)	66.7%	66.7%		33.3%	33.3%	
Maximum Green (s)	74.0	74.0		33.0	33.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	29.8	29.8		33.4	33.4	
Actuated g/C Ratio	0.39	0.39		0.44	0.44	
v/c Ratio	0.10	0.85		1.53	1.88	
Control Delay	14.0	36.1		264.8	418.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	14.0	36.1		264.8	418.6	
LOS	B	D		F	F	
Approach Delay	33.4			264.8	418.6	
Approach LOS	C			F	F	
Queue Length 50th (m)	5.6	58.5		~234.4	~316.2	
Queue Length 95th (m)	12.2	93.8		#343.1	#440.4	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1623	1325		1433	1446	
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	0.04	0.35		1.53	1.88	

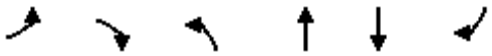
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 76.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.88			
Intersection Signal Delay: 319.2		Intersection LOS: F	
Intersection Capacity Utilization 105.2%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

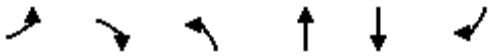
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	421	0	1996	2471	0
Future Volume (vph)	58	421	0	1996	2471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	64	463	0	2193	2715	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	64	463	0	2193	2715	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.8	29.8		33.4	33.4	
Effective Green, g (s)	29.8	29.8		33.4	33.4	
Actuated g/C Ratio	0.39	0.39		0.44	0.44	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	671	547		1435	1448	
v/s Ratio Prot	0.04			0.67	c0.82	
v/s Ratio Perm		c0.33				
v/c Ratio	0.10	0.85		1.53	1.88	
Uniform Delay, d1	14.7	21.1		21.4	21.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	11.6		241.3	396.4	
Delay (s)	14.7	32.7		262.7	417.8	
Level of Service	B	C		F	F	
Approach Delay (s)	30.5			262.7	417.8	
Approach LOS	C			F	F	

Intersection Summary			
HCM 2000 Control Delay	317.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1819	2269	24
Future Volume (vph)	0	0	0	1819	2269	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	1999	2493	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1999	2493	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

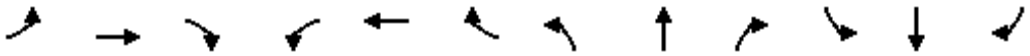
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1822	210	0	2675
Future Volume (vph)	0	0	1822	210	0	2675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	2002	231	0	2940
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2002	231	0	2940
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

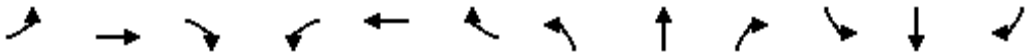
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



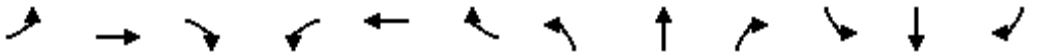
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1168	355	97	630	87	166	320	90	182	575	105
Future Volume (vph)	102	1168	355	97	630	87	166	320	90	182	575	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.967			0.984			0.977			0.982	
Flt Protected		0.997			0.994			0.986			0.990	
Satd. Flow (prot)	0	3299	0	0	3390	0	0	3178	0	0	3403	0
Flt Permitted		0.997			0.994			0.986			0.990	
Satd. Flow (perm)	0	3299	0	0	3390	0	0	3178	0	0	3403	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	115	1312	399	109	708	98	187	360	101	204	646	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1826	0	0	915	0	0	648	0	0	968	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 124.0%		ICU Level of Service H	
Analysis Period (min) 15			

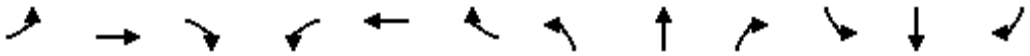


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	102	1168	355	97	630	87	166	320	90	182	575	105
Future Volume (veh/h)	102	1168	355	97	630	87	166	320	90	182	575	105
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	115	1312	399	109	708	98	187	360	101	204	646	118
Approach Volume (veh/h)		1826			915			648			968	
Crossing Volume (veh/h)		959			662			1631#			1004	
High Capacity (veh/h)		644			820			368			620	
High v/c (veh/h)		2.84			1.12			1.76			1.56	
Low Capacity (veh/h)		501			654			269			481	
Low v/c (veh/h)		3.64			1.40			2.41			2.01	

Intersection Summary					
Maximum v/c High	2.84				
Maximum v/c Low	3.64				
Intersection Capacity Utilization	124.0%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	344	39	1727	364	625	1916	232
Future Volume (vph)	124	22	83	0	0	344	39	1727	364	625	1916	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	3400	1566	3395	4980	1566
Flt Permitted	0.574						0.950			0.950		
Satd. Flow (perm)	650	1487	0	1842	1842	1566	1653	3400	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				332			174			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	382	42	1877	404	694	2083	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	382	42	1877	404	694	2083	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	60.0		49.0	49.0	49.0	11.0	40.0	40.0	20.0	49.0	49.0
Total Split (%)	9.2%	50.0%		40.8%	40.8%	40.8%	9.2%	33.3%	33.3%	16.7%	40.8%	40.8%
Maximum Green (s)	7.0	53.5		42.5	42.5	42.5	7.0	33.5	33.5	16.0	42.5	42.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	26.0	23.5				12.5	7.0	33.5	33.5	16.0	47.1	47.1
Actuated g/C Ratio	0.29	0.26				0.14	0.08	0.37	0.37	0.18	0.52	0.52
v/c Ratio	0.61	0.25				0.76	0.33	1.48	0.58	1.15	0.80	0.29
Control Delay	39.4	9.7				17.4	48.0	247.8	16.9	121.3	22.6	9.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	9.7				17.4	48.0	247.8	16.9	121.3	22.6	9.5
LOS	D	A				B	D	F	B	F	C	A
Approach Delay		25.8			17.4			204.1			44.1	
Approach LOS		C			B			F			D	
Queue Length 50th (m)	18.9	3.1				7.8	6.8	~227.6	28.4	~69.7	107.9	13.4
Queue Length 95th (m)	35.1	15.1				36.0	18.2	#310.7	66.3	#118.6	#173.5	34.2
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	220	920				914	128	1265	692	603	2602	868
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	0.12				0.42	0.33	1.48	0.58	1.15	0.80	0.29

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 90.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 103.8		Intersection LOS: F	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

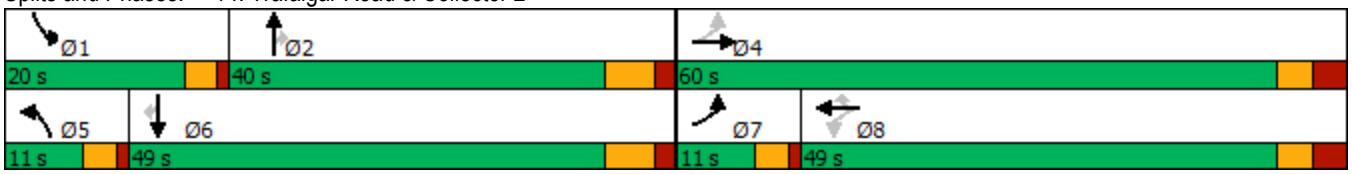
~ Volume exceeds capacity, queue is theoretically infinite.

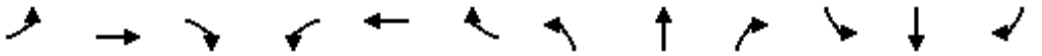
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

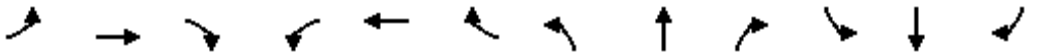
Splits and Phases: 14: Trafalgar Road & Collector 2



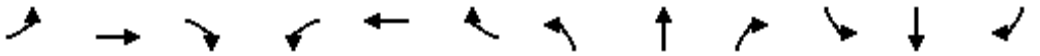


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	344	39	1727	364	625	1916	232
Future Volume (vph)	124	22	83	0	0	344	39	1727	364	625	1916	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	3400	1566	3395	4980	1566
Flt Permitted	0.57	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	649	1486				1566	1653	3400	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	382	42	1877	404	694	2083	252
RTOR Reduction (vph)	0	67	0	0	0	287	0	0	107	0	0	51
Lane Group Flow (vph)	135	47	0	0	0	95	42	1877	297	694	2083	201
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	23.5	23.5				12.5	4.1	35.2	35.2	16.0	47.1	47.1
Effective Green, g (s)	23.5	23.5				12.5	4.1	35.2	35.2	16.0	47.1	47.1
Actuated g/C Ratio	0.26	0.26				0.14	0.04	0.38	0.38	0.17	0.51	0.51
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	198	380				213	73	1305	601	592	2557	804
v/s Ratio Prot	c0.05	0.03					0.03	c0.55		c0.20	0.42	
v/s Ratio Perm	c0.12					0.06			0.19			0.13
v/c Ratio	0.68	0.12				0.45	0.58	1.44	0.49	1.17	0.81	0.25
Uniform Delay, d1	30.2	26.2				36.4	42.9	28.2	21.5	37.9	18.6	12.4
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.3	0.1				1.5	10.5	201.7	2.9	94.5	3.0	0.7
Delay (s)	39.5	26.3				37.9	53.5	229.9	24.4	132.4	21.6	13.2
Level of Service	D	C				D	D	F	C	F	C	B
Approach Delay (s)		33.5			37.9			191.0			46.3	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	101.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1794	57	370	546	136	19	0	22	69	0	4
Future Volume (vph)	0	1794	57	370	546	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)	30.0		0.0	60.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99		1.00	0.98		1.00	0.98	
Frt		0.995			0.970			0.850			0.850	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	1842	3479	0	1750	3374	0	1750	1535	0	1750	1535	0
Flt Permitted				0.069			0.755			0.742		
Satd. Flow (perm)	1842	3479	0	127	3374	0	1384	1535	0	1361	1535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			55			25			256	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		844.9			181.9			147.1			190.6	
Travel Time (s)		50.7			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1993	63	411	607	151	21	0	24	77	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2056	0	411	758	0	21	24	0	77	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		59.1		59.1	59.1		13.6	13.6		13.6	13.6	
Actuated g/C Ratio		0.75		0.75	0.75		0.17	0.17		0.17	0.17	
v/c Ratio		0.79		4.33	0.30		0.09	0.08		0.33	0.01	
Control Delay		13.3		1532.2	5.3		25.6	9.8		31.1	0.0	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		13.3		1532.2	5.3		25.6	9.8		31.1	0.0	
LOS		B		F	A		C	A		C	A	
Approach Delay		13.3			542.1			17.1			29.6	
Approach LOS		B			F			B			C	
Queue Length 50th (m)		80.8		~101.4	14.3		2.8	0.0		10.6	0.0	
Queue Length 95th (m)		#248.7		#181.4	45.2		7.5	5.1		19.7	0.0	
Internal Link Dist (m)		820.9			157.9			123.1			166.6	
Turn Bay Length (m)				60.0			30.0			30.0		
Base Capacity (vph)		2614		95	2547		525	597		516	741	
Starvation Cap Reductn		0		0	0		0	0		0	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		0.79		4.33	0.30		0.04	0.04		0.15	0.01	

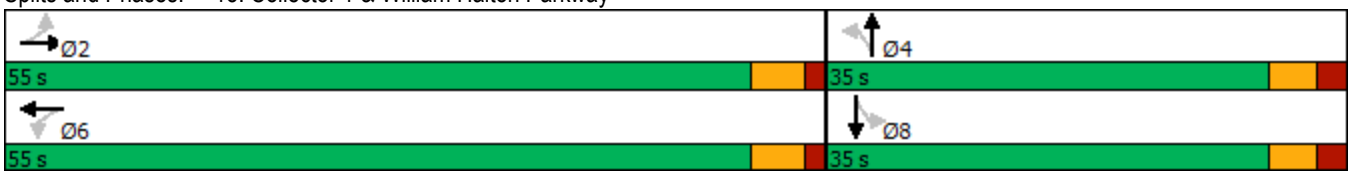
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 4.33			
Intersection Signal Delay: 198.2		Intersection LOS: F	
Intersection Capacity Utilization 97.5%		ICU Level of Service F	

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

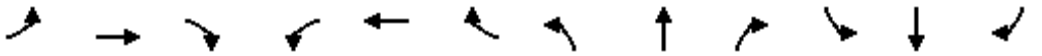
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1794	57	370	546	136	19	0	22	69	0	4
Future Volume (vph)	0	1794	57	370	546	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)		5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00		1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3481		1750	3375		1743	1529		1743	1529	
Flt Permitted		1.00		0.07	1.00		0.76	1.00		0.74	1.00	
Satd. Flow (perm)		3481		127	3375		1385	1529		1361	1529	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1993	63	411	607	151	21	0	24	77	0	4
RTOR Reduction (vph)	0	2	0	0	15	0	0	21	0	0	3	0
Lane Group Flow (vph)	0	2054	0	411	743	0	21	3	0	77	1	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		58.0		58.0	58.0		11.4	11.4		11.4	11.4	
Effective Green, g (s)		58.0		58.0	58.0		11.4	11.4		11.4	11.4	
Actuated g/C Ratio		0.73		0.73	0.73		0.14	0.14		0.14	0.14	
Clearance Time (s)		5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		2526		92	2449		197	218		194	218	
v/s Ratio Prot		0.59			0.22			0.00			0.00	
v/s Ratio Perm				c3.24			0.02			c0.06		
v/c Ratio		0.81		4.47	0.30		0.11	0.02		0.40	0.00	
Uniform Delay, d1		7.3		11.0	3.8		29.8	29.4		31.1	29.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.0		1585.1	0.3		0.2	0.0		1.3	0.0	
Delay (s)		10.3		1596.1	4.2		30.1	29.5		32.5	29.4	
Level of Service		B		F	A		C	C		C	C	
Approach Delay (s)		10.3			563.9			29.7			32.3	
Approach LOS		B			F			C			C	

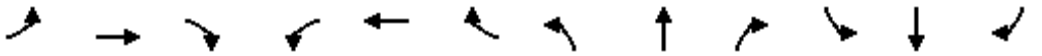
Intersection Summary			
HCM 2000 Control Delay	204.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	3.79		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	10.5
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1807	48	0	1043	146	0	0	216	0	0	9
Future Volume (vph)	0	1807	48	0	1043	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			355.4	
Travel Time (s)		10.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	2008	53	0	1159	162	0	0	240	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2061	0	0	1159	162	0	0	240	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

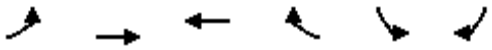
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1807	48	0	1043	146	0	0	216	0	0	9
Future Volume (Veh/h)	0	1807	48	0	1043	146	0	0	216	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2008	53	0	1159	162	0	0	240	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		182			208							
pX, platoon unblocked	0.93			0.49			0.53	0.53	0.49	0.53	0.53	0.93
vC, conflicting volume	1326			2066			2634	3366	1040	2413	3230	590
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1204			1112			1730	3114	0	1312	2857	414
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	55	100	100	98
cM capacity (veh/h)	534			307			29	6	531	33	9	542

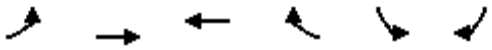
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1339	722	580	580	162	240	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	53	0	0	162	240	10
cSH	1700	1700	1700	1700	1700	531	542
Volume to Capacity	0.79	0.42	0.34	0.34	0.10	0.45	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	17.7	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	17.2	11.8
Lane LOS						C	B
Approach Delay (s)	0.0		0.0			17.2	11.8
Approach LOS						C	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	72.1%	ICU Level of Service		C
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (vph)	0	1724	513	39	0	195
Future Volume (vph)	0	1724	513	39	0	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1916	570	43	0	217
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1916	570	43	0	217
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

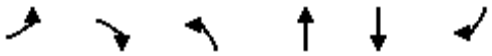
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1724	513	39	0	195
Future Volume (Veh/h)	0	1724	513	39	0	195
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1916	570	43	0	217
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.98				0.67	0.98
vC, conflicting volume	618				1538	295
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561				658	230
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	71
cM capacity (veh/h)	978				263	747

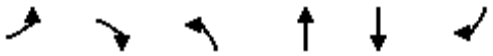
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	958	958	285	285	43	217
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	43	217
cSH	1700	1700	1700	1700	1700	747
Volume to Capacity	0.56	0.56	0.17	0.17	0.03	0.29
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	9.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.8
Lane LOS						B
Approach Delay (s)	0.0		0.0			11.8
Approach LOS						B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	111	0	2400	1618	398
Future Volume (vph)	0	111	0	2400	1618	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	3500	3500	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	123	0	2667	1798	442
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	123	0	2667	1798	442
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

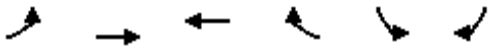
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			



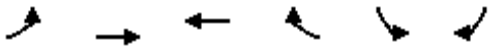
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	111	0	2400	1618	398
Future Volume (Veh/h)	0	111	0	2400	1618	398
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	123	0	2667	1798	442
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.69	0.69	0.69			
vC, conflicting volume	3142	909	2245			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1206	0	1913			
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	84	100			
cM capacity (veh/h)	120	746	212			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	123	1334	1334	899	899	442
Volume Left	0	0	0	0	0	0
Volume Right	123	0	0	0	0	442
cSH	746	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.78	0.78	0.53	0.53	0.26
Queue Length 95th (m)	4.5	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
Lane LOS	B					
Approach Delay (s)	10.8	0.0		0.0		
Approach LOS	B					

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	287	1375	521	17	99	31
Future Volume (vph)	287	1375	521	17	99	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		1.00	0.98
Frt			0.995			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	3500	3479	0	1750	1566
Flt Permitted	0.426				0.950	
Satd. Flow (perm)	782	3500	3479	0	1743	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			6			34
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	319	1528	579	19	110	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	319	1528	598	0	110	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)	56.8	56.8	56.8		13.1	13.1
Actuated g/C Ratio	0.75	0.75	0.75		0.17	0.17
v/c Ratio	0.55	0.58	0.23		0.37	0.12
Control Delay	13.6	8.7	5.4		29.2	8.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	13.6	8.7	5.4		29.2	8.6
LOS	B	A	A		C	A
Approach Delay		9.5	5.4		24.4	
Approach LOS		A	A		C	
Queue Length 50th (m)	15.1	39.7	10.4		13.7	0.0
Queue Length 95th (m)	#88.8	136.9	38.4		24.4	5.9
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)	30.0				40.0	
Base Capacity (vph)	585	2620	2606		746	675
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	0.55	0.58	0.23		0.15	0.05

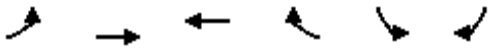
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	

Analysis Period (min) 15

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

Splits and Phases: 24: William Halton Parkway & Collector 5

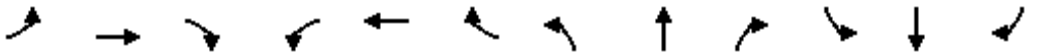




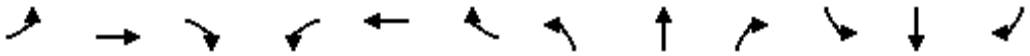
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	287	1375	521	17	99	31
Future Volume (vph)	287	1375	521	17	99	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1745	3500	3480		1750	1530
Flt Permitted	0.43	1.00	1.00		0.95	1.00
Satd. Flow (perm)	783	3500	3480		1750	1530
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	319	1528	579	19	110	34
RTOR Reduction (vph)	0	0	2	0	0	29
Lane Group Flow (vph)	319	1528	596	0	110	5
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	55.5	55.5	55.5		11.5	11.5
Effective Green, g (s)	55.5	55.5	55.5		11.5	11.5
Actuated g/C Ratio	0.73	0.73	0.73		0.15	0.15
Clearance Time (s)	5.5	5.5	5.5		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	568	2539	2524		263	230
v/s Ratio Prot		c0.44	0.17		c0.06	
v/s Ratio Perm	0.41					0.00
v/c Ratio	0.56	0.60	0.24		0.42	0.02
Uniform Delay, d1	4.9	5.1	3.5		29.5	27.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.4	0.2		1.1	0.0
Delay (s)	6.1	5.5	3.7		30.5	27.7
Level of Service	A	A	A		C	C
Approach Delay (s)		5.6	3.7		29.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	9.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1003	616	154	630	1036	563	561	1749	32	267	1658	405
Future Volume (vph)	1003	616	154	630	1036	563	561	1749	32	267	1658	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	3500	1536	3267	3500	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			157			157			89			168
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			228.3			142.6			224.9	
Travel Time (s)		12.5			13.7			8.6			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	1078	662	166	677	1114	605	603	1881	34	287	1783	435
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1078	662	166	677	1114	605	603	1881	34	287	1783	435
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	24.0	49.0	49.0	27.0	52.0	52.0	20.0	50.0	50.0	14.0	44.0	44.0
Total Split (%)	17.1%	35.0%	35.0%	19.3%	37.1%	37.1%	14.3%	35.7%	35.7%	10.0%	31.4%	31.4%
Maximum Green (s)	20.0	42.6	42.6	23.0	45.6	45.6	16.0	43.6	43.6	10.0	38.6	38.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	20.0	42.6	42.6	23.0	45.6	45.6	16.0	43.6	43.6	10.0	38.6	38.6
Actuated g/C Ratio	0.14	0.30	0.30	0.16	0.33	0.33	0.11	0.31	0.31	0.07	0.28	0.28
v/c Ratio	2.22	0.62	0.28	1.24	0.98	0.98	1.55	1.73	0.06	1.23	1.85	0.80
Control Delay	583.9	44.9	7.5	169.4	68.3	67.1	301.2	361.2	0.2	187.5	415.2	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	583.9	44.9	7.5	169.4	68.3	67.1	301.2	361.2	0.2	187.5	415.2	40.2
LOS	F	D	A	F	E	E	F	F	A	F	F	D
Approach Delay		346.5			96.5			342.0			324.0	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~247.3	82.9	1.8	~119.4	160.4	133.2	~121.0	~403.9	0.0	~50.4	~393.2	71.9
Queue Length 95th (m)	#288.5	103.4	18.2	#157.3	#206.4	#211.5	#157.8	#445.6	0.0	#79.4	#435.2	#115.5
Internal Link Dist (m)		183.8			204.3			118.6			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		70.0
Base Capacity (vph)	485	1065	585	547	1140	615	388	1090	539	233	965	547
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	2.22	0.62	0.28	1.24	0.98	0.98	1.55	1.73	0.06	1.23	1.85	0.80

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.22	
Intersection Signal Delay: 275.0	Intersection LOS: F

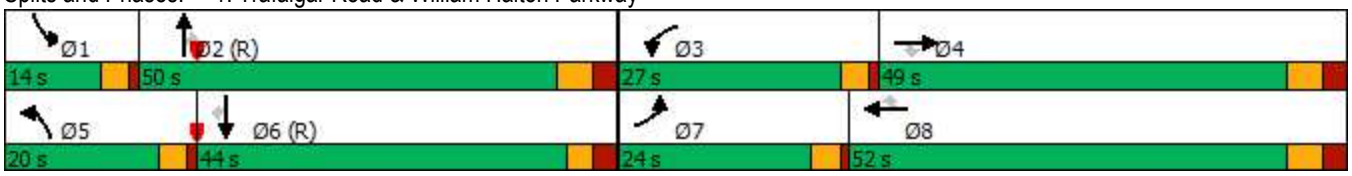
Intersection Capacity Utilization 135.6% ICU Level of Service H

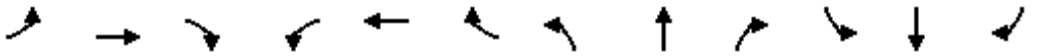
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

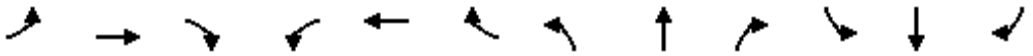




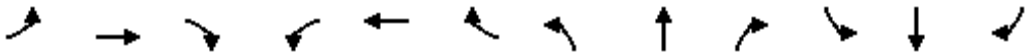
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1003	616	154	630	1036	563	561	1749	32	267	1658	405
Future Volume (vph)	1003	616	154	630	1036	563	561	1749	32	267	1658	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1078	662	166	677	1114	605	603	1881	34	287	1783	435
RTOR Reduction (vph)	0	0	109	0	0	106	0	0	23	0	0	122
Lane Group Flow (vph)	1078	662	57	677	1114	499	603	1881	11	287	1783	313
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	20.0	42.6	42.6	23.0	45.6	45.6	16.0	43.6	43.6	10.0	38.6	38.6
Effective Green, g (s)	20.0	42.6	42.6	23.0	45.6	45.6	16.0	43.6	43.6	10.0	38.6	38.6
Actuated g/C Ratio	0.14	0.30	0.30	0.16	0.33	0.33	0.11	0.31	0.31	0.07	0.28	0.28
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	485	1065	476	547	1140	510	388	1090	478	233	965	425
v/s Ratio Prot	c0.32	0.19		0.20	0.32		c0.18	0.54		0.09	c0.51	
v/s Ratio Perm			0.04			c0.32			0.01			0.20
v/c Ratio	2.22	0.62	0.12	1.24	0.98	0.98	1.55	1.73	0.02	1.23	1.85	0.74
Uniform Delay, d1	60.0	41.8	35.2	58.5	46.7	46.7	62.0	48.2	33.4	65.0	50.7	46.1
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	556.9	1.6	0.2	122.0	21.3	34.3	261.8	330.4	0.1	135.8	385.5	10.9
Delay (s)	616.9	43.4	35.4	180.5	68.0	81.1	323.8	378.6	33.5	200.8	436.2	57.0
Level of Service	F	D	D	F	E	F	F	F	C	F	F	E
Approach Delay (s)		367.0			103.1			360.8			343.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	291.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	135.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	215	86	103	247	213	115	2091	117	209	1904	286
Future Volume (vph)	139	215	86	103	247	213	115	2091	117	209	1904	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.957			0.931			0.992			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3349	0	1750	3258	0	1750	3465	0	1750	3394	0
Flt Permitted	0.341			0.507			0.950			0.950		
Satd. Flow (perm)	599	3349	0	934	3258	0	1750	3465	0	1750	3394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			134			6			20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		468.0			810.8			2139.5			320.3	
Travel Time (s)		33.7			58.4			128.4			19.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	146	226	91	108	260	224	121	2201	123	220	2004	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	317	0	108	484	0	121	2324	0	220	2305	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		11.5	37.3		11.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		12.0	64.0		14.0	66.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		10.0%	53.3%		11.7%	55.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		8.0	57.7		10.0	59.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0			24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	29.9	29.9		29.9	29.9		11.4	57.7		15.7	62.0	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.10	0.48		0.13	0.52	
v/c Ratio	0.98	0.36		0.47	0.53		0.73	1.39		0.96	1.31	
Control Delay	113.2	31.0		43.4	28.9		79.0	208.5		104.6	170.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	113.2	31.0		43.4	28.9		79.0	208.5		104.6	170.4	
LOS	F	C		D	C		E	F		F	F	
Approach Delay		56.9			31.6			202.1			164.6	
Approach LOS		E			C			F			F	
Queue Length 50th (m)	32.9	26.0		20.8	35.8		28.5	~386.5		~63.5	~376.7	
Queue Length 95th (m)	#69.2	37.3		37.5	50.4		#68.4	#428.0		#120.6	#418.4	
Internal Link Dist (m)		444.0			786.8			2115.5			296.3	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	177	1029		277	1060		166	1669		228	1762	
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	0.82	0.31		0.39	0.46		0.73	1.39		0.96	1.31	

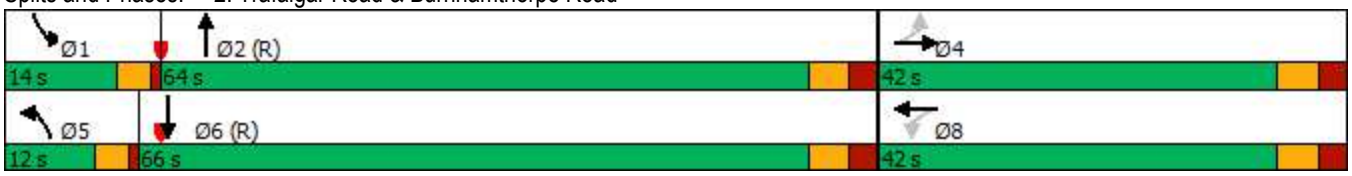
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay: 158.5		Intersection LOS: F	
Intersection Capacity Utilization 114.4%		ICU Level of Service H	

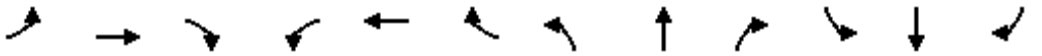
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	215	86	103	247	213	115	2091	117	209	1904	286
Future Volume (vph)	139	215	86	103	247	213	115	2091	117	209	1904	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3349		1750	3257		1750	3465		1750	3396	
Flt Permitted	0.34	1.00		0.51	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	600	3349		934	3257		1750	3465		1750	3396	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	146	226	91	108	260	224	121	2201	123	220	2004	301
RTOR Reduction (vph)	0	38	0	0	101	0	0	3	0	0	10	0
Lane Group Flow (vph)	146	279	0	108	383	0	121	2321	0	220	2295	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	29.9	29.9		29.9	29.9		11.4	57.7		15.7	62.0	
Effective Green, g (s)	29.9	29.9		29.9	29.9		11.4	57.7		15.7	62.0	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.10	0.48		0.13	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	149	834		232	811		166	1666		228	1754	
v/s Ratio Prot		0.08			0.12		0.07	c0.67		c0.13	0.68	
v/s Ratio Perm	c0.24			0.12								
v/c Ratio	0.98	0.33		0.47	0.47		0.73	1.39		0.96	1.31	
Uniform Delay, d1	44.8	36.9		38.3	38.3		52.8	31.1		51.9	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.8	0.2		1.5	0.4		14.8	180.6		49.3	143.1	
Delay (s)	111.6	37.1		39.7	38.8		67.6	211.8		101.2	172.1	
Level of Service	F	D		D	D		E	F		F	F	
Approach Delay (s)		60.6			39.0			204.7			165.9	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	161.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1010	1	500	1694	0	555
Future Volume (vph)	1010	1	500	1694	0	555
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	120.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.112			
Satd. Flow (perm)	3433	0	206	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						461
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1052	1	521	1765	0	578
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1053	0	521	1765	0	578
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



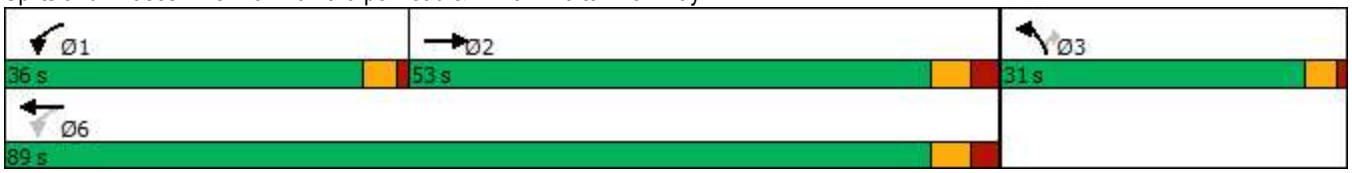
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	53.0		36.0	89.0	31.0	31.0
Total Split (%)	44.2%		30.0%	74.2%	25.8%	25.8%
Maximum Green (s)	46.6		32.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.6		83.9	81.5		27.0
Actuated g/C Ratio	0.39		0.71	0.69		0.23
v/c Ratio	0.78		0.96	0.74		0.81
Control Delay	36.9		59.3	14.2		19.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	36.9		59.3	14.2		19.6
LOS	D		E	B		B
Approach Delay	36.9			24.5	19.6	
Approach LOS	D			C	B	
Queue Length 50th (m)	113.7		95.7	124.2		24.9
Queue Length 95th (m)	140.1		#161.6	150.2		#78.7
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			120.0			
Base Capacity (vph)	1346		561	2433		712
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	0.78		0.93	0.73		0.81

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 27.1		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

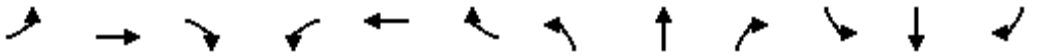
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



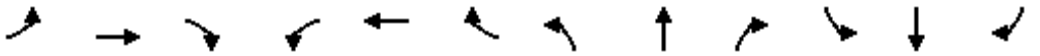


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1010	1	500	1694	0	555
Future Volume (vph)	1010	1	500	1694	0	555
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.11	1.00		1.00
Satd. Flow (perm)	3432		207	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1052	1	521	1765	0	578
RTOR Reduction (vph)	0	0	0	0	0	356
Lane Group Flow (vph)	1053	0	521	1765	0	222
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	46.6		81.4	81.4		27.0
Effective Green, g (s)	46.6		81.4	81.4		27.0
Actuated g/C Ratio	0.39		0.69	0.69		0.23
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1346		541	2398		355
v/s Ratio Prot	0.31		c0.25	0.50		
v/s Ratio Perm			c0.41			c0.14
v/c Ratio	0.78		0.96	0.74		0.62
Uniform Delay, d1	31.7		32.7	11.9		41.3
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.6		29.3	1.2		8.1
Delay (s)	36.2		62.1	13.1		49.4
Level of Service	D		E	B		D
Approach Delay (s)	36.2			24.3	49.4	
Approach LOS	D			C	D	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	14.4
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	1776	208	311	1930	365	341	1789	241	410	1368	452
Future Volume (vph)	505	1776	208	311	1930	365	341	1789	241	410	1368	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		85.0	90.0		85.0	90.0		50.0	120.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3466	1566	3395	3500	1566	3395	3500	1566	3362	3500	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	3466	1527	3389	3500	1540	3390	3500	1541	3360	3500	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			162			96			150
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			2139.5	
Travel Time (s)		30.4			42.0			38.7			128.4	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	521	1831	214	321	1990	376	352	1844	248	423	1410	466
Shared Lane Traffic (%)												
Lane Group Flow (vph)	521	1831	214	321	1990	376	352	1844	248	423	1410	466
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	2.00	1.41	0.33	1.37	1.55	0.56	1.50	1.61	0.44	1.82	1.23	0.77
Control Delay	491.7	223.7	14.0	233.6	283.8	21.7	285.3	309.2	23.1	420.0	149.4	36.0
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	491.7	223.7	14.0	233.6	283.8	21.7	285.3	309.2	23.1	420.0	149.4	36.0
LOS	F	F	B	F	F	C	F	F	C	F	F	D
Approach Delay		260.6			241.1			276.7			176.2	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~107.1	~331.4	16.0	~55.8	~377.9	43.0	~64.3	~355.8	29.7	~84.1	~234.3	75.2
Queue Length 95th (m)	#141.7	#373.4	35.4	#85.1	#419.4	74.6	#94.7	#397.8	53.8	#116.4	#276.8	118.7
Internal Link Dist (m)		568.0			792.3			620.9			2115.5	
Turn Bay Length (m)	150.0		85.0	90.0		85.0	90.0		50.0	120.0		80.0
Base Capacity (vph)	261	1295	646	235	1281	666	235	1146	569	232	1146	604
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	2.00	1.41	0.33	1.37	1.55	0.56	1.50	1.61	0.44	1.82	1.23	0.77

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.00	
Intersection Signal Delay: 239.9	Intersection LOS: F

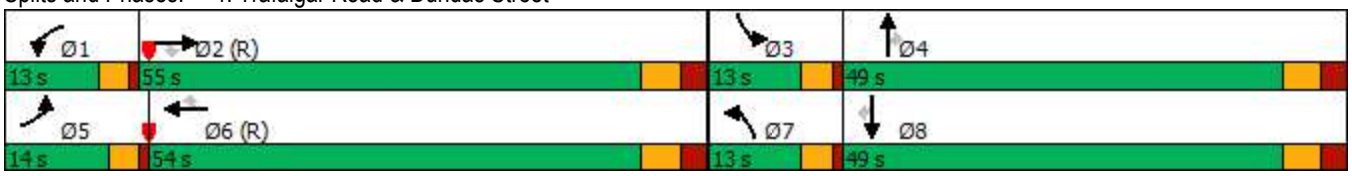
Intersection Capacity Utilization 146.2% ICU Level of Service H

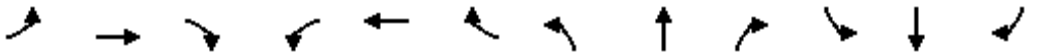
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

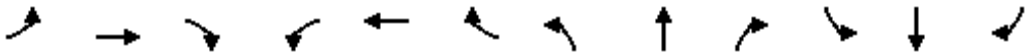




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	1776	208	311	1930	365	341	1789	241	410	1368	452
Future Volume (vph)	505	1776	208	311	1930	365	341	1789	241	410	1368	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3466	1527	3395	3500	1540	3395	3500	1541	3362	3500	1538
Flt Permitted	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 (perm)	3395	3466	1527	3395	3500	1540	3395	3500	1541	3362	3500	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	521	1831	214	321	1990	376	352	1844	248	423	1410	466
RTOR Reduction (vph)	0	0	75	0	0	103	0	0	65	0	0	101
Lane Group Flow (vph)	521	1831	139	321	1990	273	352	1844	183	423	1410	365
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1295	570	235	1281	563	235	1146	504	232	1146	503
v/s Ratio Prot	c0.15	0.53		0.09	c0.57		0.10	c0.53		c0.13	0.40	
v/s Ratio Perm			0.09			0.18			0.12			0.24
v/c Ratio	2.00	1.41	0.24	1.37	1.55	0.49	1.50	1.61	0.36	1.82	1.23	0.73
Uniform Delay, d1	60.0	40.7	28.0	60.5	41.2	31.8	60.5	43.7	33.4	60.5	43.7	38.6
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	461.7	190.9	1.0	189.5	252.9	3.0	245.1	278.2	0.9	386.9	111.5	6.3
Delay (s)	521.7	231.6	29.1	250.0	294.1	34.7	305.6	321.9	34.3	447.4	155.2	44.9
Level of Service	F	F	C	F	F	C	F	F	C	F	F	D
Approach Delay (s)		273.6			252.6			290.3			186.6	
Approach LOS		F			F			F			F	

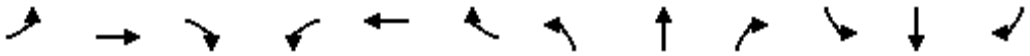
Intersection Summary			
HCM 2000 Control Delay	252.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.64		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	146.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



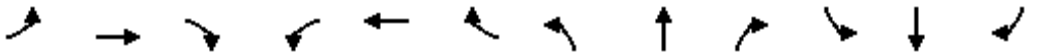
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	402	65	221	702	603	11	254	135	272	288	292
Future Volume (vph)	246	402	65	221	702	603	11	254	135	272	288	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.986			0.941			0.949			0.949	
Flt Protected		0.983			0.993			0.999			0.984	
Satd. Flow (prot)	0	3392	0	0	3270	0	0	3318	0	0	3268	0
Flt Permitted		0.983			0.993			0.999			0.984	
Satd. Flow (perm)	0	3392	0	0	3270	0	0	3318	0	0	3268	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			839.5			671.6			229.3	
Travel Time (s)		28.6			50.4			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	251	410	66	226	716	615	11	259	138	278	294	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	727	0	0	1557	0	0	408	0	0	870	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 115.7%		ICU Level of Service H	
Analysis Period (min) 15			

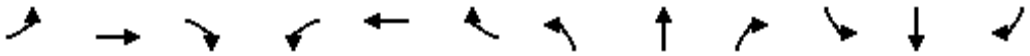


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	246	402	65	221	702	603	11	254	135	272	288	292
Future Volume (veh/h)	246	402	65	221	702	603	11	254	135	272	288	292
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	251	410	66	226	716	615	11	259	138	278	294	298
Approach Volume (veh/h)		727			1557			408			870	
Crossing Volume (veh/h)		798			521			939			953	
High Capacity (veh/h)		734			918			654			647	
High v/c (veh/h)		0.99			1.70			0.62			1.34	
Low Capacity (veh/h)		579			741			510			504	
Low v/c (veh/h)		1.26			2.10			0.80			1.73	

Intersection Summary				
Maximum v/c High	1.70			
Maximum v/c Low	2.10			
Intersection Capacity Utilization	115.7%	ICU Level of Service	H	



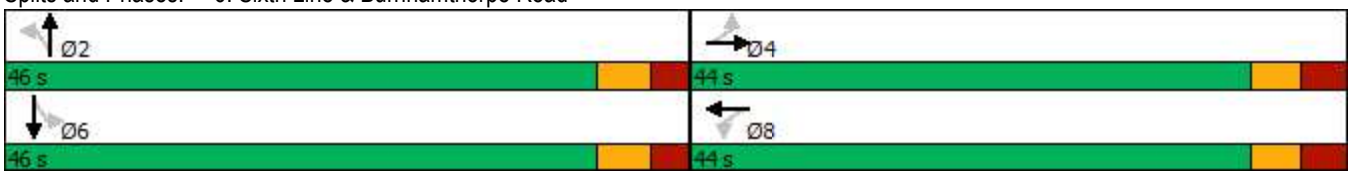
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	112	50	232	284	45	97	398	188	62	629	35
Future Volume (vph)	36	112	50	232	284	45	97	398	188	62	629	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.954			0.979			0.952			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3339	0	1750	3385	0	1750	3321	0	1750	3472	0
Flt Permitted	0.542			0.643			0.361			0.405		
Satd. Flow (perm)	998	3339	0	1184	3385	0	665	3321	0	746	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			24			112			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	38	119	53	247	302	48	103	423	200	66	669	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	172	0	247	350	0	103	623	0	66	706	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

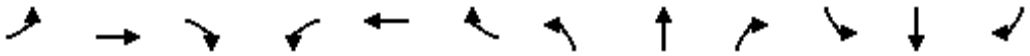


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	20.5	20.5		20.5	20.5		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.54	0.54		0.54	0.54	
v/c Ratio	0.14	0.18		0.75	0.36		0.29	0.34		0.16	0.37	
Control Delay	19.8	13.3		38.4	20.1		14.2	9.2		12.1	11.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.8	13.3		38.4	20.1		14.2	9.2		12.1	11.4	
LOS	B	B		D	C		B	A		B	B	
Approach Delay		14.5			27.7			9.9			11.4	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	3.9	6.3		30.6	18.6		6.9	18.0		4.1	26.0	
Queue Length 95th (m)	10.2	12.7		53.7	28.4		21.9	38.1		13.9	51.2	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	513	1746		609	1755		361	1857		406	1892	
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	0.07	0.10		0.41	0.20		0.29	0.34		0.16	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.4			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

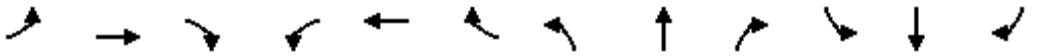
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



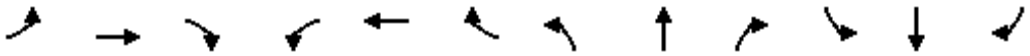


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	112	50	232	284	45	97	398	188	62	629	35
Future Volume (vph)	36	112	50	232	284	45	97	398	188	62	629	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3338		1750	3387		1750	3321		1750	3472	
Flt Permitted	0.54	1.00		0.64	1.00		0.36	1.00		0.40	1.00	
Satd. Flow (perm)	998	3338		1185	3387		665	3321		746	3472	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	119	53	247	302	48	103	423	200	66	669	37
RTOR Reduction (vph)	0	38	0	0	17	0	0	51	0	0	4	0
Lane Group Flow (vph)	38	134	0	247	333	0	103	572	0	66	702	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.5	20.5		20.5	20.5		40.0	40.0		40.0	40.0	
Effective Green, g (s)	20.5	20.5		20.5	20.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.54	0.54		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	278	932		330	945		362	1809		406	1892	
v/s Ratio Prot		0.04			0.10			0.17			c0.20	
v/s Ratio Perm	0.04			c0.21			0.15			0.09		
v/c Ratio	0.14	0.14		0.75	0.35		0.28	0.32		0.16	0.37	
Uniform Delay, d1	19.8	19.9		24.1	21.1		9.0	9.2		8.3	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		9.0	0.2		2.0	0.5		0.9	0.6	
Delay (s)	20.0	19.9		33.1	21.4		11.0	9.6		9.2	10.1	
Level of Service	C	B		C	C		B	A		A	B	
Approach Delay (s)		20.0			26.2			9.8			10.0	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	567	2	20	7	3361	0	0	2131	0
Future Volume (vph)	7	0	6	567	2	20	7	3361	0	0	2131	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1541	1431	1750	3500	0	0	4980	0
Flt Permitted	0.291			0.950	0.953		0.060					
Satd. Flow (perm)	467	0	1331	1615	1541	1431	111	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	591	2	21	7	3501	0	0	2220	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	295	300	19	7	3501	0	0	2220	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	49.0		49.0	49.0	49.0	49.0	11.0	71.0			60.0	
Total Split (%)	40.8%		40.8%	40.8%	40.8%	40.8%	9.2%	59.2%			50.0%	
Maximum Green (s)	43.0		43.0	43.0	43.0	43.0	7.0	64.0			53.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	25.1		25.1	25.1	25.1	25.1	67.3	64.3			62.5	
Actuated g/C Ratio	0.24		0.24	0.24	0.24	0.24	0.66	0.63			0.61	
v/c Ratio	0.06		0.02	0.75	0.80	0.05	0.04	1.59			0.73	
Control Delay	29.3		0.0	47.5	51.9	0.2	8.9	291.2			18.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	29.3		0.0	47.5	51.9	0.2	8.9	291.2			18.1	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		15.8			48.2			290.7			18.1	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	57.0	61.4	0.0	0.4	~521.2			98.2	
Queue Length 95th (m)	4.6		0.0	86.5	93.5	0.0	2.5	#646.1			#194.3	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	197		603	680	649	645	185	2195			3035	
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		0.01	0.43	0.46	0.03	0.04	1.59			0.73	

Intersection Summary

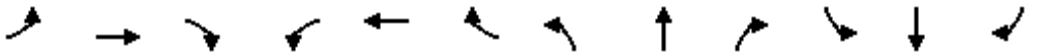
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 102.5
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.59
Intersection Signal Delay: 171.5 Intersection LOS: F
Intersection Capacity Utilization 126.4% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

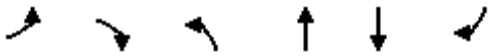
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	567	2	20	7	3361	0	0	2131	0
Future Volume (vph)	7	0	6	567	2	20	7	3361	0	0	2131	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1541	1431	1750	3500			4980	
Flt Permitted	0.29		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	468		1331	1615	1541	1431	111	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	591	2	21	7	3501	0	0	2220	0
RTOR Reduction (vph)	0	0	5	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	295	300	5	7	3501	0	0	2220	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	25.1		25.1	25.1	25.1	25.1	67.6	67.6			62.5	
Effective Green, g (s)	25.1		25.1	25.1	25.1	25.1	67.6	67.6			62.5	
Actuated g/C Ratio	0.24		0.24	0.24	0.24	0.24	0.64	0.64			0.59	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	111		316	383	365	339	88	2238			2944	
v/s Ratio Prot							0.00	c1.00			0.45	
v/s Ratio Perm	0.01		0.00	0.18	0.19	0.00	0.05					
v/c Ratio	0.06		0.00	0.77	0.82	0.01	0.08	1.56			0.75	
Uniform Delay, d1	31.2		30.8	37.6	38.2	30.8	12.1	19.1			15.9	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	9.2	13.8	0.0	0.4	256.2			1.1	
Delay (s)	31.4		30.8	46.8	52.0	30.8	12.5	275.2			17.1	
Level of Service	C		C	D	D	C	B	F			B	
Approach Delay (s)		31.1			48.9			274.7			17.1	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	162.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	105.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	126.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	3370	2761	49
Future Volume (vph)	0	0	0	3370	2761	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	3510	2876	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3510	2876	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.5%		ICU Level of Service F	
Analysis Period (min) 15			

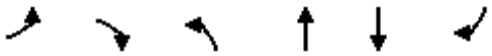
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3370	165	0	2761
Future Volume (vph)	0	0	3370	165	0	2761
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	3510	172	0	2876
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3510	172	0	2876
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.5%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



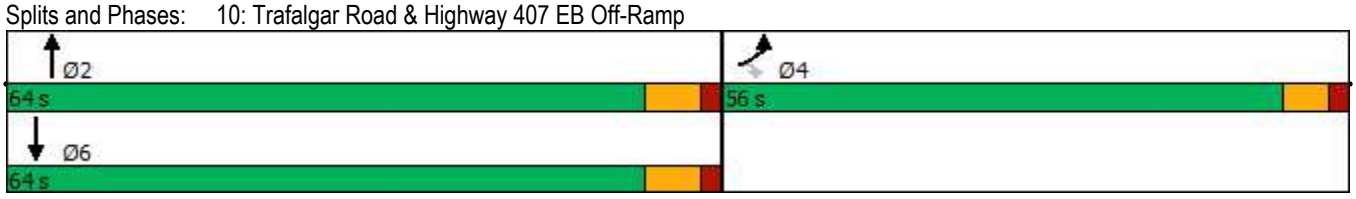
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	265	0	4029	2538	0
Future Volume (vph)	42	265	0	4029	2538	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	45	282	0	4286	2700	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	282	0	4286	2700	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

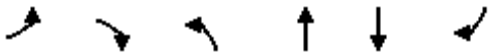
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	56.0	56.0		64.0	64.0	
Total Split (%)	46.7%	46.7%		53.3%	53.3%	
Maximum Green (s)	50.0	50.0		57.0	57.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	26.2	26.2		57.4	57.4	
Actuated g/C Ratio	0.27	0.27		0.59	0.59	
v/c Ratio	0.10	0.82		2.06	1.31	
Control Delay	25.5	51.6		499.5	166.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.5	51.6		499.5	166.3	
LOS	C	D		F	F	
Approach Delay	48.0			499.5	166.3	
Approach LOS	D			F	F	
Queue Length 50th (m)	6.3	48.9		~664.1	~341.8	
Queue Length 95th (m)	14.0	77.8		#812.1	#456.0	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	911	665		2078	2057	
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	0.05	0.42		2.06	1.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 96.6			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.06			
Intersection Signal Delay: 356.3		Intersection LOS: F	
Intersection Capacity Utilization 127.2%		ICU Level of Service H	
Analysis Period (min) 15			

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

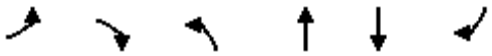
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	265	0	4029	2538	0
Future Volume (vph)	42	265	0	4029	2538	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	45	282	0	4286	2700	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	45	282	0	4286	2700	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.2	26.2		57.4	57.4	
Effective Green, g (s)	26.2	26.2		57.4	57.4	
Actuated g/C Ratio	0.27	0.27		0.59	0.59	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	474	346		2079	2059	
v/s Ratio Prot	0.03			c1.22	0.78	
v/s Ratio Perm		c0.22				
v/c Ratio	0.09	0.82		2.06	1.31	
Uniform Delay, d1	26.3	32.9		19.6	19.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	13.7		479.4	143.7	
Delay (s)	26.4	46.6		499.0	163.3	
Level of Service	C	D		F	F	
Approach Delay (s)	43.9			499.0	163.3	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	354.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	96.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3200	2337	19
Future Volume (vph)	0	0	0	3200	2337	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	3404	2486	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3404	2486	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	3200	2337	19
Future Volume (Veh/h)	0	0	0	3200	2337	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	3404	2486	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)				130	228	
pX, platoon unblocked	0.61	0.60	0.60			
vC, conflicting volume	4188	1243	2506			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2003	74	2177			
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)	32	584	145			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1702	1702	1243	1243	20
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	20
cSH	1700	1700	1700	1700	1700
Volume to Capacity	1.00	1.00	0.73	0.73	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

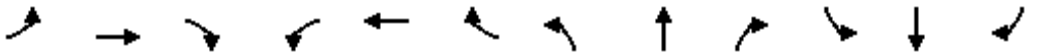
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3705	187	0	2588
Future Volume (vph)	0	0	3705	187	0	2588
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3941	199	0	2753
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3941	199	0	2753
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

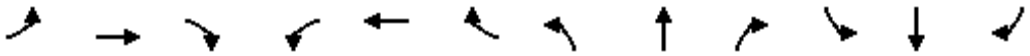
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.



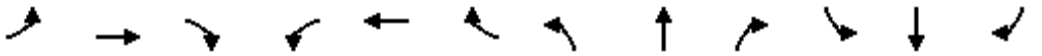
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1177	248	135	1364	125	441	616	220	107	317	124
Future Volume (vph)	48	1177	248	135	1364	125	441	616	220	107	317	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.975			0.988			0.974			0.966	
Flt Protected		0.998			0.996			0.983			0.990	
Satd. Flow (prot)	0	3359	0	0	3444	0	0	3340	0	0	3347	0
Flt Permitted		0.998			0.996			0.983			0.990	
Satd. Flow (perm)	0	3359	0	0	3444	0	0	3340	0	0	3347	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	50	1226	258	141	1421	130	459	642	229	111	330	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1534	0	0	1692	0	0	1330	0	0	570	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 153.5%		ICU Level of Service H	
Analysis Period (min) 15			

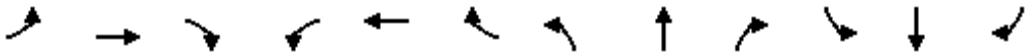


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	48	1177	248	135	1364	125	441	616	220	107	317	124
Future Volume (veh/h)	48	1177	248	135	1364	125	441	616	220	107	317	124
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	50	1226	258	141	1421	130	459	642	229	111	330	129
Approach Volume (veh/h)		1534			1692			1330			570	
Crossing Volume (veh/h)		582			1151			1387#			2021#	
High Capacity (veh/h)		874			550			452			263	
High v/c (veh/h)		1.76			3.08			2.94			2.16	
Low Capacity (veh/h)		702			421			338			185	
Low v/c (veh/h)		2.19			4.02			3.93			3.08	

Intersection Summary					
Maximum v/c High	3.08				
Maximum v/c Low	4.02				
Intersection Capacity Utilization	153.5%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	1112	37	2686	300	480	2027	175
Future Volume (vph)	363	44	192	0	0	1112	37	2686	300	480	2027	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	3500	1566	3395	5029	1566
Flt Permitted	0.695						0.950			0.950		
Satd. Flow (perm)	1280	1617	0	1842	1842	1566	1750	3500	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		180				259			141			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	1236	41	2984	333	533	2252	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	1236	41	2984	333	533	2252	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



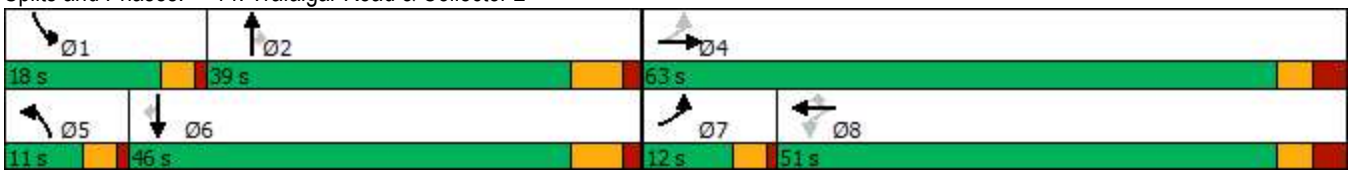
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	12.0	63.0		51.0	51.0	51.0	11.0	39.0	39.0	18.0	46.0	46.0
Total Split (%)	10.0%	52.5%		42.5%	42.5%	42.5%	9.2%	32.5%	32.5%	15.0%	38.3%	38.3%
Maximum Green (s)	8.0	56.5		44.5	44.5	44.5	7.0	32.5	32.5	14.0	39.5	39.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	59.0	56.5				44.5	7.0	32.5	32.5	14.0	41.7	41.7
Actuated g/C Ratio	0.49	0.47				0.37	0.06	0.27	0.27	0.12	0.35	0.35
v/c Ratio	0.61	0.31				1.66	0.40	3.15	0.63	1.35	1.29	0.32
Control Delay	25.9	7.2				327.8	66.5	988.1	27.8	212.4	168.4	15.3
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	7.2				327.8	66.5	988.1	27.8	212.4	168.4	15.3
LOS	C	A				F	E	F	C	F	F	B
Approach Delay		18.5			327.8			881.6			166.3	
Approach LOS		B			F			F			F	
Queue Length 50th (m)	60.8	10.5				~386.3	9.5	~647.3	39.7	~84.5	~255.6	14.9
Queue Length 95th (m)	87.5	26.4				#467.0	21.2	#684.4	71.2	#118.4	#284.3	33.4
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	660	856				743	102	947	526	396	1747	612
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	0.31				1.66	0.40	3.15	0.63	1.35	1.29	0.32

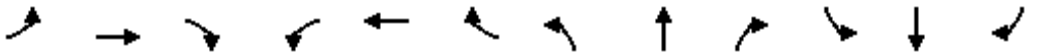
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 3.15			
Intersection Signal Delay: 470.2		Intersection LOS: F	
Intersection Capacity Utilization 177.4%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

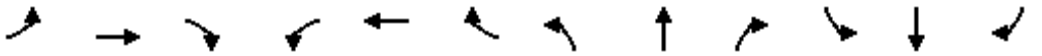




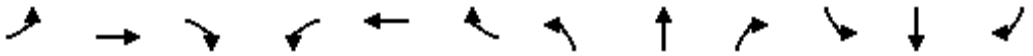
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	1112	37	2686	300	480	2027	175
Future Volume (vph)	363	44	192	0	0	1112	37	2686	300	480	2027	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	3500	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1280	1617				1566	1750	3500	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	1236	41	2984	333	533	2252	194
RTOR Reduction (vph)	0	96	0	0	0	164	0	0	102	0	0	69
Lane Group Flow (vph)	403	166	0	0	0	1072	41	2984	231	533	2252	125
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	56.5	56.5				44.5	5.6	33.3	33.3	14.0	41.7	41.7
Effective Green, g (s)	56.5	56.5				44.5	5.6	33.3	33.3	14.0	41.7	41.7
Actuated g/C Ratio	0.47	0.47				0.37	0.05	0.28	0.28	0.12	0.35	0.35
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	629	756				576	81	964	431	393	1736	540
v/s Ratio Prot	c0.04	0.10					0.02	c0.85		c0.16	0.45	
v/s Ratio Perm	0.26					c0.68			0.15			0.08
v/c Ratio	0.64	0.22				1.86	0.51	3.10	0.54	1.36	1.30	0.23
Uniform Delay, d1	24.7	19.1				38.1	56.2	43.8	37.2	53.4	39.5	28.2
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				394.5	4.9	945.7	4.7	176.2	138.1	1.0
Delay (s)	26.9	19.2				432.6	61.2	989.4	41.9	229.6	177.7	29.2
Level of Service	C	B				F	E	F	D	F	F	C
Approach Delay (s)		23.9			432.6			884.1			177.3	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	491.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.11		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	177.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	810	18	337	1434	118	83	0	140	193	0	14
Future Volume (vph)	0	810	18	337	1434	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)	30.0		0.0	60.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Frt		0.997			0.989			0.850			0.850	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	1842	3487	0	1750	3453	0	1750	1535	0	1750	1535	0
Flt Permitted				0.274			0.747			0.644		
Satd. Flow (perm)	1842	3487	0	504	3453	0	1370	1535	0	1182	1535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			15			125			25	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		839.5			181.9			147.1			190.6	
Travel Time (s)		50.4			10.9			10.6			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	900	20	374	1593	131	92	0	156	214	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	920	0	374	1724	0	92	156	0	214	16	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0		35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%		38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9		29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		50.7		50.7	50.7		19.4	19.4		19.4	19.4	
Actuated g/C Ratio		0.63		0.63	0.63		0.24	0.24		0.24	0.24	
v/c Ratio		0.42		1.18	0.79		0.28	0.34		0.75	0.04	
Control Delay		9.2		131.2	16.1		26.1	9.0		45.0	6.3	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.2		131.2	16.1		26.1	9.0		45.0	6.3	
LOS		A		F	B		C	A		D	A	
Approach Delay		9.2			36.7			15.3			42.3	
Approach LOS		A			D			B			D	
Queue Length 50th (m)		32.7		~69.0	89.6		11.3	3.6		30.0	0.0	
Queue Length 95th (m)		61.6		#90.5	#170.7		22.7	16.6		52.3	3.2	
Internal Link Dist (m)		815.5			157.9			123.1			166.6	
Turn Bay Length (m)				60.0			30.0			30.0		
Base Capacity (vph)		2193		316	2176		505	645		436	582	
Starvation Cap Reductn		0		0	0		0	0		0	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		0.42		1.18	0.79		0.18	0.24		0.49	0.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.6			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

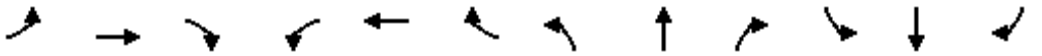
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	810	18	337	1434	118	83	0	140	193	0	14
Future Volume (vph)	0	810	18	337	1434	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)		5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3486		1747	3452		1743	1533		1744	1533	
Flt Permitted		1.00		0.27	1.00		0.75	1.00		0.64	1.00	
Satd. Flow (perm)		3486		504	3452		1370	1533		1183	1533	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	900	20	374	1593	131	92	0	156	214	0	16
RTOR Reduction (vph)	0	1	0	0	6	0	0	95	0	0	12	0
Lane Group Flow (vph)	0	919	0	374	1718	0	92	61	0	214	4	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		50.7		50.7	50.7		19.4	19.4		19.4	19.4	
Effective Green, g (s)		50.7		50.7	50.7		19.4	19.4		19.4	19.4	
Actuated g/C Ratio		0.63		0.63	0.63		0.24	0.24		0.24	0.24	
Clearance Time (s)		5.1		5.1	5.1		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		2192		317	2171		329	368		284	368	
v/s Ratio Prot		0.26			0.50			0.04			0.00	
v/s Ratio Perm				c0.74			0.07			c0.18		
v/c Ratio		0.42		1.18	0.79		0.28	0.17		0.75	0.01	
Uniform Delay, d1		7.5		14.9	11.0		24.9	24.2		28.4	23.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6		108.7	3.0		0.5	0.2		10.8	0.0	
Delay (s)		8.1		123.6	14.1		25.4	24.4		39.2	23.3	
Level of Service		A		F	B		C	C		D	C	
Approach Delay (s)		8.1			33.6			24.8			38.1	
Approach LOS		A			C			C			D	

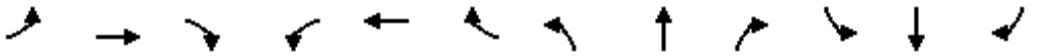
Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	10.5
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1117	16	0	1850	152	0	0	641	0	0	39
Future Volume (vph)	0	1117	16	0	1850	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)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		181.9			207.8			147.0			359.5	
Travel Time (s)		10.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1241	18	0	2056	169	0	0	712	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1259	0	0	2056	169	0	0	712	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

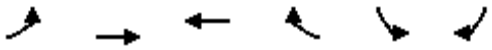
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1117	16	0	1850	152	0	0	641	0	0	39
Future Volume (Veh/h)	0	1117	16	0	1850	152	0	0	641	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1241	18	0	2056	169	0	0	712	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		182			208							
pX, platoon unblocked	0.69			0.87			0.76	0.76	0.87	0.76	0.76	0.69
vC, conflicting volume	2230			1264			2331	3485	640	3398	3325	1038
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1891			1011			1361	2884	295	2770	2673	173
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	0	0	100	93
cM capacity (veh/h)	216			592			74	12	606	0	16	578

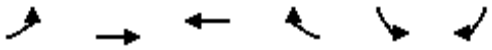
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	827	432	1028	1028	169	712	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	18	0	0	169	712	43
cSH	1700	1700	1700	1700	1700	606	578
Volume to Capacity	0.49	0.25	0.60	0.60	0.10	1.18	0.07
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	184.5	1.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	118.9	11.7
Lane LOS						F	B
Approach Delay (s)	0.0		0.0			118.9	11.7
Approach LOS						F	B

Intersection Summary				
Average Delay	20.1			
Intersection Capacity Utilization	78.3%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (vph)	0	1056	1666	84	0	563
Future Volume (vph)	0	1056	1666	84	0	563
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	1566	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	1566	0	1593
Link Speed (k/h)		60	60		50	
Link Distance (m)		228.3	173.6		144.7	
Travel Time (s)		13.7	10.4		10.4	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1173	1851	93	0	626
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1173	1851	93	0	626
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.0	7.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

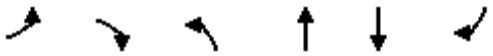
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1056	1666	84	0	563
Future Volume (Veh/h)	0	1056	1666	84	0	563
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1173	1851	93	0	626
Pedestrians		5	5		5	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.0	1.0		1.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		228	174			
pX, platoon unblocked	0.56				0.64	0.56
vC, conflicting volume	1949				2448	936
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1132				1023	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)	343				147	604

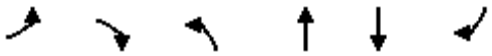
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	586	586	926	926	93	626
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	93	626
cSH	1700	1700	1700	1700	1700	604
Volume to Capacity	0.34	0.34	0.54	0.54	0.05	1.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	127.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	72.5
Lane LOS						F
Approach Delay (s)	0.0		0.0			72.5
Approach LOS						F

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	318	0	2438	2124	306
Future Volume (vph)	0	318	0	2438	2124	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	15.0		15.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1593	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	1593	0	3500	3500	1566
Link Speed (k/h)	50			60	60	
Link Distance (m)	168.4			320.3	142.6	
Travel Time (s)	12.1			19.2	8.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	353	0	2709	2360	340
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	353	0	2709	2360	340
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

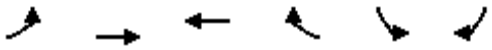
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			



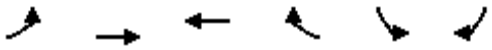
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	318	0	2438	2124	306
Future Volume (Veh/h)	0	318	0	2438	2124	306
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	353	0	2709	2360	340
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				320	143	
pX, platoon unblocked	0.67	0.73	0.73			
vC, conflicting volume	3724	1190	2705			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2265	520	2596			
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	3	100			
cM capacity (veh/h)	23	362	119			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	353	1354	1354	1180	1180	340
Volume Left	0	0	0	0	0	0
Volume Right	353	0	0	0	0	340
cSH	362	1700	1700	1700	1700	1700
Volume to Capacity	0.97	0.80	0.80	0.69	0.69	0.20
Queue Length 95th (m)	83.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	75.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	F					
Approach Delay (s)	75.6	0.0		0.0		
Approach LOS	F					

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	221	815	1664	39	197	86
Future Volume (vph)	221	815	1664	39	197	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor			1.00		1.00	0.98
Frt			0.997			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	3500	3487	0	1750	1566
Flt Permitted	0.079				0.950	
Satd. Flow (perm)	146	3500	3487	0	1743	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			4			9
Link Speed (k/h)		60	60		50	
Link Distance (m)		173.6	1244.3		120.8	
Travel Time (s)		10.4	74.7		8.7	
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	246	906	1849	43	219	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	246	906	1892	0	219	96
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
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	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	7.0
Minimum Split (s)	37.5	37.5	37.5		36.0	36.0
Total Split (s)	54.0	54.0	54.0		36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%		40.0%	40.0%
Maximum Green (s)	48.5	48.5	48.5		32.0	32.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.8	1.8	1.8		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max	None		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)	50.4	50.4	50.4		16.3	16.3
Actuated g/C Ratio	0.66	0.66	0.66		0.21	0.21
v/c Ratio	2.56	0.39	0.82		0.59	0.29
Control Delay	748.8	7.8	15.8		32.4	23.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	748.8	7.8	15.8		32.4	23.1
LOS	F	A	B		C	C
Approach Delay		166.0	15.8		29.6	
Approach LOS		F	B		C	
Queue Length 50th (m)	~44.2	23.8	80.7		27.5	10.1
Queue Length 95th (m)	#108.1	63.1	#224.6		45.7	20.9
Internal Link Dist (m)		149.6	1220.3		96.8	
Turn Bay Length (m)	30.0				40.0	
Base Capacity (vph)	96	2311	2304		740	654
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	2.56	0.39	0.82		0.30	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.56			
Intersection Signal Delay: 68.6		Intersection LOS: E	
Intersection Capacity Utilization 85.3%		ICU Level of Service E	

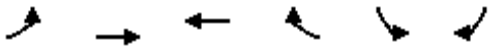
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 24: William Halton Parkway & Collector 5

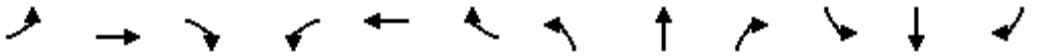




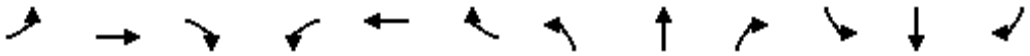
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	221	815	1664	39	197	86
Future Volume (vph)	221	815	1664	39	197	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1750	3500	3486		1750	1533
Flt Permitted	0.08	1.00	1.00		0.95	1.00
Satd. Flow (perm)	146	3500	3486		1750	1533
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	246	906	1849	43	219	96
RTOR Reduction (vph)	0	0	1	0	0	7
Lane Group Flow (vph)	246	906	1891	0	219	89
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	50.4	50.4	50.4		16.3	16.3
Effective Green, g (s)	50.4	50.4	50.4		16.3	16.3
Actuated g/C Ratio	0.66	0.66	0.66		0.21	0.21
Clearance Time (s)	5.5	5.5	5.5		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	96	2314	2305		374	327
v/s Ratio Prot		0.26	0.54		c0.13	
v/s Ratio Perm	c1.68					0.06
v/c Ratio	2.56	0.39	0.82		0.59	0.27
Uniform Delay, d1	12.9	5.9	9.5		26.9	25.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	732.6	0.5	2.5		2.3	0.5
Delay (s)	745.5	6.4	12.0		29.3	25.4
Level of Service	F	A	B		C	C
Approach Delay (s)		164.2	12.0		28.1	
Approach LOS		F	B		C	

Intersection Summary			
HCM 2000 Control Delay	65.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.07		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	9.5
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Future Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.998	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1564	1487	1750	3500	0	0	5029	0
Flt Permitted	0.322			0.950	0.953		0.057					
Satd. Flow (perm)	303	0	1566	1630	1564	1487	105	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	496	0	26	1	2883	0	0	2142	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	248	251	23	1	2883	0	0	2142	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



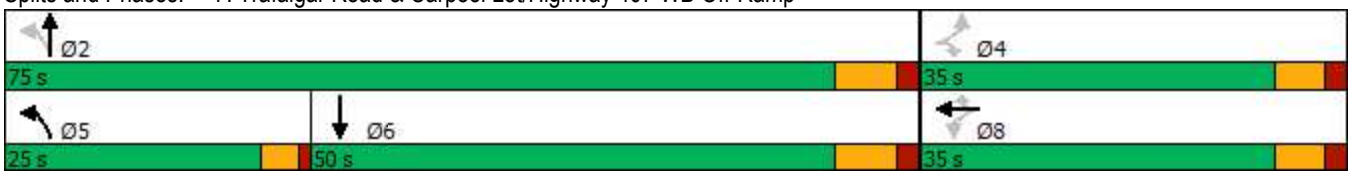
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	20.4		20.4	20.4	20.4	20.4	71.2	68.2			66.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.70	0.67			0.65	
v/c Ratio	0.02		0.01	0.76	0.67	0.06	0.01	1.23			0.65	
Control Delay	32.0		0.0	53.3	34.0	0.3	6.0	126.9			13.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	32.0		0.0	53.3	34.0	0.3	6.0	126.9			13.4	
LOS	C		A	D	C	A	A	F			B	
Approach Delay		8.0			41.7			126.8			13.4	
Approach LOS		A			D			F			B	
Queue Length 50th (m)	0.2		0.0	48.7	34.3	0.0	0.1	~370.2			79.0	
Queue Length 95th (m)	1.5		0.0	75.8	62.0	0.0	0.6	#463.5			151.8	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	86		504	466	503	481	414	2347			3285	
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	0.01		0.01	0.53	0.50	0.05	0.00	1.23			0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 101.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 75.0		Intersection LOS: E	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

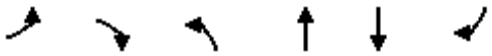
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Future Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.32		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	302		1566	1630	1564	1487	105	3500			5029	
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)	1	0	3	496	0	26	1	2883	0	0	2142	0
RTOR Reduction (vph)	0	0	2	0	64	19	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	248	187	4	1	2883	0	0	2142	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	20.4		20.4	20.4	20.4	20.4	71.4	71.4			66.4	
Effective Green, g (s)	20.4		20.4	20.4	20.4	20.4	71.4	71.4			66.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	58		304	317	304	289	87	2384			3186	
v/s Ratio Prot							0.00	c0.82			0.43	
v/s Ratio Perm	0.00		0.00	c0.15	0.12	0.00	0.01					
v/c Ratio	0.02		0.00	0.78	0.62	0.02	0.01	1.21			0.67	
Uniform Delay, d1	34.1		34.0	40.1	38.6	34.1	8.7	16.7			12.3	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	11.9	3.7	0.0	0.1	98.4			0.6	
Delay (s)	34.2		34.0	52.0	42.3	34.1	8.8	115.1			12.8	
Level of Service	C		C	D	D	C	A	F			B	
Approach Delay (s)		34.1			46.5			115.0			12.8	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	69.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2653	2432	43
Future Volume (vph)	0	0	0	2653	2432	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2884	2643	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2884	2643	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

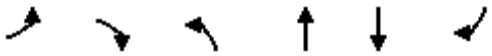
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2653	54	0	2432
Future Volume (vph)	0	0	2653	54	0	2432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2884	59	0	2643
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2884	59	0	2643
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



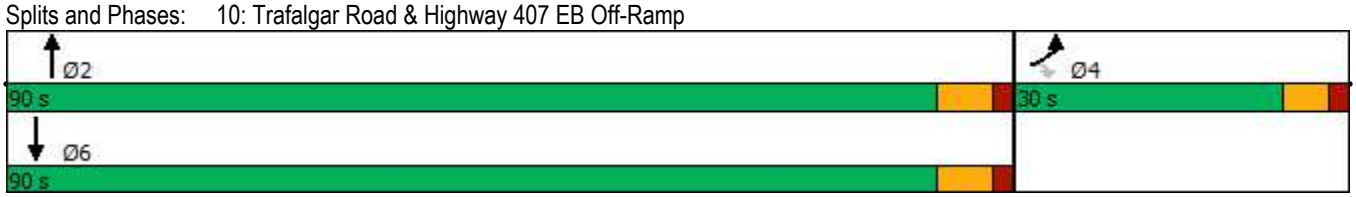
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	225	0	3189	2426	0
Future Volume (vph)	43	225	0	3189	2426	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		6				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	46	242	0	3429	2609	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	242	0	3429	2609	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

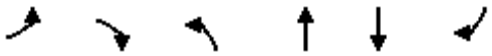
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	30.0	30.0		90.0	90.0	
Total Split (%)	25.0%	25.0%		75.0%	75.0%	
Maximum Green (s)	24.0	24.0		83.0	83.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	22.8	22.8		83.0	83.0	
Actuated g/C Ratio	0.19	0.19		0.70	0.70	
v/c Ratio	0.14	0.90		1.40	1.07	
Control Delay	40.8	80.9		204.8	58.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	40.8	80.9		204.8	58.7	
LOS	D	F		F	E	
Approach Delay	74.5			204.8	58.7	
Approach LOS	E			F	E	
Queue Length 50th (m)	9.0	54.3		~572.1	~360.6	
Queue Length 95th (m)	19.3	#99.2		#606.2	#400.1	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	354	283		2446	2446	
Starvation Cap Reductn	0	0		8	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.13	0.86		1.41	1.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 138.6		Intersection LOS: F	
Intersection Capacity Utilization 104.0%		ICU Level of Service G	
Analysis Period (min) 15			

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

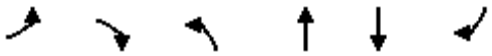
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	225	0	3189	2426	0
Future Volume (vph)	43	225	0	3189	2426	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	242	0	3429	2609	0
RTOR Reduction (vph)	0	5	0	0	0	0
Lane Group Flow (vph)	46	237	0	3429	2609	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.8	22.8		83.0	83.0	
Effective Green, g (s)	22.8	22.8		83.0	83.0	
Actuated g/C Ratio	0.19	0.19		0.70	0.70	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	335	264		2445	2445	
v/s Ratio Prot	0.03			c0.98	0.75	
v/s Ratio Perm		c0.17				
v/c Ratio	0.14	0.90		1.40	1.07	
Uniform Delay, d1	39.8	46.9		17.9	17.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	30.0		183.6	39.2	
Delay (s)	40.0	76.9		201.5	57.1	
Level of Service	D	E		F	E	
Approach Delay (s)	71.0			201.5	57.1	
Approach LOS	E			F	E	

Intersection Summary			
HCM 2000 Control Delay	136.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2505	2245	14
Future Volume (vph)	0	0	0	2505	2245	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2694	2414	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2694	2414	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

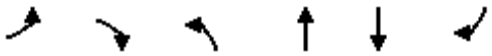
Intersection Sign configuration not allowed in HCM analysis.



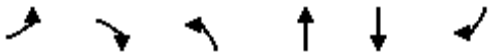
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3001	95	0	2450
Future Volume (vph)	0	0	3001	95	0	2450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	3227	102	0	2634
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3227	102	0	2634
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	1057	923	150
Future Volume (vph)	320	148	0	1057	923	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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					
Satd. Flow (prot)	1075	1401	1740	4885	4980	1566
Flt Permitted	0.950					
Satd. Flow (perm)	1075	1401	1740	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		161				163
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			228.1	145.5	
Travel Time (s)	16.2			10.3	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	348	161	0	1149	1003	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	161	0	1149	1003	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
v/c Ratio	1.65	0.40		0.36	0.31	0.15
Control Delay	340.3	8.6		7.5	7.1	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	340.3	8.6		7.5	7.1	1.3
LOS	F	A		A	A	A
Approach Delay	235.3			7.5	6.3	
Approach LOS	F			A	A	
Queue Length 50th (m)	~89.1	0.0		29.5	24.6	0.0
Queue Length 95th (m)	#140.1	15.6		36.7	30.9	5.9
Internal Link Dist (m)	88.4			204.1	121.5	
Turn Bay Length (m)						40.0
Base Capacity (vph)	211	404		3199	3261	1081
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	1.65	0.40		0.36	0.31	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 91			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.65			
Intersection Signal Delay: 48.0		Intersection LOS: D	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

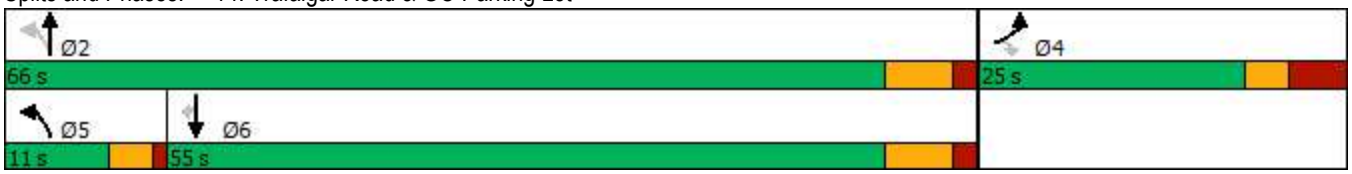
~ Volume exceeds capacity, queue is theoretically infinite.

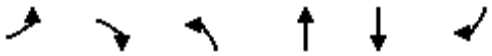
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

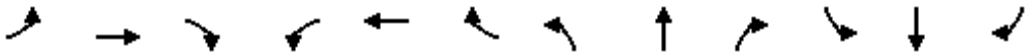
Splits and Phases: 14: Trafalgar Road & GO Parking Lot



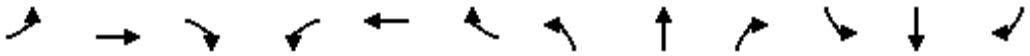


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	1057	923	150
Future Volume (vph)	320	148	0	1057	923	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		0.91	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	1.00
Satd. Flow (prot)	1075	1401		4885	4980	1566
Flt Permitted	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1075	1401		4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	161	0	1149	1003	163
RTOR Reduction (vph)	0	129	0	0	0	56
Lane Group Flow (vph)	348	32	0	1149	1003	107
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.9	17.9		59.6	59.6	59.6
Effective Green, g (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
Clearance Time (s)	7.1	7.1		6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2		4.0	4.0	4.0
Lane Grp Cap (vph)	211	275		3199	3261	1025
v/s Ratio Prot	c0.32			c0.24	0.20	
v/s Ratio Perm		0.02				0.07
v/c Ratio	1.65	0.12		0.36	0.31	0.10
Uniform Delay, d1	36.5	30.0		7.1	6.8	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	312.4	0.2		0.3	0.2	0.2
Delay (s)	349.0	30.2		7.4	7.0	6.0
Level of Service	F	C		A	A	A
Approach Delay (s)	248.2			7.4	6.9	
Approach LOS	F			A	A	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Future Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.998	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1564	1487	1750	3500	0	0	5029	0
Flt Permitted	0.354			0.950	0.953		0.065					
Satd. Flow (perm)	333	0	1566	1630	1564	1487	120	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		73	73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	496	0	26	1	2883	0	0	2142	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	248	251	23	1	2883	0	0	2142	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



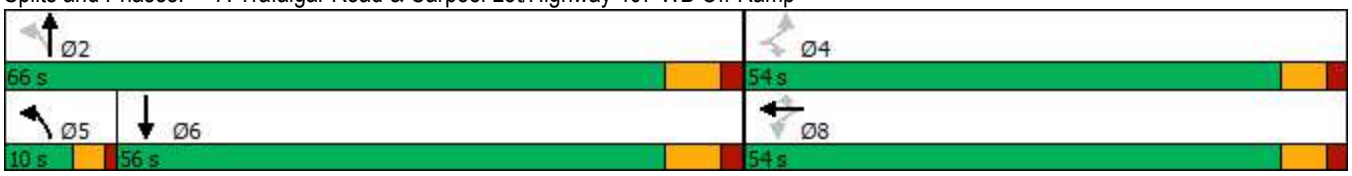
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	54.0		54.0	54.0	54.0	54.0	10.0	66.0			56.0	
Total Split (%)	45.0%		45.0%	45.0%	45.0%	45.0%	8.3%	55.0%			46.7%	
Maximum Green (s)	48.0		48.0	48.0	48.0	48.0	6.0	59.0			49.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.1		19.1	19.1	19.1	19.1	62.2	59.2			57.4	
Actuated g/C Ratio	0.21		0.21	0.21	0.21	0.21	0.68	0.65			0.63	
v/c Ratio	0.01		0.01	0.73	0.65	0.06	0.01	1.27			0.68	
Control Delay	28.0		0.0	46.6	31.3	0.3	7.0	145.3			14.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	28.0		0.0	46.6	31.3	0.3	7.0	145.3			14.0	
LOS	C		A	D	C	A	A	F			B	
Approach Delay		7.0			37.2			145.2			14.0	
Approach LOS		A			D			F			B	
Queue Length 50th (m)	0.2		0.0	42.9	31.3	0.0	0.1	~336.9			74.4	
Queue Length 95th (m)	1.4		0.0	68.8	57.4	0.0	0.7	#432.1			149.1	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	175		860	860	859	819	189	2269			3163	
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	0.01		0.00	0.29	0.29	0.03	0.01	1.27			0.68	

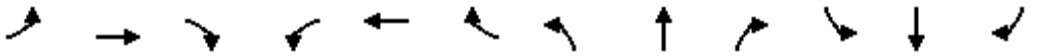
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 91.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 84.3		Intersection LOS: F	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

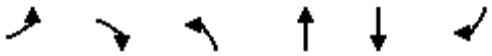
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Future Volume (vph)	1	0	3	456	0	24	1	2652	0	0	1971	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.35		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	332		1566	1630	1564	1487	120	3500			5029	
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)	1	0	3	496	0	26	1	2883	0	0	2142	0
RTOR Reduction (vph)	0	0	2	0	58	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	248	193	5	1	2883	0	0	2142	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.1		19.1	19.1	19.1	19.1	62.4	62.4			57.4	
Effective Green, g (s)	19.1		19.1	19.1	19.1	19.1	62.4	62.4			57.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.66	0.66			0.61	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	67		316	329	316	300	96	2311			3054	
v/s Ratio Prot							0.00	c0.82			0.43	
v/s Ratio Perm	0.00		0.00	c0.15	0.12	0.00	0.01					
v/c Ratio	0.01		0.00	0.75	0.61	0.02	0.01	1.25			0.70	
Uniform Delay, d1	30.2		30.1	35.5	34.3	30.2	9.0	16.1			12.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	9.4	3.3	0.0	0.0	115.2			0.7	
Delay (s)	30.3		30.1	44.9	37.6	30.2	9.0	131.2			13.4	
Level of Service	C		C	D	D	C	A	F			B	
Approach Delay (s)		30.1			40.8			131.2			13.4	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	77.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2653	2432	43
Future Volume (vph)	0	0	0	2653	2432	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2884	2643	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2884	2643	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

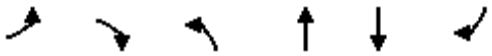
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2653	54	0	2432
Future Volume (vph)	0	0	2653	54	0	2432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2884	59	0	2643
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2884	59	0	2643
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



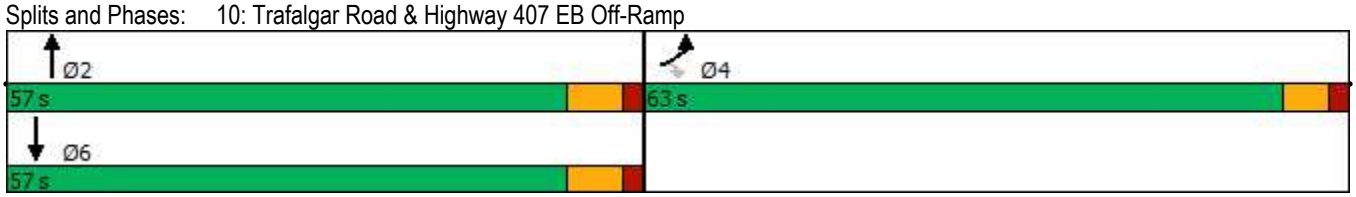
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	225	0	3189	2426	0
Future Volume (vph)	43	225	0	3189	2426	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	46	242	0	3429	2609	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	242	0	3429	2609	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

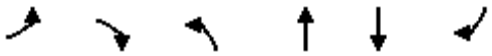
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	63.0	63.0		57.0	57.0	
Total Split (%)	52.5%	52.5%		47.5%	47.5%	
Maximum Green (s)	57.0	57.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.5	19.5		50.2	50.2	
Actuated g/C Ratio	0.24	0.24		0.61	0.61	
v/c Ratio	0.11	0.75		1.62	1.23	
Control Delay	24.5	43.8		299.6	127.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.5	43.8		299.6	127.6	
LOS	C	D		F	F	
Approach Delay	40.7			299.6	127.6	
Approach LOS	D			F	F	
Queue Length 50th (m)	5.7	35.3		~412.6	~269.7	
Queue Length 95th (m)	13.3	59.4		#515.7	#359.6	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1209	951		2122	2122	
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	0.04	0.25		1.62	1.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 82.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.62			
Intersection Signal Delay: 216.9		Intersection LOS: F	
Intersection Capacity Utilization 104.0%		ICU Level of Service G	
Analysis Period (min) 15			

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

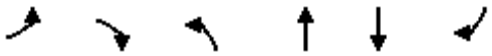
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	225	0	3189	2426	0
Future Volume (vph)	43	225	0	3189	2426	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	242	0	3429	2609	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	46	242	0	3429	2609	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.5	19.5		50.2	50.2	
Effective Green, g (s)	19.5	19.5		50.2	50.2	
Actuated g/C Ratio	0.24	0.24		0.61	0.61	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	412	324		2124	2124	
v/s Ratio Prot	0.03			c0.98	0.75	
v/s Ratio Perm		c0.18				
v/c Ratio	0.11	0.75		1.61	1.23	
Uniform Delay, d1	24.8	29.3		16.2	16.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	9.1		278.7	107.1	
Delay (s)	24.9	38.4		294.9	123.4	
Level of Service	C	D		F	F	
Approach Delay (s)	36.2			294.9	123.4	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	212.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2505	2245	14
Future Volume (vph)	0	0	0	2505	2245	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2694	2414	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2694	2414	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

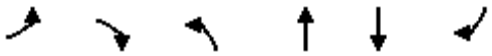
Intersection Sign configuration not allowed in HCM analysis.



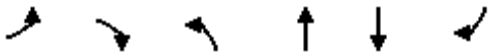
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3001	95	0	2450
Future Volume (vph)	0	0	3001	95	0	2450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	3227	102	0	2634
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3227	102	0	2634
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	1057	923	150
Future Volume (vph)	320	148	0	1057	923	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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					
Satd. Flow (prot)	1075	1401	1740	4885	4980	1566
Flt Permitted	0.950					
Satd. Flow (perm)	1075	1401	1740	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		161				163
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			228.1	145.5	
Travel Time (s)	16.2			10.3	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	348	161	0	1149	1003	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	161	0	1149	1003	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
v/c Ratio	1.65	0.40		0.36	0.31	0.15
Control Delay	340.3	8.6		7.5	7.1	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	340.3	8.6		7.5	7.1	1.3
LOS	F	A		A	A	A
Approach Delay	235.3			7.5	6.3	
Approach LOS	F			A	A	
Queue Length 50th (m)	~89.1	0.0		29.5	24.6	0.0
Queue Length 95th (m)	#140.1	15.6		36.7	30.9	5.9
Internal Link Dist (m)	88.4			204.1	121.5	
Turn Bay Length (m)						40.0
Base Capacity (vph)	211	404		3199	3261	1081
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	1.65	0.40		0.36	0.31	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 91			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.65			
Intersection Signal Delay: 48.0		Intersection LOS: D	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

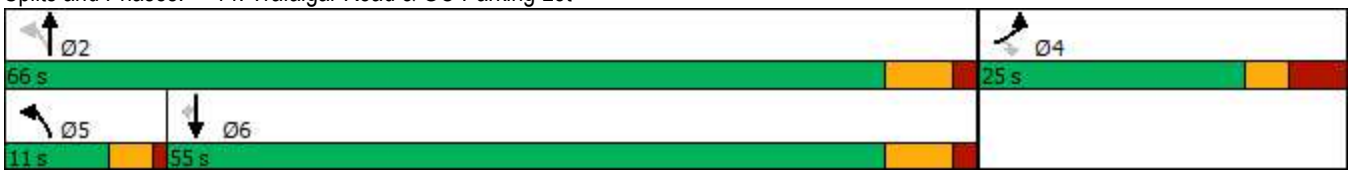
~ Volume exceeds capacity, queue is theoretically infinite.

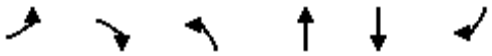
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 14: Trafalgar Road & GO Parking Lot





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	1057	923	150
Future Volume (vph)	320	148	0	1057	923	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		0.91	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	1.00
Satd. Flow (prot)	1075	1401		4885	4980	1566
Flt Permitted	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1075	1401		4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	161	0	1149	1003	163
RTOR Reduction (vph)	0	129	0	0	0	56
Lane Group Flow (vph)	348	32	0	1149	1003	107
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.9	17.9		59.6	59.6	59.6
Effective Green, g (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
Clearance Time (s)	7.1	7.1		6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2		4.0	4.0	4.0
Lane Grp Cap (vph)	211	275		3199	3261	1025
v/s Ratio Prot	c0.32			c0.24	0.20	
v/s Ratio Perm		0.02				0.07
v/c Ratio	1.65	0.12		0.36	0.31	0.10
Uniform Delay, d1	36.5	30.0		7.1	6.8	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	312.4	0.2		0.3	0.2	0.2
Delay (s)	349.0	30.2		7.4	7.0	6.0
Level of Service	F	C		A	A	A
Approach Delay (s)	248.2			7.4	6.9	
Approach LOS	F			A	A	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2041 Future Background AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	48	2.0	48	2.0	0.885	64.6	LOS F	5.0	35.8	0.96	1.30	2.38	28.6
2	T1	All MCs	266	2.0	266	2.0	0.885	63.8	LOS F	5.1	36.5	0.96	1.30	2.38	29.0
3	R2	All MCs	227	2.0	227	2.0	0.885	60.7	LOS F	5.1	36.5	0.96	1.31	2.40	29.3
Approach			540	2.0	540	2.0	0.885	62.6	LOS F	5.1	36.5	0.96	1.30	2.39	29.1
East: William Halton Parkway															
4	L2	All MCs	77	2.0	77	2.0	0.335	9.4	LOS A	1.2	8.3	0.51	0.50	0.59	48.0
5	T1	All MCs	399	2.0	399	2.0	0.335	9.2	LOS A	1.2	8.3	0.50	0.48	0.57	49.6
6	R2	All MCs	170	2.0	170	2.0	0.090	2.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			646	2.0	646	2.0	0.335	7.6	LOS A	1.2	8.3	0.37	0.36	0.42	51.0
North: Sixth Line															
7	L2	All MCs	1022	2.0	1022	2.0	1.335	174.3	LOS F	93.6	666.5	1.00	4.45	10.88	15.7
8	T1	All MCs	258	2.0	258	2.0	0.346	9.0	LOS A	1.2	8.7	0.49	0.44	0.54	50.3
9	R2	All MCs	383	2.0	383	2.0	0.202	4.3	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1663	2.0	1663	2.0	1.335	109.5	LOS F	93.6	666.5	0.69	2.80	6.77	21.3
West: William Halton Parkway															
10	L2	All MCs	310	2.0	310	2.0	1.030	77.2	LOS F	16.9	120.0	1.00	1.98	4.58	25.8
11	T1	All MCs	704	2.0	704	2.0	1.030	75.7	LOS F	17.4	124.0	1.00	2.01	4.67	26.6
12	R2	All MCs	106	2.0	106	2.0	0.056	2.9	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			1120	2.0	1120	2.0	1.030	69.3	LOS F	17.4	124.0	0.91	1.81	4.21	27.7
All Vehicles			3969	2.0	3969	2.0	1.335	75.2	LOS F	93.6	666.5	0.74	1.92	4.42	26.5

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Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
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Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Sixth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2041 Future Background PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	12	2.0	12	2.0	0.425	14.3	LOS B	1.6	11.3	0.67	0.75	0.95	46.1
2	T1	All MCs	282	2.0	282	2.0	0.425	14.1	LOS B	1.6	11.3	0.66	0.74	0.94	46.9
3	R2	All MCs	150	2.0	150	2.0	0.425	13.7	LOS B	1.6	11.1	0.65	0.73	0.93	46.7
Approach			444	2.0	444	2.0	0.425	13.9	LOS B	1.6	11.3	0.66	0.74	0.94	46.8
East: William Halton Parkway															
4	L2	All MCs	246	2.0	246	2.0	0.701	19.1	LOS C	6.2	43.9	0.72	0.90	1.47	42.4
5	T1	All MCs	780	2.0	780	2.0	0.701	18.8	LOS C	6.2	43.9	0.71	0.89	1.46	44.1
6	R2	All MCs	670	2.0	670	2.0	0.353	5.4	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			1696	2.0	1696	2.0	0.701	13.5	LOS B	6.2	43.9	0.43	0.54	0.88	47.8
North: Sixth Line															
7	L2	All MCs	302	2.0	302	2.0	0.602	20.3	LOS C	2.9	20.4	0.75	0.89	1.26	40.6
8	T1	All MCs	320	2.0	320	2.0	0.602	19.4	LOS C	2.9	20.4	0.73	0.87	1.24	44.2
9	R2	All MCs	324	2.0	324	2.0	0.171	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			947	2.0	947	2.0	0.602	14.7	LOS B	2.9	20.4	0.49	0.58	0.82	46.2
West: William Halton Parkway															
10	L2	All MCs	273	2.0	273	2.0	0.614	18.7	LOS C	3.4	23.9	0.71	0.87	1.26	41.8
11	T1	All MCs	447	2.0	447	2.0	0.614	18.1	LOS C	3.4	23.9	0.69	0.85	1.24	44.5
12	R2	All MCs	72	2.0	72	2.0	0.038	2.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.5
Approach			792	2.0	792	2.0	0.614	16.9	LOS C	3.4	23.9	0.63	0.78	1.14	44.3
All Vehicles			3879	2.0	3879	2.0	0.701	14.6	LOS B	6.2	43.9	0.51	0.62	0.93	46.5

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Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
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Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Background 2041 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	187	23.0	187	23.0	0.882	62.8	LOS F	4.8	38.0	0.94	1.30	2.29	28.9
2	T1	All MCs	360	2.0	360	2.0	0.882	51.9	LOS F	5.9	42.1	0.94	1.29	2.29	31.4
3	R2	All MCs	101	3.0	101	3.0	0.882	60.9	LOS F	5.9	42.1	0.93	1.28	2.29	32.1
Approach			647	8.2	647	8.2	0.882	56.4	LOS F	5.9	42.1	0.94	1.29	2.29	30.7
East: William Halton Parkway															
4	L2	All MCs	109	2.0	109	2.0	0.667	18.4	LOS C	4.8	34.3	0.70	0.86	1.34	43.2
5	T1	All MCs	708	3.0	708	3.0	0.667	18.2	LOS C	4.8	34.3	0.69	0.85	1.33	44.3
6	R2	All MCs	98	4.0	98	4.0	0.667	18.1	LOS C	4.7	33.9	0.68	0.84	1.32	44.4
Approach			915	3.0	915	3.0	0.667	18.2	LOS C	4.8	34.3	0.69	0.85	1.33	44.2
North: Ninth Line															
7	L2	All MCs	204	2.0	204	2.0	0.403	13.7	LOS B	1.5	10.4	0.66	0.73	0.91	43.4
8	T1	All MCs	646	2.0	646	2.0	1.207	132.6	LOS F	43.1	306.6	1.00	3.33	9.31	19.1
9	R2	All MCs	118	2.0	118	2.0	0.062	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			969	2.0	969	2.0	1.207	91.8	LOS F	43.1	306.6	0.81	2.38	6.40	23.8
West: William Halton Parkway															
10	L2	All MCs	115	4.0	115	4.0	1.401	208.4	LOS F	83.6	596.3	1.00	4.76	13.65	13.8
11	T1	All MCs	1312	2.0	1312	2.0	1.401	148.1	LOS F	83.6	596.3	1.00	3.51	9.43	18.1
12	R2	All MCs	399	12.0	399	12.0	0.225	6.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1826	4.3	1826	4.3	1.401	120.9	LOS F	83.6	596.3	0.78	2.82	7.63	20.6
All Vehicles			4356	4.1	4356	4.1	1.401	83.3	LOS F	83.6	596.3	0.79	2.08	5.24	25.5

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Roundabout Capacity Model: US HCM 2010.
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Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
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MOVEMENT SUMMARY

Site: 101 [Ninth Line & William Halton Parkway (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2041 Future Background PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Ninth Line															
1	L2	All MCs	462	23.0	462	23.0	1.995	487.5	LOS F	96.5	780.4	1.00	6.09	19.80	7.0
2	T1	All MCs	692	2.0	692	2.0	1.995	477.9	LOS F	128.4	916.7	1.00	6.15	20.91	6.9
3	R2	All MCs	247	3.0	247	3.0	1.995	488.8	LOS F	128.4	916.7	1.00	6.17	21.18	6.9
Approach			1401	9.1	1401	9.1	1.995	482.9	LOS F	128.4	916.7	1.00	6.14	20.59	6.9
East: Burnhamthorpe Road															
4	L2	All MCs	152	2.0	152	2.0	1.337	178.2	LOS F	81.2	582.2	1.00	4.36	11.35	15.4
5	T1	All MCs	1533	3.0	1533	3.0	1.337	178.0	LOS F	83.4	599.9	1.00	4.42	11.52	15.5
6	R2	All MCs	140	4.0	140	4.0	1.337	177.8	LOS F	83.4	599.9	1.00	4.47	11.68	15.5
Approach			1825	3.0	1825	3.0	1.337	178.0	LOS F	83.4	599.9	1.00	4.42	11.52	15.5
North: Ninth Line															
7	L2	All MCs	120	2.0	120	2.0	0.658	31.3	LOS D	2.6	18.6	0.86	0.99	1.37	37.2
8	T1	All MCs	356	2.0	356	2.0	0.658	29.9	LOS D	2.6	18.6	0.85	0.98	1.36	39.0
9	R2	All MCs	139	2.0	139	2.0	0.073	3.8	LOS A	0.0	0.0	0.00	0.00	0.00	56.4
Approach			616	2.0	616	2.0	0.658	24.3	LOS C	2.6	18.6	0.66	0.76	1.06	41.4
West: William Halton Parkway															
10	L2	All MCs	54	4.0	54	4.0	1.115	89.7	LOS F	43.6	310.8	1.00	2.85	6.52	24.1
11	T1	All MCs	1322	2.0	1322	2.0	1.115	66.9	LOS F	43.6	310.8	0.92	2.10	4.54	29.5
12	R2	All MCs	279	12.0	279	12.0	0.157	4.0	LOS A	0.0	0.0	0.00	0.00	0.00	56.2
Approach			1655	3.7	1655	3.7	1.115	57.1	LOS F	43.6	310.8	0.77	1.77	3.84	31.7
All Vehicles			5497	4.7	5497	4.7	1.995	202.1	LOS F	128.4	916.7	0.89	3.65	10.35	14.2

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HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix K

Planned HOV / BRT Correspondence with Halton Region

Outlook

RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

From Khan, Ayesha <Ayesha.Khan@halton.ca>
Date Wed 2024-05-15 08:40
To Jade Huangfu <jade.huangfu@cghtransportation.com>
Cc Robin Marinac <robin.marinac@cghtransportation.com>

Hello Jade and Robin,
My apologies for a delayed response.

I got the following information from our Mobility & Transportation Planning group:

The 2019 Defining Major Transit Requirements (DMTR) Study identified Preliminary 2031 and 2041 Recommended Transit Priority Corridor Networks (the report can be found at the following link: DMTR.) For Trafalgar Road from Highway 407 southerly to the Oakville GO, a Priority Bus with HOV lanes was lanes was identified in the 2031 network. In the 2041 network, a BRT with Bus Only lanes was identified from Highway 407 southerly to the Oakville GO. The Recommendations of the DMTR will reviewed and refined through the Region's ongoing Integrated Master Plan (IMP). The IMP is an ongoing study and the results, including modelling, are not available at this time. Additional information on the IMP can be found at the following link: IMP

Hope this is helpful.

Thanks,
Ayesha

From: Jade Huangfu <jade.huangfu@cghtransportation.com>
Sent: Friday, May 10, 2024 11:22 AM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Robin Marinac <robin.marinac@cghtransportation.com>
Subject: Re: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha,

Just wanted to follow up again on the previous email, regarding the information requested on the timelines and EMME data associated with the Trafalgar Road BRT and HOV implementation. We have a tight timeline with this project and wondering when we could expect to receive this information so that we can proceed with our work.

Thank you,

Jade Huangfu, BASc

CGH Transportation Inc.

P: 647-822-6294

E: Jade.Huangfu@cghtransportation.com

From: Jade Huangfu <jade.huangfu@cghtransportation.com>
Sent: Friday, May 3, 2024 11:59
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Robin Marinac <robin.marinac@cghtransportation.com>
Subject: Re: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Ayesha,

I apologize for following up so soon since the last email, as we are working with a tight deadline on this project. I am wondering when we could expect an answer for the requested information on Trafalgar Road.

Thank you,

Jade Huangfu, BASc

CGH Transportation Inc.

P: 647-822-6294

E: Jade.Huangfu@cghtransportation.com

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, April 30, 2024 10:39
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Ayesha,

No problem at all. Thank you!

Kind regards,

Robin Marinac

Robin Marinac, P.Eng.

CGH Transportation Inc.

P: 437-242-5183

E: robin.marinac@cghtransportation.com

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: Tuesday, April 30, 2024 10:38 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Robin,

Apologies for the delay. Let me look into this and get back to you.

Thanks,

Ayesha

Ayesha Khan
Project Manager I – Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Tuesday, April 30, 2024 10:28 AM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha,

I've just noticed that we never heard back on this. Any chance you can provide the requested information below?

Kind regards,

Robin Marinac

Robin Marinac, P.Eng.

CGH Transportation Inc.

P: 437-242-5183

E: robin.marinac@cghtransportation.com

From: Jade Huangfu <jade.huangfu@cghtransportation.com>
Sent: Friday, February 2, 2024 11:10 AM
To: Ayesha.Khan@halton.ca
Cc: Robin Marinac <robin.marinac@cghtransportation.com>
Subject: Re: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Ayesha,

As part of the TOR that we submitted in November, we had requested the timelines associated with the implementation of the HOV and BRT lanes along Trafalgar Road within our Study Area as well as the EMME link volumes along Trafalgar Road prior and post BRT implementation. Would you be able to provide this information so we can progress on the TIS?

Thank you,

Jade Huangfu, BASc

CGH Transportation Inc.

P: 647-822-6294

E: Jade.Huangfu@cghtransportation.com

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Monday, December 18, 2023 13:57
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>; aquisha.khan@oakville.ca <aquisha.khan@oakville.ca>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Ayesha,

We appreciate your consideration of our justification as well as your confirmation that these two additional intersections do not need to be analyzed.

Kind regards,

Robin Marinac

Robin Marinac, P.Eng.

CGH Transportation Inc.

P: 437-242-5183

E: robin.marinac@cghtransportation.com

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: Thursday, December 14, 2023 3:51 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>; aquisha.khan@oakville.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hi Robin,

Thanks for your email and explanation. I am okay to exclude those two intersections, I am satisfied with your justification.

Thanks,

Ayesha

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Wednesday, December 13, 2023 7:59 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; aquisha.khan@oakville.ca

Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha,

Thank you for the comments provided below. We will implement them in our TIS.

I would like to discuss the inclusion of the two additional intersections to our analysis. As these intersections are not within the EM4 JC7 JC9 lands and increases to turning movements are not expected at these intersections as a result of the subject lands, site generated volume is anticipated to be assigned primarily to the northbound through and southbound through movements at these intersections. As a result, we feel that it is not necessary to include these two intersections in our study. The inclusion of Dundas Street and Trafalgar Road just south of these two intersections is anticipated to better capture any trips south of the EM4 JC7 JC9 lands travelling to/from the south, east, and west. Future collector intersections on Trafalgar Road within the EM4 JC7 JC9 lands will be considered and are anticipated to better reflect the impact of the site generated trips on the existing and future road network than the two suggested additional intersections. Additionally, please note that our future total study area network is anticipated to include upwards of 20 intersections. As such, we feel that these two intersections should not be included in our analysis.

Please let us know your thoughts on this and if you accept our proposed change to the received comments. We are happy to discuss this further if needed.

Kind regards,

Robin Marinac

Robin Marinac, P.Eng.

CGH Transportation Inc.

P: 437-242-5183

E: robin.marinac@cghtransportation.com

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: Friday, December 8, 2023 1:13 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>; aquisha.khan@oakville.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

Hello Robin,

Thank you for your patience while we had the TOR peer-reviewed. Please see our comments below:

- Study Area and Existing Conditions
    - There are six intersections included as part of the TIS and signal timing plans are being requested from the Region and Town of Oakville for three intersections along Trafalgar Road. However, there are two other signalized intersections within the study area not considered. The first is Trafalgar Road & Wheat Boom Drive and the second is Trafalgar Road & Threshing Mill Boulevard. Consider adding these two intersections to the study and requests for signal timing plans.
    - Turning movement counts from April 21st, 2022 are to be grown to existing 2023 volumes to avoid double counting background development traffic from background developments that may have been partially built-out in the last year. Consider acquiring new counts as the April 2022 counts are from a year and a half ago and taken during the end of Covid before traffic patterns returned to pre-pandemic levels and patterns.
- Analysis
    - Include Section 3.6.1 of the Region's TIS guidelines that the capacity analysis at intersections should be complete using either the Highway Capacity Manual (HCM) or Canadian Capacity Guide (CCG) methodologies. Additionally, the software package, such as Synchro v11 should be included.
    - Identify any intersections, exclusive movements and queues that increase beyond the Region's thresholds outlined in Section 3.6.1.
- Background Growth
    - The document outlines 13 background developments will be considered as part of the TIS and possibly another four will be added if a TIS is available. Although much of the background volume growth will be due to the background developments, a compound annual growth rate (CAGR) of 1.5% from 2023 to 2033 and 0.75% from 2033 to 2043 will be used for Burnhamthorpe Road, Trafalgar Road and William Halton Parkway. A 0.5% CAGR will be used for Dundas Street from 2023 to 2043. However, these CAGR are not consistent with the CAGR used in the some of the background developments. For example, both the Argo Trafalgar and the Green Ginger developments use a 2% percent CAGR for all streets within the study area as agreed to with Region and Town of Oakville staff. The Argo Trafalgar TIS does include a one percent CAGR after 2036. Consideration should be given for

a conservative two percent CAGR for all study area roads until 2033 followed by a one percent CAGR thereafter.

- Site Access
    - Halton Region's Access By-Law NO. 32-17 restricts and regulates access to the Regional Road System. Clarification should be provided for the allowable moves at each access (i.e., full moves or right-in/right-out) to a Regional Road.
    - Clarification should be provided for the intended use of each access. Specifically, each access should indicate whether it is intended for a residential neighbourhood, office, or mixed use for example.
    - Sight lines are mentioned only as a bullet at the end of the document under the Access Considerations heading. Include in the Site Access or as part of a Safety Analysis heading, Section 3.8 of the Region's TIS guidelines that indicates at each of the proposed accesses, sight distance requirements should be determined based on decision sight distance and turning sight distance as identified in the Transportation Association of Canada (TAC) Manual.

- Recommended Mitigation Measures
    - Traffic Impacts and Recommendations are mentioned only as bullets at the end of the document. Include a new Mitigation Measures heading for Section 3.9 of the Region's TIS guidelines that specifies to ensure that acceptable operations of the transportation system is maintained, identification of operational transportation system improvements and other measures are required. This includes any identified traffic signal and roadway deficiencies.

Thank you,

Ayesha

Ayesha Khan
Transportation Planning Coordination PM1
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866

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From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Monday, November 20, 2023 4:41 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; aquisha.khan@oakville.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: EM4 JC7 JC9 Transportation Impact Analysis - Terms of Reference

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Hi Ayesha and Aquisha,

Please see the attached Terms of Reference Scoping Document for the EM4 JC7 JC9 Area Transportation Impact Analysis. I'd like to note that the concept provided in the attachment is a draft concept only and has been included for discussion purposes only. Please let me know if you have any questions or comments as part of your review.

Kind regards,

Robin Marinac

Robin Marinac, P.Eng.

CGH Transportation Inc.

P: 437-242-5183

E: robin.marinac@cghtransportation.com

Appendix L

AWSC Warrant Sheets

Collector 3 & Collector 5

2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	74	86	5	2	6	4	10	74	46	107	15	25
AM Sum		165			12			130			147	
PM	102	108	4	5	16	11	7	99	99	87	11	18
PM Sum		214			32			205			116	
EB/WB AM	159	35%	NB/SB AM	295	65%							
EB/WB PM	148	26%	NB/SB PM	419	74%							

Settlers Road & Collector 1

2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	33	121	143	145	123	29	31	90	8	5	134	40
AM Sum		297			297			129			179	
PM	29	77	90	104	126	33	35	110	7	9	129	32
PM Sum		196			263			152			170	
EB/WB AM	476	53%	NB/SB AM	426	47%							
EB/WB PM	433	55%	NB/SB PM	348	45%							

Settlers Road & Collector 4

2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	35	130	49	21	292	8	19	124	146	61	306	50
AM Sum		214			321			289			417	
PM	24	172	15	20	174	17	12	137	92	131	212	110
PM Sum		211			211			241			453	
EB/WB AM	738	59%	NB/SB AM	503	41%							
EB/WB PM	664	59%	NB/SB PM	452	41%							

Settlers Road & Collector 6

2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	34	64	28	10	191	54	46	111	109	40	322	12
AM Sum		126			255			266			374	
PM	21	92	17	28	128	51	21	101	96	87	118	34
PM Sum		130			207			218			239	
EB/WB AM	629	62%	NB/SB AM	392	38%							
EB/WB PM	446	56%	NB/SB PM	348	44%							

Marvin Avenue & Collector 1

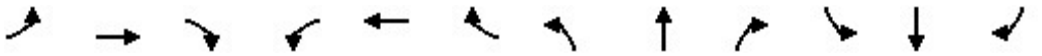
2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	20	45	3	8	191	185	205	47	33	13	82	9
AM Sum		68			384			285			104	
PM	4	49	8	5	77	177	134	53	21	32	108	4
PM Sum		61			259			208			144	
EB/WB AM	488	58%	NB/SB AM	353	42%							
EB/WB PM	403	60%	NB/SB PM	269	40%							

Marvin Avenue & Collector 4

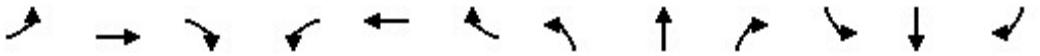
2031 FT	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	48	94	54	167	105	7	20	147	222	52	44	113
AM Sum		196			279			389			209	
PM	68	159	138	109	70	20	12	89	143	116	106	68
PM Sum		365			199			244			290	
EB/WB AM	488	45%	NB/SB AM	585	55%							
EB/WB PM	489	45%	NB/SB PM	609	55%							

Appendix M

2031 Future Total Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Future Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			168			120			142
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	472	1157	263	293	609	168	423	2202	55	330	1613	278
Shared Lane Traffic (%)												
Lane Group Flow (vph)	472	1157	263	293	609	168	423	2202	55	330	1613	278
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

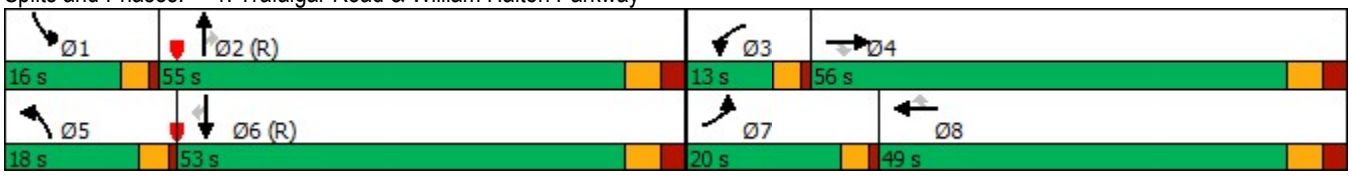


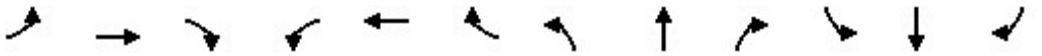
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.22	0.93	0.40	1.34	0.57	0.30	1.25	1.44	0.09	1.15	1.11	0.45
Control Delay	169.3	57.6	15.6	229.7	43.6	6.5	183.6	234.6	0.3	153.4	101.9	19.8
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	169.3	57.6	15.6	229.7	43.6	6.5	183.6	234.6	0.3	153.4	101.9	19.8
LOS	F	E	B	F	D	A	F	F	A	F	F	B
Approach Delay		79.7			88.7			221.7			99.3	
Approach LOS		E			F			F			F	
Queue Length 50th (m)	~82.3	162.1	21.3	~54.4	74.8	0.0	~75.0	~343.3	0.0	~55.0	~211.6	28.3
Queue Length 95th (m)	#116.6	#204.6	44.8	#83.7	94.3	16.4	#108.4	#374.9	0.0	#85.8	#245.1	54.1
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	388	1240	653	218	1065	558	339	1534	596	288	1457	615
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	1.22	0.93	0.40	1.34	0.57	0.30	1.25	1.44	0.09	1.15	1.11	0.45

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 134.9		Intersection LOS: F	
Intersection Capacity Utilization 102.3%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

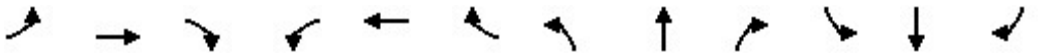




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Future Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	472	1157	263	293	609	168	423	2202	55	330	1613	278
RTOR Reduction (vph)	0	0	99	0	0	117	0	0	36	0	0	95
Lane Group Flow (vph)	472	1157	164	293	609	51	423	2202	19	330	1613	183
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Effective Green, g (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1240	554	218	1065	441	339	1534	518	288	1457	521
v/s Ratio Prot	c0.14	c0.33		0.09	0.17		c0.12	c0.50		0.10	0.37	
v/s Ratio Perm			0.10			0.04			0.01			0.12
v/c Ratio	1.22	0.93	0.30	1.34	0.57	0.12	1.25	1.44	0.04	1.15	1.11	0.35
Uniform Delay, d1	62.0	43.6	32.6	65.5	41.0	35.1	63.0	45.7	30.2	64.0	46.7	35.3
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	118.8	13.1	0.6	182.2	1.2	0.2	133.8	199.8	0.1	98.4	58.7	1.9
Delay (s)	180.8	56.7	33.2	247.7	42.2	35.4	196.8	245.5	30.4	162.4	105.4	37.2
Level of Service	F	E	C	F	D	D	F	F	C	F	F	D
Approach Delay (s)		84.4			97.4			233.4			105.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	142.8	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)	20.8
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Future Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor		1.00		1.00								
Frt		0.959			0.943			0.984			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3345	0	1750	3222	0	1700	4344	0	1750	4339	0
Flt Permitted	0.388			0.347			0.070			0.066		
Satd. Flow (perm)	715	3345	0	639	3222	0	125	4344	0	122	4339	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			110			18			11	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	238	379	141	268	291	178	236	2182	260	144	1787	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	520	0	268	469	0	236	2442	0	144	1885	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		22.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		56.0	56.0		22.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		46.7%	46.7%		18.3%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		49.7	49.7		18.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	35.6	35.6		35.6	35.6		56.9	56.9		74.0	71.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.47	0.47		0.62	0.60	
v/c Ratio	1.12	0.52		1.42	0.45		4.00	1.18		0.65	0.73	
Control Delay	138.5	35.9		249.7	27.4		1408.9	116.5		34.4	19.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	138.5	35.9		249.7	27.4		1408.9	116.5		34.4	19.1	
LOS	F	D		F	C		F	F		C	B	
Approach Delay		68.1			108.3			230.4			20.2	
Approach LOS		E			F			F			C	
Queue Length 50th (m)	~64.7	51.5		~84.9	35.7		~88.2	~284.2		16.5	123.1	
Queue Length 95th (m)	#114.1	68.4		#136.8	51.3		#141.7	#339.7		36.8	143.5	
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	212	1005		189	1033		59	2069		319	2596	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.12	0.52		1.42	0.45		4.00	1.18		0.45	0.73	

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: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 4.00	

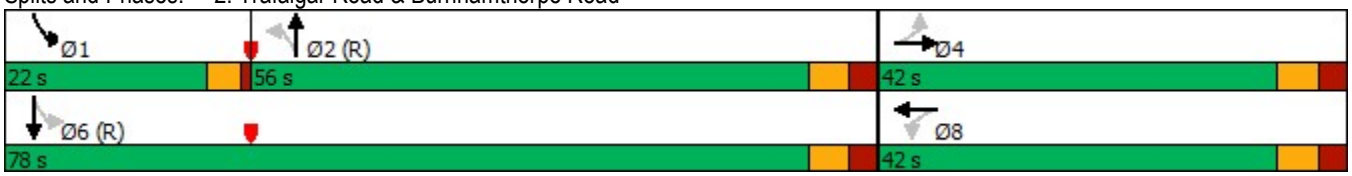
Intersection Signal Delay: 127.3	Intersection LOS: F
Intersection Capacity Utilization 97.0%	ICU Level of Service F
Analysis Period (min) 15	

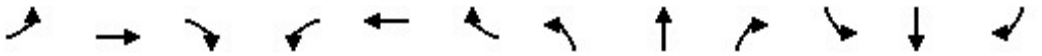
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Future Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3346		1749	3222		1700	4345		1750	4340	
Flt Permitted	0.39	1.00		0.35	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	714	3346		639	3222		126	4345		121	4340	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	238	379	141	268	291	178	236	2182	260	144	1787	98
RTOR Reduction (vph)	0	13	0	0	77	0	0	9	0	0	4	0
Lane Group Flow (vph)	238	507	0	268	392	0	236	2433	0	144	1881	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.6	35.6		35.6	35.6		56.9	56.9		71.7	71.7	
Effective Green, g (s)	35.6	35.6		35.6	35.6		56.9	56.9		71.7	71.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.47	0.47		0.60	0.60	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	211	992		189	955		59	2060		218	2593	
v/s Ratio Prot		0.15			0.12			0.56		0.06	c0.43	
v/s Ratio Perm	0.33			c0.42			c1.88			0.33		
v/c Ratio	1.13	0.51		1.42	0.41		4.00	1.18		0.66	0.73	
Uniform Delay, d1	42.2	35.0		42.2	33.8		31.6	31.6		29.5	17.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	100.6	0.4		216.2	0.3		1389.5	86.7		7.3	1.8	
Delay (s)	142.8	35.4		258.4	34.1		1421.1	118.3		36.8	19.0	
Level of Service	F	D		F	C		F	F		D	B	
Approach Delay (s)		69.1			115.7			233.1			20.2	
Approach LOS		E			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	129.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1454	1	667	716	0	1095
Future Volume (vph)	1454	1	667	716	0	1095
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	1716	3466	1842	1566
Flt Permitted			0.067			
Satd. Flow (perm)	3500	0	121	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						326
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1580	1	725	778	0	1190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1581	0	725	778	0	1190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	62.0		27.0	89.0	31.0	31.0
Total Split (%)	51.7%		22.5%	74.2%	25.8%	25.8%
Maximum Green (s)	55.6		23.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	55.6		85.0	82.6		27.0
Actuated g/C Ratio	0.46		0.71	0.69		0.22
v/c Ratio	0.98		1.85	0.33		1.97
Control Delay	49.1		419.5	8.0		461.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	49.1		419.5	8.0		461.6
LOS	D		F	A		F
Approach Delay	49.1			206.5	461.6	
Approach LOS	D			F	F	
Queue Length 50th (m)	187.1		~246.3	35.0		~375.7
Queue Length 95th (m)	#240.9		#319.0	44.1		#456.0
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1621		391	2385		605
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	0.98		1.85	0.33		1.97

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.97			
Intersection Signal Delay: 219.3		Intersection LOS: F	
Intersection Capacity Utilization 116.7%		ICU Level of Service H	
Analysis Period (min) 15			

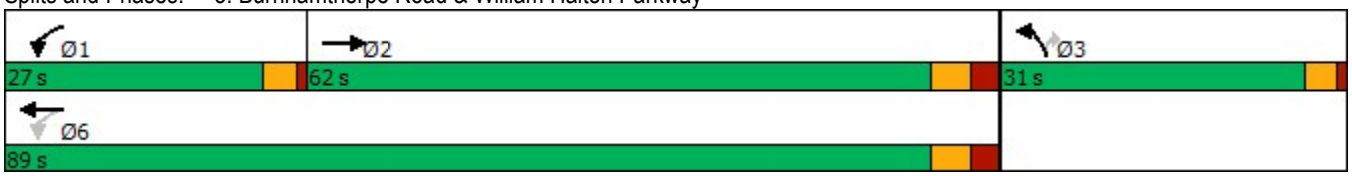
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway

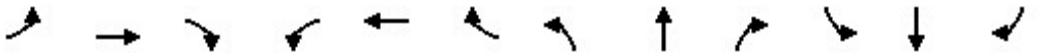




Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1454	1	667	716	0	1095
Future Volume (vph)	1454	1	667	716	0	1095
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		1716	3466		1566
Flt Permitted	1.00		0.07	1.00		1.00
Satd. Flow (perm)	3500		121	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1580	1	725	778	0	1190
RTOR Reduction (vph)	0	0	0	0	0	253
Lane Group Flow (vph)	1581	0	725	778	0	937
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	55.6		82.6	82.6		27.0
Effective Green, g (s)	55.6		82.6	82.6		27.0
Actuated g/C Ratio	0.46		0.69	0.69		0.22
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1621		388	2385		352
v/s Ratio Prot	0.45		c0.36	0.22		
v/s Ratio Perm			c0.92			c0.60
v/c Ratio	0.98		1.87	0.33		2.66
Uniform Delay, d1	31.5		40.4	7.5		46.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	17.2		400.6	0.1		756.4
Delay (s)	48.7		440.9	7.6		802.9
Level of Service	D		F	A		F
Approach Delay (s)	48.7			216.6	802.9	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	317.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Future Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	3298	4214	1536	3330	4378	1566	3330	4378	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	4421	1529	3298	4214	1512	3328	4378	1543	3328	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			151			96			145
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			1233.0	
Travel Time (s)		28.8			31.0			36.1			74.0	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
Shared Lane Traffic (%)												
Lane Group Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
v/c Ratio	2.28	1.26	0.35	1.33	0.80	1.00	0.96	0.97	0.22	4.06	1.28	0.65
Control Delay	615.9	157.9	12.3	222.7	41.0	67.1	112.9	60.0	10.5	1402.9	170.3	28.8
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	615.9	157.9	12.3	222.7	41.0	67.1	112.9	60.0	10.5	1402.9	170.3	28.8
LOS	F	F	B	F	D	E	F	E	B	F	F	C
Approach Delay		236.8			71.2			62.4			485.8	
Approach LOS		F			E			E			F	
Queue Length 50th (m)	~127.6	~290.8	15.7	~45.6	118.7	~140.7	26.1	145.1	5.1	~199.0	~249.4	54.1
Queue Length 95th (m)	#163.3	#323.2	35.9	#73.4	140.1	#222.2	#49.7	#181.5	19.2	#237.7	#282.8	89.8
Internal Link Dist (m)		536.5			579.0			577.7			1209.0	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	90.0		65.0
Base Capacity (vph)	261	1720	685	202	1575	659	204	1434	570	204	1434	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.28	1.26	0.35	1.33	0.80	1.00	0.96	0.97	0.22	4.06	1.28	0.65

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 4.06	
Intersection Signal Delay: 247.1	Intersection LOS: F

Intersection Capacity Utilization 119.6%	ICU Level of Service H
Analysis Period (min) 15	

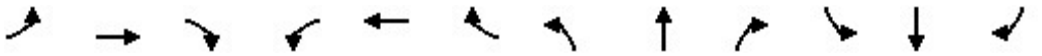
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

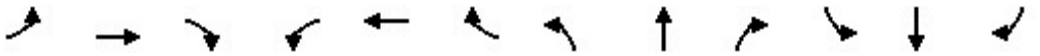




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Future Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Flt Permitted	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 (perm)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
RTOR Reduction (vph)	0	0	90	0	0	95	0	0	65	0	0	97
Lane Group Flow (vph)	596	2172	153	268	1256	565	195	1385	60	828	1842	293
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Effective Green, g (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	261	1720	595	202	1575	565	204	1434	505	204	1434	499
v/s Ratio Prot	c0.18	c0.49		0.08	0.30		0.06	0.32		c0.25	c0.42	
v/s Ratio Perm			0.10			0.37			0.04			0.19
v/c Ratio	2.28	1.26	0.26	1.33	0.80	1.00	0.96	0.97	0.12	4.06	1.28	0.59
Uniform Delay, d1	60.0	39.7	26.9	61.0	36.3	40.7	60.8	43.0	30.6	61.0	43.7	36.4
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	589.6	123.1	1.0	177.1	4.3	38.1	50.3	16.3	0.1	1388.1	133.5	1.9
Delay (s)	649.6	162.8	28.0	238.1	40.6	78.8	111.1	59.3	30.7	1449.1	177.2	38.2
Level of Service	F	F	C	F	D	E	F	E	C	F	F	D
Approach Delay (s)		248.3			76.4			63.1			503.6	
Approach LOS		F			E			E			F	

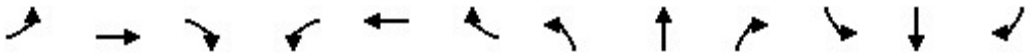
Intersection Summary			
HCM 2000 Control Delay	257.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



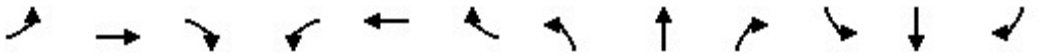
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	613	95	83	455	181	43	321	208	848	259	318
Future Volume (vph)	261	613	95	83	455	181	43	321	208	848	259	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.985			0.964			0.946			0.965	
Flt Protected		0.987			0.995			0.996			0.972	
Satd. Flow (prot)	0	3403	0	0	3357	0	0	3298	0	0	3283	0
Flt Permitted		0.987			0.995			0.996			0.972	
Satd. Flow (perm)	0	3403	0	0	3357	0	0	3298	0	0	3283	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			830.2			671.5			229.3	
Travel Time (s)		28.9			49.8			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	290	681	106	86	506	189	48	334	217	883	270	353
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1077	0	0	781	0	0	599	0	0	1506	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 125.4%		ICU Level of Service H	
Analysis Period (min) 15			

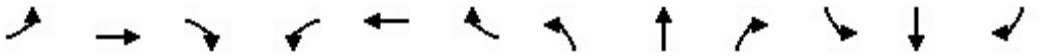


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	261	613	95	83	455	181	43	321	208	848	259	318
Future Volume (veh/h)	261	613	95	83	455	181	43	321	208	848	259	318
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	290	681	106	86	506	189	48	334	217	883	270	353
Approach Volume (veh/h)		1077			781			599			1506	
Crossing Volume (veh/h)		1239#			672			1854#			640	
High Capacity (veh/h)		511			813			304			834	
High v/c (veh/h)		2.11			0.96			1.97			1.81	
Low Capacity (veh/h)		388			648			218			667	
Low v/c (veh/h)		2.78			1.21			2.75			2.26	

Intersection Summary					
Maximum v/c High	2.11				
Maximum v/c Low	2.78				
Intersection Capacity Utilization	125.4%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Future Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	40.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962			0.976			0.972			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3367	0	1684	3315	0	1750	3377	0	1700	3456	0
Flt Permitted	0.586			0.620			0.421			0.284		
Satd. Flow (perm)	1079	3367	0	1099	3315	0	776	3377	0	508	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			26			48			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	157	53	136	226	43	203	748	175	89	600	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	210	0	136	269	0	203	923	0	89	611	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

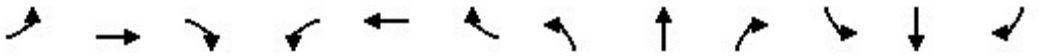


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
v/c Ratio	0.31	0.30		0.63	0.40		0.41	0.43		0.28	0.28	
Control Delay	29.3	19.7		41.1	25.2		11.3	7.9		10.4	7.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.3	19.7		41.1	25.2		11.3	7.9		10.4	7.2	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		22.0			30.5			8.6			7.6	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	8.0	10.0		17.9	15.8		12.3	27.9		4.8	17.4	
Queue Length 95th (m)	17.9	18.0		34.2	25.4		33.3	51.1		15.7	32.5	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			40.0			30.0			30.0		
Base Capacity (vph)	422	1350		430	1314		490	2151		320	2184	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.16		0.32	0.20		0.41	0.43		0.28	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

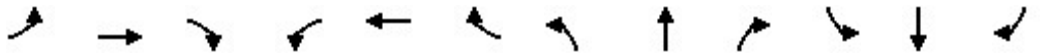
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



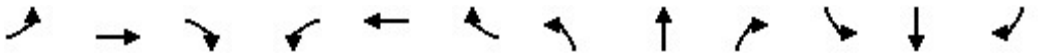


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Future Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3367		1684	3315		1750	3375		1700	3457	
Flt Permitted	0.59	1.00		0.62	1.00		0.42	1.00		0.28	1.00	
Satd. Flow (perm)	1079	3367		1099	3315		775	3375		509	3457	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	157	53	136	226	43	203	748	175	89	600	11
RTOR Reduction (vph)	0	43	0	0	21	0	0	18	0	0	1	0
Lane Group Flow (vph)	65	167	0	136	248	0	203	905	0	89	610	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Effective Green, g (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	663		216	653		490	2133		321	2185	
v/s Ratio Prot		0.05			0.07			c0.27			0.18	
v/s Ratio Perm	0.06			c0.12			0.26			0.17		
v/c Ratio	0.31	0.25		0.63	0.38		0.41	0.42		0.28	0.28	
Uniform Delay, d1	25.9	25.6		27.8	26.3		6.9	7.0		6.2	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		5.6	0.4		2.6	0.6		2.1	0.3	
Delay (s)	26.8	25.8		33.5	26.7		9.5	7.6		8.3	6.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.1			29.0			7.9			6.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	12.9
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Future Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.389			0.950	0.950		0.057					
Satd. Flow (perm)	438	0	1566	1449	1388	1487	71	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	454	0	3	2	2139	0	0	2191	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	227	227	3	2	2139	0	0	2191	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

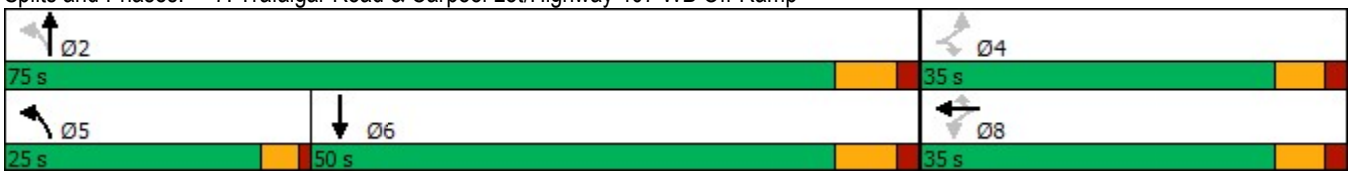


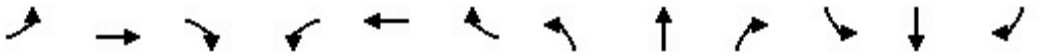
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	21.3		21.3	21.3	21.3	21.3	71.2	68.2			66.4	
Actuated g/C Ratio	0.21		0.21	0.21	0.21	0.21	0.69	0.66			0.65	
v/c Ratio	0.03		0.01	0.75	0.79	0.01	0.02	0.97			0.71	
Control Delay	32.0		0.0	54.2	57.8	0.0	7.0	32.1			15.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	32.0		0.0	54.2	57.8	0.0	7.0	32.1			15.2	
LOS	C		A	D	E	A	A	C			B	
Approach Delay		19.2			55.6			32.1			15.2	
Approach LOS		B			E			C			B	
Queue Length 50th (m)	0.5		0.0	44.8	47.2	0.0	0.1	194.0			90.7	
Queue Length 95th (m)	2.8		0.0	70.7	74.7	0.0	0.9	#299.1			163.8	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	124		500	411	393	478	279	2198			3073	
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		0.00	0.55	0.58	0.01	0.01	0.97			0.71	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 102.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 26.6		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Future Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.39		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	437		1566	1449	1388	1487	71	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	454	0	3	2	2139	0	0	2191	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	227	227	1	2	2139	0	0	2191	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	21.3		21.3	21.3	21.3	21.3	71.5	71.5			66.4	
Effective Green, g (s)	21.3		21.3	21.3	21.3	21.3	71.5	71.5			66.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	87		315	291	279	299	59	2233			2980	
v/s Ratio Prot							0.00	c0.65			0.46	
v/s Ratio Perm	0.01		0.00	0.16	0.16	0.00	0.02					
v/c Ratio	0.03		0.00	0.78	0.81	0.00	0.03	0.96			0.74	
Uniform Delay, d1	34.0		33.8	40.0	40.4	33.8	9.5	15.8			13.6	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	12.7	16.4	0.0	0.2	10.8			1.0	
Delay (s)	34.1		33.8	52.7	56.8	33.8	9.8	26.5			14.6	
Level of Service	C		C	D	E	C	A	C			B	
Approach Delay (s)		34.0			54.6			26.5			14.6	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1906	2358	30
Future Volume (vph)	0	0	0	1906	2358	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	2142	2649	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2142	2649	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1906	193	0	2358
Future Volume (vph)	0	0	1906	193	0	2358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	2142	217	0	2649
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2142	217	0	2649
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	388	0	2074	2209	0
Future Volume (vph)	52	388	0	2074	2209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1716	1401	0	3275	3305	0
Flt Permitted	0.950					
Satd. Flow (perm)	1716	1401	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	57	426	0	2279	2427	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	426	0	2279	2427	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

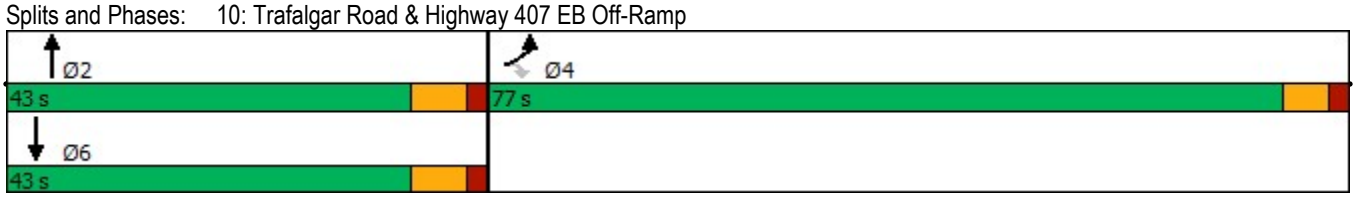
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	77.0	77.0		43.0	43.0	
Total Split (%)	64.2%	64.2%		35.8%	35.8%	
Maximum Green (s)	71.0	71.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	28.2	28.2		36.3	36.3	
Actuated g/C Ratio	0.36	0.36		0.47	0.47	
v/c Ratio	0.09	0.84		1.49	1.57	
Control Delay	15.5	37.6		245.7	282.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	15.5	37.6		245.7	282.1	
LOS	B	D		F	F	
Approach Delay	35.0			245.7	282.1	
Approach LOS	D			F	F	
Queue Length 50th (m)	5.3	55.6		~245.6	~268.5	
Queue Length 95th (m)	11.9	89.2		#351.8	#379.0	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1591	1299		1531	1545	
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	0.04	0.33		1.49	1.57	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 77.7	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.57	
Intersection Signal Delay: 243.1	Intersection LOS: F
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	388	0	2074	2209	0
Future Volume (vph)	52	388	0	2074	2209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1716	1401		3275	3305	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1716	1401		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	57	426	0	2279	2427	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	426	0	2279	2427	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	28.3	28.3		36.4	36.4	
Effective Green, g (s)	28.3	28.3		36.4	36.4	
Actuated g/C Ratio	0.36	0.36		0.47	0.47	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	625	510		1534	1548	
v/s Ratio Prot	0.03			0.70	c0.73	
v/s Ratio Perm		c0.30				
v/c Ratio	0.09	0.84		1.49	1.57	
Uniform Delay, d1	16.2	22.6		20.7	20.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	11.3		222.1	258.7	
Delay (s)	16.3	33.9		242.7	279.3	
Level of Service	B	C		F	F	
Approach Delay (s)	31.8			242.7	279.3	
Approach LOS	C			F	F	

Intersection Summary			
HCM 2000 Control Delay	240.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2096	2209	26
Future Volume (vph)	0	0	0	2096	2209	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	2303	2427	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2303	2427	29
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 95.9%		ICU Level of Service F	
Analysis Period (min) 15			

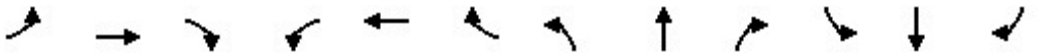
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2074	385	0	2596
Future Volume (vph)	0	0	2074	385	0	2596
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	2279	423	0	2853
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2279	423	0	2853
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

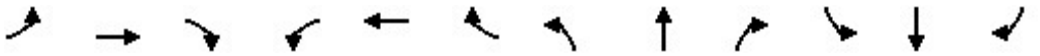
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



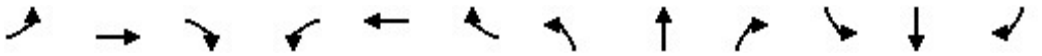
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	1874	480	106	1080	95	263	349	99	199	628	96
Future Volume (vph)	101	1874	480	106	1080	95	263	349	99	199	628	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.971			0.989			0.979			0.984	
Flt Protected		0.998			0.996			0.982			0.989	
Satd. Flow (prot)	0	3325	0	0	3414	0	0	3122	0	0	3406	0
Flt Permitted		0.998			0.996			0.982			0.989	
Satd. Flow (perm)	0	3325	0	0	3414	0	0	3122	0	0	3406	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	113	2106	539	119	1213	107	296	392	111	224	706	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2758	0	0	1439	0	0	799	0	0	1038	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 166.0%		ICU Level of Service H	
Analysis Period (min) 15			

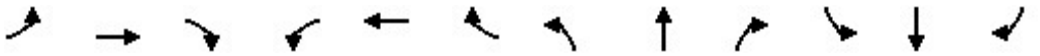


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	101	1874	480	106	1080	95	263	349	99	199	628	96
Future Volume (veh/h)	101	1874	480	106	1080	95	263	349	99	199	628	96
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	113	2106	539	119	1213	107	296	392	111	224	706	108
Approach Volume (veh/h)		2758			1439			799			1038	
Crossing Volume (veh/h)		1049			801			2443#			1628#	
High Capacity (veh/h)		598			732			182			369	
High v/c (veh/h)		4.61			1.96			4.38			2.82	
Low Capacity (veh/h)		462			578			123			270	
Low v/c (veh/h)		5.97			2.49			6.51			3.85	

Intersection Summary					
Maximum v/c High	4.61				
Maximum v/c Low	6.51				
Intersection Capacity Utilization	166.0%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Future Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.551						0.950			0.950		
Satd. Flow (perm)	624	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				286			206			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	291	42	2342	404	590	2105	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	291	42	2342	404	590	2105	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	59.5		48.5	48.5	48.5	11.0	42.5	42.5	18.0	49.5	49.5
Total Split (%)	9.2%	49.6%		40.4%	40.4%	40.4%	9.2%	35.4%	35.4%	15.0%	41.3%	41.3%
Maximum Green (s)	7.0	53.0		42.0	42.0	42.0	7.0	36.0	36.0	14.0	43.0	43.0
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	24.2	21.7				10.7	7.0	36.0	36.0	14.0	47.4	47.4
Actuated g/C Ratio	0.27	0.24				0.12	0.08	0.41	0.41	0.16	0.53	0.53
v/c Ratio	0.66	0.26				0.66	0.32	1.18	0.53	1.10	0.79	0.28
Control Delay	44.2	10.5				12.9	46.2	113.9	12.4	106.4	20.8	8.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	10.5				12.9	46.2	113.9	12.4	106.4	20.8	8.5
LOS	D	B				B	D	F	B	F	C	A
Approach Delay		28.8			12.9			98.2			36.9	
Approach LOS		C			B			F			D	
Queue Length 50th (m)	19.1	3.2				0.8	6.8	~174.5	22.4	~58.5	110.1	13.4
Queue Length 95th (m)	#38.6	15.6				22.9	17.3	#216.5	51.6	#94.7	143.0	30.1
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	205	924				891	130	1982	758	536	2663	886
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	0.66	0.12				0.33	0.32	1.18	0.53	1.10	0.79	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 88.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 62.7		Intersection LOS: E	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

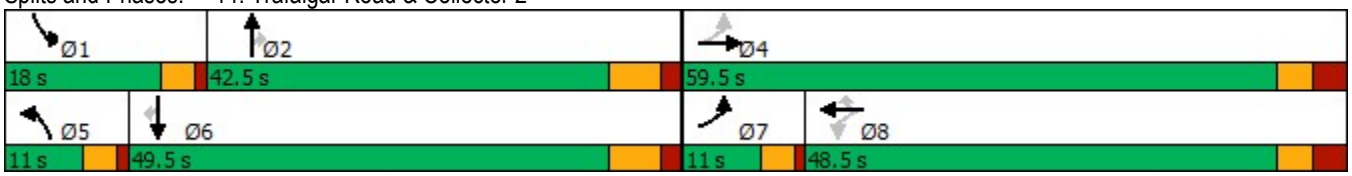
~ Volume exceeds capacity, queue is theoretically infinite.

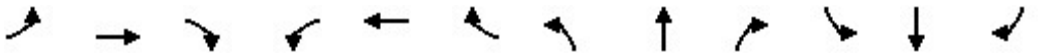
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

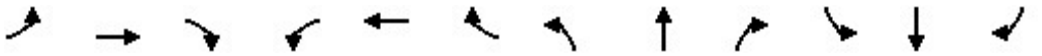
Splits and Phases: 14: Trafalgar Road & Collector 2



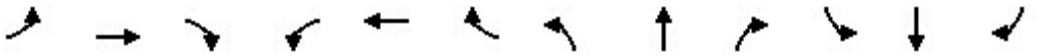


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Future Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.55	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	624	1486				1566	1653	4885	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	291	42	2342	404	590	2105	252
RTOR Reduction (vph)	0	68	0	0	0	252	0	0	120	0	0	50
Lane Group Flow (vph)	135	46	0	0	0	39	42	2342	284	590	2105	202
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	21.7	21.7				10.7	4.2	37.6	37.6	14.0	47.4	47.4
Effective Green, g (s)	21.7	21.7				10.7	4.2	37.6	37.6	14.0	47.4	47.4
Actuated g/C Ratio	0.24	0.24				0.12	0.05	0.42	0.42	0.16	0.52	0.52
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	184	357				185	76	2034	652	526	2614	822
v/s Ratio Prot	c0.06	0.03					0.03	c0.48		c0.17	0.42	
v/s Ratio Perm	c0.12					0.02			0.18			0.13
v/c Ratio	0.73	0.13				0.21	0.55	1.15	0.44	1.12	0.81	0.25
Uniform Delay, d1	31.0	26.9				36.0	42.1	26.3	18.8	38.1	17.7	11.7
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.0	0.2				0.6	8.4	74.3	2.1	77.1	2.8	0.7
Delay (s)	45.1	27.0				36.5	50.6	100.7	20.9	115.3	20.4	12.4
Level of Service	D	C				D	D	F	C	F	C	B
Approach Delay (s)		36.8			36.5			88.3			38.7	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	60.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	21.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Future Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	50.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				0.97	1.00	0.99		1.00	1.00	
Frt		0.998				0.850		0.952			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1742	0	1750	1763	0
Flt Permitted	0.361			0.081			0.752			0.724		
Satd. Flow (perm)	663	3491	0	149	3500	1516	1379	1742	0	1328	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				172		11			2	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		830.2			198.4			579.5			190.6	
Travel Time (s)		49.8			11.9			41.7			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1850	24	257	759	172	20	34	16	23	6	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1874	0	257	759	172	20	50	0	23	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%	61.1%	38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	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)	20.0	20.0		20.0	20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)	61.8	61.8		61.8	61.8	61.8	13.4	13.4		13.4	13.4	
Actuated g/C Ratio	0.80	0.80		0.80	0.80	0.80	0.17	0.17		0.17	0.17	
v/c Ratio	0.03	0.67		2.14	0.27	0.14	0.08	0.16		0.10	0.03	
Control Delay	6.3	9.8		560.7	4.9	1.6	26.0	22.5		26.3	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.3	9.8		560.7	4.9	1.6	26.0	22.5		26.3	21.7	
LOS	A	A		F	A	A	C	C		C	C	
Approach Delay		9.8			124.7			23.5			25.1	
Approach LOS		A			F			C			C	
Queue Length 50th (m)	0.5	65.2		~49.4	15.6	0.0	2.8	5.6		3.3	0.9	
Queue Length 95th (m)	4.0	#212.8		#110.9	48.0	8.1	7.2	12.3		8.0	3.8	
Internal Link Dist (m)		806.2			174.4			555.5			166.6	
Turn Bay Length (m)	30.0			50.0		30.0	30.0			30.0		
Base Capacity (vph)	534	2811		120	2818	1254	536	684		516	686	
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	0.03	0.67		2.14	0.27	0.14	0.04	0.07		0.04	0.01	

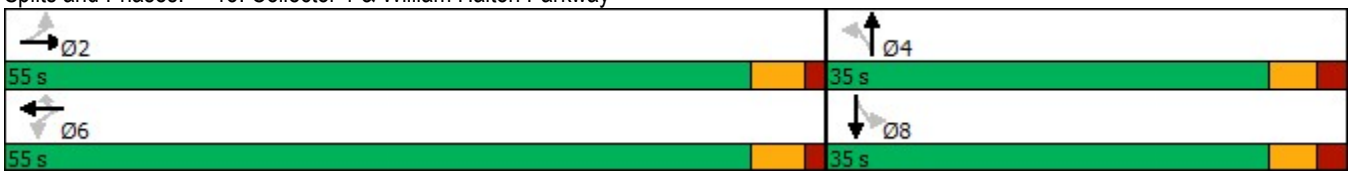
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.14			
Intersection Signal Delay: 53.2		Intersection LOS: D	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

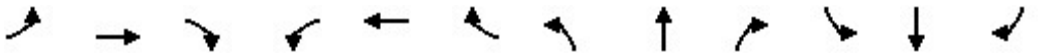
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Future Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3492		1749	3500	1519	1743	1739		1743	1762	
Flt Permitted	0.36	1.00		0.08	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	663	3492		150	3500	1519	1380	1739		1329	1762	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1850	24	257	759	172	20	34	16	23	6	2
RTOR Reduction (vph)	0	0	0	0	0	42	0	10	0	0	2	0
Lane Group Flow (vph)	16	1874	0	257	759	130	20	40	0	23	6	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	59.6	59.6		59.6	59.6	59.6	9.0	9.0		9.0	9.0	
Effective Green, g (s)	59.6	59.6		59.6	59.6	59.6	9.0	9.0		9.0	9.0	
Actuated g/C Ratio	0.75	0.75		0.75	0.75	0.75	0.11	0.11		0.11	0.11	
Clearance Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
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)	499	2631		113	2637	1144	157	197		151	200	
v/s Ratio Prot		0.54			0.22			c0.02			0.00	
v/s Ratio Perm	0.02			c1.71		0.09	0.01			0.02		
v/c Ratio	0.03	0.71		2.27	0.29	0.11	0.13	0.20		0.15	0.03	
Uniform Delay, d1	2.5	5.2		9.7	3.1	2.6	31.5	31.8		31.6	31.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.7		600.6	0.3	0.2	0.4	0.5		0.5	0.1	
Delay (s)	2.6	6.9		610.3	3.3	2.8	31.9	32.3		32.1	31.2	
Level of Service	A	A		F	A	A	C	C		C	C	
Approach Delay (s)		6.8			134.6			32.2			31.9	
Approach LOS		A			F			C			C	

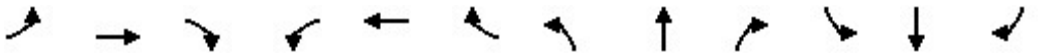
Intersection Summary			
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.00		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	10.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1667	33	0	1060	146	0	0	121	0	0	9
Future Volume (vph)	0	1667	33	0	1060	146	0	0	121	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			355.4	
Travel Time (s)		11.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1852	37	0	1178	162	0	0	134	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1889	0	0	1178	162	0	0	134	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

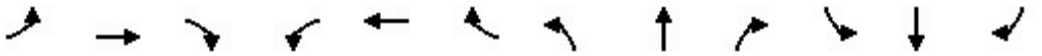
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1667	33	0	1060	146	0	0	121	0	0	9
Future Volume (Veh/h)	0	1667	33	0	1060	146	0	0	121	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1852	37	0	1178	162	0	0	134	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.87			0.65			0.71	0.71	0.65	0.71	0.71	0.87
vC, conflicting volume	1345			1894			2480	3220	954	2248	3077	599
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1091			1291			1431	2469	0	1106	2268	230
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	81	100	100	98
cM capacity (veh/h)	548			343			66	21	695	93	28	663

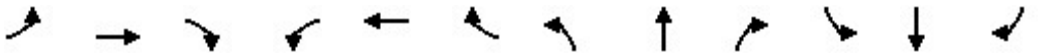
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1235	654	589	589	162	134	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	162	134	10
cSH	1700	1700	1700	1700	1700	695	663
Volume to Capacity	0.73	0.38	0.35	0.35	0.10	0.19	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.4	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.4	10.5
Lane LOS						B	B
Approach Delay (s)	0.0		0.0			11.4	10.5
Approach LOS						B	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Future Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.960			0.926			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3493	0	1750	3360	0	1750	1706	0	1750	1831	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	3493	0	1750	3360	0	1750	1706	0	1750	1831	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			579.5	
Travel Time (s)		9.8			17.7			34.4			41.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	640	10	84	398	143	21	101	99	20	52	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	650	0	84	541	0	21	200	0	20	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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 45.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	576	9	76	358	129	19	91	89	18	47	2
Future Volume (Veh/h)	15	576	9	76	358	129	19	91	89	18	47	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	640	10	84	398	143	21	101	99	20	52	2
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					245							
pX, platoon unblocked												
vC, conflicting volume	546			655			1084	1398	335	1151	1332	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	546			655			1084	1398	335	1151	1332	280
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 %	98			91			81	18	85	47	62	100
cM capacity (veh/h)	1014			924			109	124	654	38	136	710

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	17	427	223	84	265	276	21	200	20	54
Volume Left	17	0	0	84	0	0	21	0	20	0
Volume Right	0	0	10	0	0	143	0	99	0	2
cSH	1014	1700	1700	924	1700	1700	109	206	38	140
Volume to Capacity	0.02	0.25	0.13	0.09	0.16	0.16	0.19	0.97	0.53	0.39
Queue Length 95th (m)	0.4	0.0	0.0	2.3	0.0	0.0	5.1	62.8	14.0	12.5
Control Delay (s)	8.6	0.0	0.0	9.3	0.0	0.0	45.8	102.9	177.5	46.1
Lane LOS	A			A			E	F	F	E
Approach Delay (s)	0.2			1.2			97.4		81.6	
Approach LOS							F		F	

Intersection Summary				
Average Delay	18.0			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	542	1	11	355	3	30
Future Volume (vph)	542	1	11	355	3	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3500	0	0	3496	1750	1566
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3500	0	0	3496	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	602	1	12	394	3	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	603	0	0	406	3	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	542	1	11	355	3	30
Future Volume (Veh/h)	542	1	11	355	3	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	602	1	12	394	3	33
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			608		834	312
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			608		834	312
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	95
cM capacity (veh/h)			962		300	678

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	401	202	143	263	3	33
Volume Left	0	0	12	0	3	0
Volume Right	0	1	0	0	0	33
cSH	1700	1700	962	1700	300	678
Volume to Capacity	0.24	0.12	0.01	0.15	0.01	0.05
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.2	1.2
Control Delay (s)	0.0	0.0	0.8	0.0	17.1	10.6
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.3		11.1	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	0	13	353	0	28
Future Volume (vph)	572	0	13	353	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	30.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.998		
Satd. Flow (prot)	3500	0	0	3493	1842	1566
Flt Permitted				0.998		
Satd. Flow (perm)	3500	0	0	3493	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	636	0	14	392	0	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	636	0	0	406	0	31
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

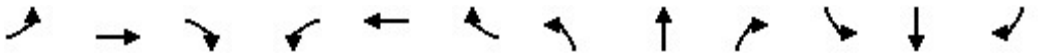
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	572	0	13	353	0	28
Future Volume (Veh/h)	572	0	13	353	0	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	636	0	14	392	0	31
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				382		
pX, platoon unblocked						
vC, conflicting volume			641		870	328
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			641		870	328
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	95
cM capacity (veh/h)			935		284	661

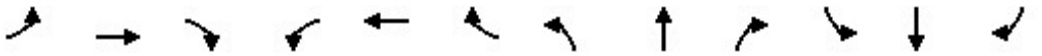
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	424	212	145	261	0	31
Volume Left	0	0	14	0	0	0
Volume Right	0	0	0	0	0	31
cSH	1700	1700	935	1700	1700	661
Volume to Capacity	0.25	0.12	0.01	0.15	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	1.0	0.0	0.0	10.7
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.4		10.7	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1400	10	0	795	45	0	0	25	0	0	180
Future Volume (vph)	0	1400	10	0	795	45	0	0	25	0	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5						5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1556	11	0	883	50	0	0	28	0	0	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1567	0	0	883	50	0	0	28	0	0	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)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

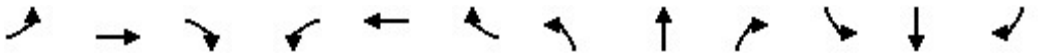
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1400	10	0	795	45	0	0	25	0	0	180
Future Volume (Veh/h)	0	1400	10	0	795	45	0	0	25	0	0	180
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1556	11	0	883	50	0	0	28	0	0	200
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.93			0.68			0.71	0.71	0.68	0.71	0.71	0.93
vC, conflicting volume	938			1572			2213	2504	794	1699	2460	452
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	778			895			1444	1852	0	725	1790	254
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	96	100	100	71
cM capacity (veh/h)	771			509			46	52	728	211	57	685

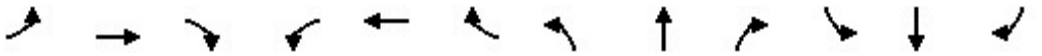
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1037	530	442	442	50	28	200
Volume Left	0	0	0	0	0	0	0
Volume Right	0	11	0	0	50	28	200
cSH	1700	1700	1700	1700	1700	728	685
Volume to Capacity	0.61	0.31	0.26	0.26	0.03	0.04	0.29
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.9	9.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.1	12.4
Lane LOS						B	B
Approach Delay (s)	0.0		0.0			10.1	12.4
Approach LOS						B	B

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	50.6%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	694	12	0	635	4	0	0	135	0	0	25
Future Volume (vph)	0	694	12	0	635	4	0	0	135	0	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	771	13	0	706	4	0	0	150	0	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	784	0	0	710	0	0	0	150	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

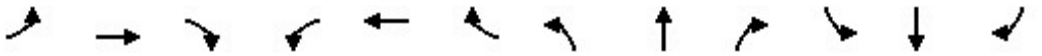
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	694	12	0	635	4	0	0	135	0	0	25
Future Volume (Veh/h)	0	694	12	0	635	4	0	0	135	0	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	771	13	0	706	4	0	0	150	0	0	28
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	715			789			1168	1498	402	1254	1502	365
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	715			556			976	1339	129	1070	1344	365
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	81	100	100	96
cM capacity (veh/h)	877			910			175	136	804	127	135	626

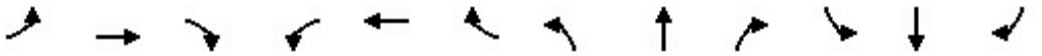
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	514	270	471	239	150	28
Volume Left	0	0	0	0	0	0
Volume Right	0	13	0	4	150	28
cSH	1700	1700	1700	1700	804	626
Volume to Capacity	0.30	0.16	0.28	0.14	0.19	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.2	1.1
Control Delay (s)	0.0	0.0	0.0	0.0	10.5	11.0
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.5	11.0
Approach LOS					B	B

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	35.8%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	41	0	0	109	0	2347	38	0	1763	184
Future Volume (vph)	0	0	41	0	0	109	0	2347	38	0	1763	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	46	0	0	121	0	2608	42	0	1959	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	46	0	0	121	0	2608	42	0	1959	204
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

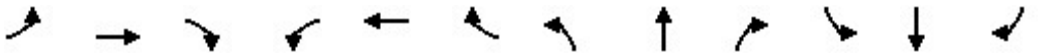
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	41	0	0	109	0	2347	38	0	1763	184
Future Volume (Veh/h)	0	0	41	0	0	109	0	2347	38	0	1763	184
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	46	0	0	121	0	2608	42	0	1959	204
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.72	0.72	0.69	0.72	0.72	0.56	0.69			0.56		
vC, conflicting volume	2959	4619	663	3317	4781	879	2168			2655		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1700	0	0	1927	0	1099			1195		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	100	100	80	100			100		
cM capacity (veh/h)	574	65	736	674	47	599	431			322		

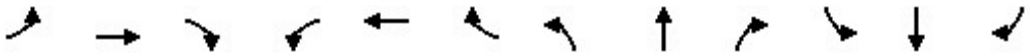
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	46	121	869	869	869	42	653	653	653	204
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	46	121	0	0	0	42	0	0	0	204
cSH	736	599	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.20	0.51	0.51	0.51	0.02	0.38	0.38	0.38	0.12
Queue Length 95th (m)	1.5	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.2	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	10.2	12.5	0.0				0.0			
Approach LOS	B	B								

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	60.2%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
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
Ped Bike Factor												
Frt		0.977			0.958			0.996			0.952	
Flt Protected		0.965			0.992			0.978			0.996	
Satd. Flow (prot)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Flt Permitted		0.965			0.992			0.978			0.996	
Satd. Flow (perm)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			274.1			250.4			181.9	
Travel Time (s)		24.8			19.7			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	17	28	2	7	4	82	96	6	11	82	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	13	0	0	184	0	0	144	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	119	17	28	2	7	4	82	96	6	11	82	51

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	164	13	184	144
Volume Left (vph)	119	2	82	11
Volume Right (vph)	28	4	6	51
Hadj (s)	0.08	-0.12	0.10	-0.16
Departure Headway (s)	4.8	4.8	4.6	4.4
Degree Utilization, x	0.22	0.02	0.24	0.18
Capacity (veh/h)	706	682	746	772
Control Delay (s)	9.1	7.9	9.0	8.3
Approach Delay (s)	9.1	7.9	9.0	8.3
Approach LOS	A	A	A	A

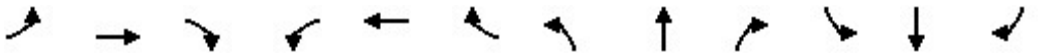
Intersection Summary				
Delay	8.8			
Level of Service	A			
Intersection Capacity Utilization	37.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

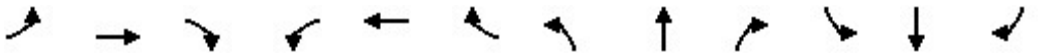
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Future Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	119	17	28	2	7	4	82	96	6	11	82	51
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	7.9	9	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	73%	17%	8%
Vol Thru, %	52%	10%	50%	57%
Vol Right, %	3%	17%	33%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	147	12	130
LT Vol	74	107	2	10
Through Vol	86	15	6	74
RT Vol	5	25	4	46
Lane Flow Rate	183	163	13	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.234	0.215	0.018	0.176
Departure Headway (Hd)	4.598	4.74	4.725	4.381
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	781	756	755	819
Service Time	2.625	2.772	2.767	2.41
HCM Lane V/C Ratio	0.234	0.216	0.017	0.176
HCM Control Delay	9	9.1	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.8	0.1	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Future Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		0.0	30.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.97		1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.896			0.939	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1628	0	1750	1716	0
Flt Permitted	0.363			0.127			0.712			0.694		
Satd. Flow (perm)	667	3500	1514	234	3496	0	1306	1628	0	1273	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38		1			30			28	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1454	50	32	717	4	189	30	67	89	41	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1454	50	32	721	0	189	97	0	89	69	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	

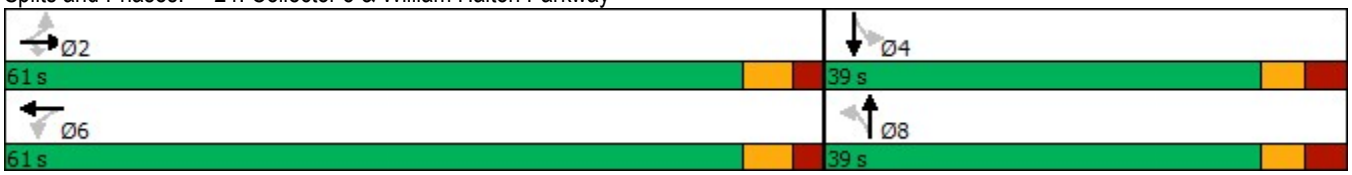


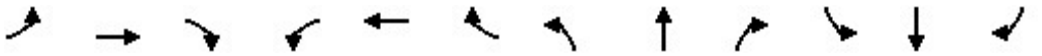
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.9	38.9	38.9	38.9	38.9		38.5	38.5		38.5	38.5	
Total Split (s)	61.0	61.0	61.0	61.0	61.0		39.0	39.0		39.0	39.0	
Total Split (%)	61.0%	61.0%	61.0%	61.0%	61.0%		39.0%	39.0%		39.0%	39.0%	
Maximum Green (s)	54.9	54.9	54.9	54.9	54.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	55.8	55.8	55.8	55.8	55.8		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
v/c Ratio	0.03	0.65	0.05	0.21	0.32		0.68	0.26		0.33	0.18	
Control Delay	8.6	12.6	4.0	13.7	8.5		43.7	21.0		31.1	18.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.6	12.6	4.0	13.7	8.5		43.7	21.0		31.1	18.4	
LOS	A	B	A	B	A		D	C		C	B	
Approach Delay		12.3			8.8			36.0			25.5	
Approach LOS		B			A			D			C	
Queue Length 50th (m)	0.6	66.1	0.6	1.9	24.1		28.7	9.1		12.4	5.5	
Queue Length 95th (m)	3.5	133.5	6.0	9.7	51.0		49.1	20.7		24.4	15.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	30.0			30.0			40.0		
Base Capacity (vph)	428	2246	985	150	2244		490	629		477	661	
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	0.03	0.65	0.05	0.21	0.32		0.39	0.15		0.19	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 24: Collector 5 & William Halton Parkway

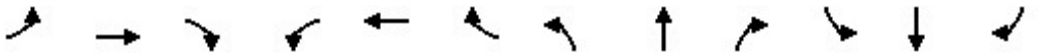




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Future Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3500	1517	1749	3496		1743	1627		1744	1715	
Flt Permitted	0.36	1.00	1.00	0.13	1.00		0.71	1.00		0.69	1.00	
Satd. Flow (perm)	666	3500	1517	233	3496		1307	1627		1274	1715	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1454	50	32	717	4	189	30	67	89	41	28
RTOR Reduction (vph)	0	0	14	0	0	0	0	24	0	0	22	0
Lane Group Flow (vph)	11	1454	36	32	721	0	189	73	0	89	47	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Effective Green, g (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	427	2248	974	149	2246		277	345		270	364	
v/s Ratio Prot		c0.42			0.21			0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.14			c0.14			0.07		
v/c Ratio	0.03	0.65	0.04	0.21	0.32		0.68	0.21		0.33	0.13	
Uniform Delay, d1	5.7	9.5	5.7	6.4	7.0		31.5	28.2		29.0	27.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.6	0.0	3.3	0.4		6.8	0.3		0.7	0.2	
Delay (s)	5.7	10.2	5.7	9.7	7.4		38.3	28.6		29.7	27.9	
Level of Service	A	B	A	A	A		D	C		C	C	
Approach Delay (s)		10.0			7.5			35.0			28.9	
Approach LOS		A			A			D			C	

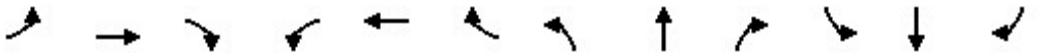
Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Future Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.909			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3493	0	1750	3496	0	1750	1674	0	1750	1763	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	3493	0	1750	3496	0	1750	1674	0	1750	1763	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	873	9	88	633	4	32	133	208	22	110	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	882	0	88	637	0	32	341	0	22	154	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

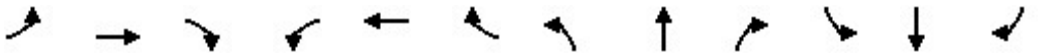
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			



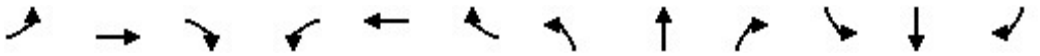
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	786	8	79	570	4	29	120	187	20	99	40
Future Volume (Veh/h)	35	786	8	79	570	4	29	120	187	20	99	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	39	873	9	88	633	4	32	133	208	22	110	44
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347										
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	642			887			1557	1778	451	1610	1781	328
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	642			861			1539	1763	419	1593	1766	328
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 %	96			88			0	0	63	0	0	93
cM capacity (veh/h)	934			763			0	69	570	0	69	661

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	39	582	300	88	422	215	32	341	22	154
Volume Left	39	0	0	88	0	0	32	0	22	0
Volume Right	0	0	9	0	0	4	0	208	0	44
cSH	934	1700	1700	763	1700	1700	0	149	0	92
Volume to Capacity	0.04	0.34	0.18	0.12	0.25	0.13	Err	2.29	Err	1.67
Queue Length 95th (m)	1.0	0.0	0.0	3.0	0.0	0.0	Err	216.7	Err	94.0
Control Delay (s)	9.0	0.0	0.0	10.3	0.0	0.0	Err	650.5	Err	420.9
Lane LOS	A			B			F	F	F	F
Approach Delay (s)	0.4			1.3			Err		Err	
Approach LOS							F		F	

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	60.5%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2234	20	61	1882	30
Future Volume (vph)	79	7	22	97	3	97	23	2234	20	61	1882	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99		1.00	0.98			1.00			1.00	
Frt		0.887			0.854			0.999			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1610	0	1750	1544	0	1750	5022	0	1750	5016	0
Flt Permitted	0.685			0.736			0.084			0.084		
Satd. Flow (perm)	1257	1610	0	1350	1544	0	155	5022	0	155	5016	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			2			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	2482	22	68	2091	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	32	0	108	111	0	26	2504	0	68	2124	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



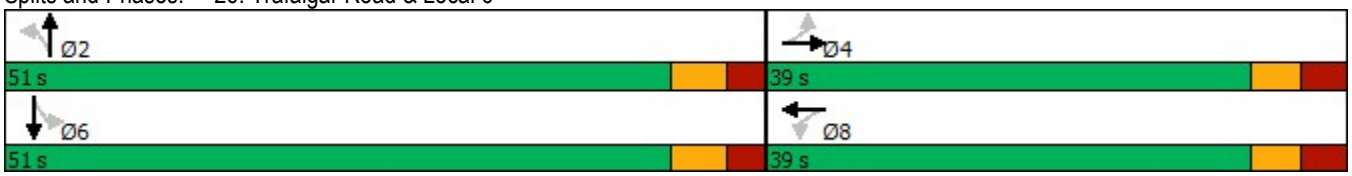
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		33.4	33.4		33.4	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0		51.0	51.0	
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%		56.7%	56.7%	
Maximum Green (s)	32.5	32.5		32.5	32.5		44.6	44.6		44.6	44.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	14.6	14.6		14.6	14.6		48.0	48.0		48.0	48.0	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.63	0.63		0.63	0.63	
v/c Ratio	0.36	0.10		0.42	0.37		0.27	0.79		0.69	0.67	
Control Delay	28.5	21.2		29.6	27.8		18.9	14.5		54.9	11.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.5	21.2		29.6	27.8		18.9	14.5		54.9	11.6	
LOS	C	C		C	C		B	B		D	B	
Approach Delay		26.6			28.7			14.5			13.0	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	10.3	3.2		12.8	12.9		1.2	68.0		4.5	50.2	
Queue Length 95th (m)	21.0	9.0		24.7	24.7		10.8	#195.2		#36.3	132.3	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	547	703		588	673		98	3186		98	3183	
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	0.16	0.05		0.18	0.16		0.27	0.79		0.69	0.67	

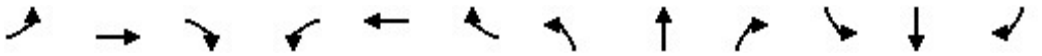
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	

Analysis Period (min) 15

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

Splits and Phases: 26: Trafalgar Road & Local 6

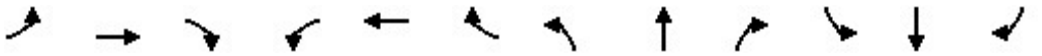




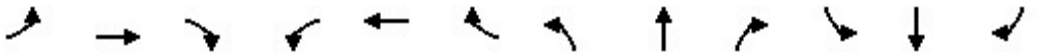
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2234	20	61	1882	30
Future Volume (vph)	79	7	22	97	3	97	23	2234	20	61	1882	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	1609		1744	1541		1749	5021		1750	5015	
Flt Permitted	0.69	1.00		0.74	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1259	1609		1352	1541		154	5021		154	5015	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	2482	22	68	2091	33
RTOR Reduction (vph)	0	2	0	0	1	0	0	1	0	0	1	0
Lane Group Flow (vph)	88	30	0	108	110	0	26	2503	0	68	2123	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.6	14.6		14.6	14.6		47.9	47.9		47.9	47.9	
Effective Green, g (s)	14.6	14.6		14.6	14.6		47.9	47.9		47.9	47.9	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	243	311		261	298		97	3189		97	3185	
v/s Ratio Prot		0.02			0.07			c0.50			0.42	
v/s Ratio Perm	0.07			c0.08			0.17			0.44		
v/c Ratio	0.36	0.10		0.41	0.37		0.27	0.78		0.70	0.67	
Uniform Delay, d1	26.4	25.0		26.6	26.4		6.0	10.0		9.0	8.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.1		1.1	0.8		6.7	2.0		34.6	1.1	
Delay (s)	27.3	25.1		27.7	27.2		12.7	12.0		43.7	9.8	
Level of Service	C	C		C	C		B	B		D	A	
Approach Delay (s)		26.7			27.4			12.0			10.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Future Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		30.0	85.0		30.0	90.0		0.0	60.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	1.00		0.98		1.00			1.00	
Frt			0.850			0.850		0.985			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4936	0	1750	4973	0
Flt Permitted	0.663			0.563			0.076			0.076		
Satd. Flow (perm)	1216	1842	1532	1032	1842	1534	140	4936	0	140	4973	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			67		19			11	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2294	248	110	1981	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	126	219	371	148	66	99	2542	0	110	2113	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	11.0	59.0		11.0	59.0	
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	9.2%	49.2%		9.2%	49.2%	
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	7.0	52.6		7.0	52.6	
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0		20.0			20.0	
Pedestrian Calls (#/hr)	5	5	5		5	5		5			5	
Act Effct Green (s)	20.5	20.5	20.5	34.0	31.5	31.5	62.2	52.8		62.2	52.8	
Actuated g/C Ratio	0.19	0.19	0.19	0.31	0.29	0.29	0.57	0.49		0.57	0.49	
v/c Ratio	0.74	0.36	0.55	1.00	0.28	0.13	0.54	1.05		0.60	0.87	
Control Delay	60.5	40.4	21.1	83.3	30.4	6.9	25.1	62.2		29.5	30.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	60.5	40.4	21.1	83.3	30.4	6.9	25.1	62.2		29.5	30.5	
LOS	E	D	C	F	C	A	C	E		C	C	
Approach Delay		38.8			61.3			60.8			30.4	
Approach LOS		D			E			E			C	
Queue Length 50th (m)	34.0	23.3	15.9	~68.2	24.0	0.0	7.9	~212.8		8.8	138.4	
Queue Length 95th (m)	56.6	39.5	38.3	#116.1	39.5	9.0	#25.2	#287.4		#33.4	#210.1	
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		30.0	85.0		30.0	90.0			60.0		
Base Capacity (vph)	366	554	553	370	742	658	184	2416		184	2430	
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	0.23	0.40	1.00	0.20	0.10	0.54	1.05		0.60	0.87	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 108.3			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 47.6		Intersection LOS: D	
Intersection Capacity Utilization 97.8%		ICU Level of Service F	

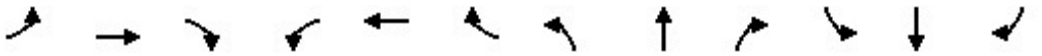
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 27: Trafalgar Road & Settlers Road

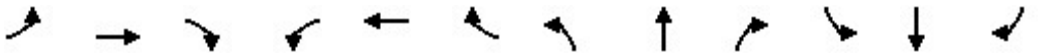




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Future Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1743	1842	1530	1746	1842	1533	1750	4939		1750	4971	
Flt Permitted	0.66	1.00	1.00	0.56	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1216	1842	1530	1035	1842	1533	140	4939		140	4971	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2294	248	110	1981	132
RTOR Reduction (vph)	0	0	107	0	0	47	0	10	0	0	6	0
Lane Group Flow (vph)	170	126	112	371	148	19	99	2532	0	110	2107	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	20.5	20.5	20.5	31.5	31.5	31.5	59.8	52.8		59.8	52.8	
Effective Green, g (s)	20.5	20.5	20.5	31.5	31.5	31.5	59.8	52.8		59.8	52.8	
Actuated g/C Ratio	0.19	0.19	0.19	0.29	0.29	0.29	0.55	0.49		0.55	0.49	
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
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)	230	348	289	347	536	446	181	2410		181	2425	
v/s Ratio Prot		0.07		c0.07	0.08		0.04	c0.51		c0.04	0.42	
v/s Ratio Perm	0.14		0.07	c0.24		0.01	0.27			0.30		
v/c Ratio	0.74	0.36	0.39	1.07	0.28	0.04	0.55	1.05		0.61	0.87	
Uniform Delay, d1	41.3	38.2	38.4	38.1	29.6	27.5	19.0	27.7		23.3	24.6	
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	11.7	0.6	0.9	67.9	0.3	0.0	3.4	33.4		5.7	4.6	
Delay (s)	53.1	38.8	39.2	106.0	29.8	27.6	22.4	61.1		28.9	29.2	
Level of Service	D	D	D	F	C	C	C	E		C	C	
Approach Delay (s)		43.7			77.9			59.7			29.2	
Approach LOS		D			E			E			C	

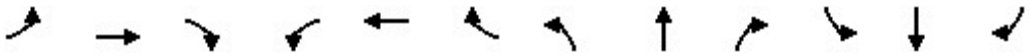
Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	108.2	Sum of lost time (s)	20.9
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Future Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
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
Ped Bike Factor												
Frt		0.970			0.987			0.935			0.992	
Flt Protected		0.998			0.976			0.994			0.988	
Satd. Flow (prot)	0	1783	0	0	1774	0	0	1712	0	0	1805	0
Flt Permitted		0.998			0.976			0.994			0.988	
Satd. Flow (perm)	0	1783	0	0	1774	0	0	1712	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	149	44	161	137	32	37	134	159	34	100	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	199	0	0	330	0	0	330	0	0	143	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Future Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	149	44	161	137	32	37	134	159	34	100	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	199	330	330	143
Volume Left (vph)	6	161	37	34
Volume Right (vph)	44	32	159	9
Hadj (s)	-0.09	0.07	-0.23	0.04
Departure Headway (s)	5.8	5.7	5.5	6.1
Degree Utilization, x	0.32	0.53	0.50	0.24
Capacity (veh/h)	552	588	605	502
Control Delay (s)	11.6	14.9	14.0	11.1
Approach Delay (s)	11.6	14.9	14.0	11.1
Approach LOS	B	B	B	B

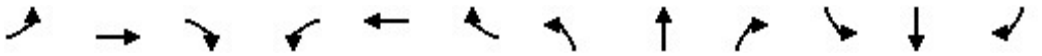
Intersection Summary				
Delay	13.4			
Level of Service	B			
Intersection Capacity Utilization	56.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	134	40	145	123	29	33	121	143	31	90	8
Future Vol, veh/h	5	134	40	145	123	29	33	121	143	31	90	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	149	44	161	137	32	37	134	159	34	100	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

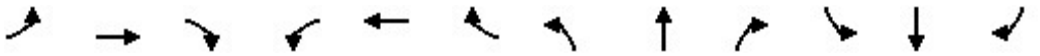
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	14.8	13.9	11.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	3%	49%	24%
Vol Thru, %	41%	75%	41%	70%
Vol Right, %	48%	22%	10%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	297	179	297	129
LT Vol	33	5	145	31
Through Vol	121	134	123	90
RT Vol	143	40	29	8
Lane Flow Rate	330	199	330	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.5	0.318	0.521	0.242
Departure Headway (Hd)	5.452	5.756	5.679	6.068
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	657	621	630	588
Service Time	3.522	3.837	3.75	4.155
HCM Lane V/C Ratio	0.502	0.32	0.524	0.243
HCM Control Delay	13.9	11.5	14.8	11.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.8	1.4	3	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
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
Ped Bike Factor												
Frt		0.984			0.997			0.969			0.932	
Flt Protected		0.993			0.997			0.992			0.997	
Satd. Flow (prot)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Flt Permitted		0.993			0.997			0.992			0.997	
Satd. Flow (perm)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	340	56	23	324	9	39	144	54	21	138	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	464	0	0	356	0	0	237	0	0	321	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	68	340	56	23	324	9	39	144	54	21	138	162

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	464	356	237	321
Volume Left (vph)	68	23	39	21
Volume Right (vph)	56	9	54	162
Hadj (s)	-0.01	0.03	-0.07	-0.26
Departure Headway (s)	7.3	7.6	8.1	7.6
Degree Utilization, x	0.94	0.75	0.54	0.68
Capacity (veh/h)	486	453	409	440
Control Delay (s)	53.3	30.5	20.1	25.3
Approach Delay (s)	53.3	30.5	20.1	25.3
Approach LOS	F	D	C	D

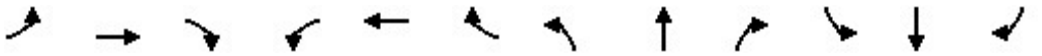
Intersection Summary			
Delay	35.2		
Level of Service	E		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	34.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Future Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	340	56	23	324	9	39	144	54	21	138	162
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

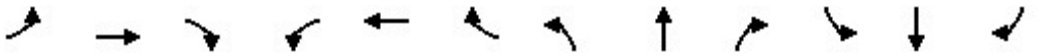
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	52	30.2	20.1	25.1
HCM LOS	F	D	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	15%	7%	7%
Vol Thru, %	61%	73%	91%	43%
Vol Right, %	23%	12%	2%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	417	321	289
LT Vol	35	61	21	19
Through Vol	130	306	292	124
RT Vol	49	50	8	146
Lane Flow Rate	238	463	357	321
Geometry Grp	1	1	1	1
Degree of Util (X)	0.533	0.93	0.75	0.675
Departure Headway (Hd)	8.066	7.225	7.567	7.564
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	445	500	478	475
Service Time	6.145	5.289	5.638	5.637
HCM Lane V/C Ratio	0.535	0.926	0.747	0.676
HCM Control Delay	20.1	52	30.2	25.1
HCM Lane LOS	C	F	D	D
HCM 95th-tile Q	3.1	11.1	6.3	5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
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
Ped Bike Factor												
Frt		0.996			0.971			0.970			0.945	
Flt Protected		0.995			0.998			0.987			0.991	
Satd. Flow (prot)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Flt Permitted		0.995			0.998			0.987			0.991	
Satd. Flow (perm)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	358	13	11	212	60	38	71	31	51	123	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	283	0	0	140	0	0	295	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	358	13	11	212	60	38	71	31	51	123	121

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	415	283	140	295
Volume Left (vph)	44	11	38	51
Volume Right (vph)	13	60	31	121
Hadj (s)	0.04	-0.09	-0.04	-0.18
Departure Headway (s)	5.9	6.1	6.7	6.2
Degree Utilization, x	0.68	0.48	0.26	0.51
Capacity (veh/h)	578	536	437	530
Control Delay (s)	20.8	14.5	12.1	15.3
Approach Delay (s)	20.8	14.5	12.1	15.3
Approach LOS	C	B	B	C

Intersection Summary				
Delay		16.7		
Level of Service		C		
Intersection Capacity Utilization		58.7%	ICU Level of Service	B
Analysis Period (min)		15		

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Future Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	358	13	11	212	60	38	71	31	51	123	121
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.8	14.5	12.1	15.3
HCM LOS	C	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	11%	4%	17%
Vol Thru, %	51%	86%	75%	42%
Vol Right, %	22%	3%	21%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	374	255	266
LT Vol	34	40	10	46
Through Vol	64	322	191	111
RT Vol	28	12	54	109
Lane Flow Rate	140	416	283	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.26	0.683	0.476	0.505
Departure Headway (Hd)	6.674	5.916	6.053	6.147
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	611	595	585
Service Time	4.734	3.961	4.104	4.195
HCM Lane V/C Ratio	0.261	0.681	0.476	0.506
HCM Control Delay	12.1	20.8	14.5	15.3
HCM Lane LOS	B	C	B	C
HCM 95th-tile Q	1	5.3	2.6	2.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	34	2343	36	0	2309
Future Volume (vph)	0	34	2343	36	0	2309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.80	0.91	1.00	*0.80
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1593	4412	0	0	4421
Flt Permitted						
Satd. Flow (perm)	0	1593	4412	0	0	4421
Link Speed (k/h)	50		60			60
Link Distance (m)	87.7		148.7			268.7
Travel Time (s)	6.3		8.9			16.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	38	2603	40	0	2566
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	2643	0	0	2566
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

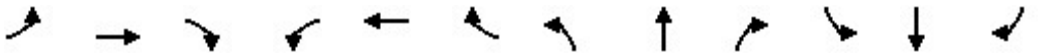
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.1%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



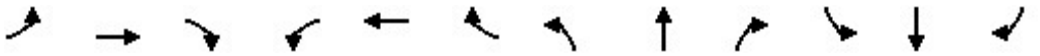
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	34	2343	36	0	2309
Future Volume (Veh/h)	0	34	2343	36	0	2309
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	2603	40	0	2566
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.74	0.55			0.55	
vC, conflicting volume	3478	888			2643	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			1135	
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)	756	598			337	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	1041	1041	561	855	855	855
Volume Left	0	0	0	0	0	0	0
Volume Right	38	0	0	40	0	0	0
cSH	598	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.61	0.61	0.33	0.50	0.50	0.50
Queue Length 95th (m)	1.5	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
Lane LOS	B						
Approach Delay (s)	11.4	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Future Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	90.0		0.0	110.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	1.00		0.98		1.00			1.00	
Frt			0.850			0.850		0.997			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	5010	0	1750	5022	0
Flt Permitted	0.673			0.555			0.089			0.098		
Satd. Flow (perm)	1234	1842	1532	1017	1842	1534	164	5010	0	181	5022	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229			104		3			1	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2569	52	114	2439	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	78	297	264	131	60	261	2621	0	114	2461	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0	39.0	17.0	56.0	56.0	17.0	53.0		11.0	47.0	
Total Split (%)	32.5%	32.5%	32.5%	14.2%	46.7%	46.7%	14.2%	44.2%		9.2%	39.2%	
Maximum Green (s)	32.5	32.5	32.5	13.0	49.5	49.5	13.0	46.6		7.0	40.6	
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0		20.0			20.0	
Pedestrian Calls (#/hr)	5	5	5		5	5		5			5	
Act Effct Green (s)	14.7	14.7	14.7	34.0	31.5	31.5	60.4	46.9		50.3	40.9	
Actuated g/C Ratio	0.14	0.14	0.14	0.33	0.31	0.31	0.59	0.46		0.49	0.40	
v/c Ratio	0.21	0.30	0.72	0.62	0.23	0.11	0.87	1.14		0.58	1.23	
Control Delay	40.2	41.1	20.7	33.2	26.8	1.2	53.6	97.6		27.8	136.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	40.2	41.1	20.7	33.2	26.8	1.2	53.6	97.6		27.8	136.9	
LOS	D	D	C	C	C	A	D	F		C	F	
Approach Delay		26.3			27.2			93.6			132.0	
Approach LOS		C			C			F			F	
Queue Length 50th (m)	6.6	14.0	12.3	40.7	19.2	0.0	31.8	~206.4		8.1	~205.8	
Queue Length 95th (m)	15.3	26.5	38.0	61.4	32.5	1.8	#101.1	#323.5		#35.1	#318.0	
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0			90.0			110.0			30.0		
Base Capacity (vph)	394	588	645	431	895	799	299	2295		196	2003	
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	0.09	0.13	0.46	0.61	0.15	0.08	0.87	1.14		0.58	1.23	

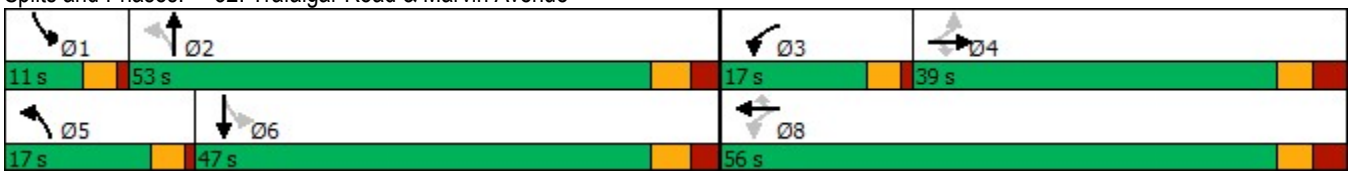
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.5			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 100.1		Intersection LOS: F	
Intersection Capacity Utilization 90.9%		ICU Level of Service E	

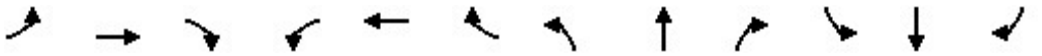
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

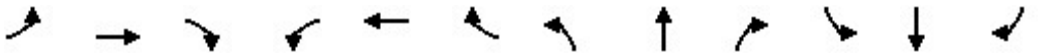




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Future Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1743	1842	1528	1746	1842	1534	1750	5011		1750	5021	
Flt Permitted	0.67	1.00	1.00	0.56	1.00	1.00	0.09	1.00		0.10	1.00	
Satd. Flow (perm)	1235	1842	1528	1021	1842	1534	164	5011		180	5021	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2569	52	114	2439	22
RTOR Reduction (vph)	0	0	196	0	0	42	0	2	0	0	1	0
Lane Group Flow (vph)	37	78	101	264	131	18	261	2619	0	114	2460	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	14.7	14.7	14.7	31.5	31.5	31.5	58.0	47.0		47.9	40.9	
Effective Green, g (s)	14.7	14.7	14.7	31.5	31.5	31.5	58.0	47.0		47.9	40.9	
Actuated g/C Ratio	0.14	0.14	0.14	0.31	0.31	0.31	0.57	0.46		0.47	0.40	
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
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	264	219	404	566	471	295	2299		191	2005	
v/s Ratio Prot		0.04		c0.08	0.07		c0.11	0.52		0.04	c0.49	
v/s Ratio Perm	0.03		0.07	c0.12		0.01	0.39			0.24		
v/c Ratio	0.21	0.30	0.46	0.65	0.23	0.04	0.88	1.14		0.60	1.23	
Uniform Delay, d1	38.7	39.2	40.2	29.0	26.4	24.8	29.3	27.7		22.6	30.8	
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	0.6	0.6	1.5	3.8	0.2	0.0	25.4	68.6		4.9	106.8	
Delay (s)	39.3	39.8	41.7	32.8	26.6	24.9	54.7	96.3		27.5	137.6	
Level of Service	D	D	D	C	C	C	D	F		C	F	
Approach Delay (s)		41.2			30.0			92.5			132.7	
Approach LOS		D			C			F			F	

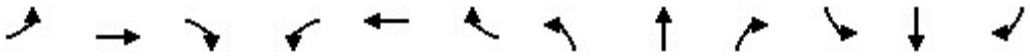
Intersection Summary			
HCM 2000 Control Delay	101.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	20.9
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Future Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
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
Ped Bike Factor												
Frt		0.988			0.935			0.995			0.984	
Flt Protected		0.994			0.999			0.986			0.965	
Satd. Flow (prot)	0	1809	0	0	1721	0	0	1807	0	0	1749	0
Flt Permitted		0.994			0.999			0.986			0.965	
Satd. Flow (perm)	0	1809	0	0	1721	0	0	1807	0	0	1749	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	91	10	9	212	206	22	50	3	228	52	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	427	0	0	75	0	0	317	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Future Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	91	10	9	212	206	22	50	3	228	52	37

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	115	427	75	317
Volume Left (vph)	14	9	22	228
Volume Right (vph)	10	206	3	37
Hadj (s)	0.01	-0.25	0.07	0.11
Departure Headway (s)	5.7	5.0	6.0	5.6
Degree Utilization, x	0.18	0.59	0.13	0.49
Capacity (veh/h)	560	686	513	603
Control Delay (s)	10.0	15.0	9.9	13.9
Approach Delay (s)	10.0	15.0	9.9	13.9
Approach LOS	B	C	A	B

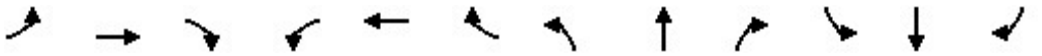
Intersection Summary				
Delay	13.6			
Level of Service	B			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	82	9	8	191	185	20	45	3	205	47	33
Future Vol, veh/h	13	82	9	8	191	185	20	45	3	205	47	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	91	10	9	212	206	22	50	3	228	52	37
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

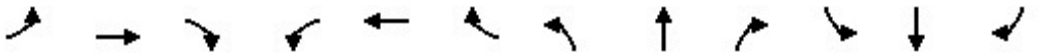
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	15	9.9	13.9
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	12%	2%	72%
Vol Thru, %	66%	79%	50%	16%
Vol Right, %	4%	9%	48%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	104	384	285
LT Vol	20	13	8	205
Through Vol	45	82	191	47
RT Vol	3	9	185	33
Lane Flow Rate	76	116	427	317
Geometry Grp	1	1	1	1
Degree of Util (X)	0.125	0.183	0.591	0.49
Departure Headway (Hd)	5.978	5.702	4.983	5.571
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	598	627	725	646
Service Time	4.034	3.756	3.021	3.612
HCM Lane V/C Ratio	0.127	0.185	0.589	0.491
HCM Control Delay	9.9	10	15	13.9
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.4	0.7	3.9	2.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
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
Ped Bike Factor												
Frt		0.927			0.997			0.963			0.923	
Flt Protected		0.988			0.971			0.988			0.997	
Satd. Flow (prot)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Flt Permitted		0.988			0.971			0.988			0.997	
Satd. Flow (perm)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	49	126	186	117	8	53	104	60	22	163	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	233	0	0	311	0	0	217	0	0	432	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	58	49	126	186	117	8	53	104	60	22	163	247

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	233	311	217	432
Volume Left (vph)	58	186	53	22
Volume Right (vph)	126	8	60	247
Hadj (s)	-0.24	0.14	-0.08	-0.30
Departure Headway (s)	6.5	6.7	6.6	5.9
Degree Utilization, x	0.42	0.57	0.40	0.71
Capacity (veh/h)	481	490	462	567
Control Delay (s)	14.2	18.3	14.0	22.3
Approach Delay (s)	14.2	18.3	14.0	22.3
Approach LOS	B	C	B	C

Intersection Summary				
Delay	18.1			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

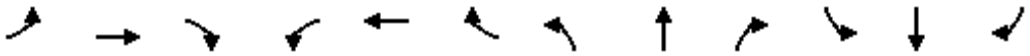
Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Future Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	49	126	186	117	8	53	104	60	22	163	247
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	18.1	13.9	22
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	25%	60%	5%
Vol Thru, %	48%	21%	38%	38%
Vol Right, %	28%	54%	3%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	209	279	389
LT Vol	48	52	167	20
Through Vol	94	44	105	147
RT Vol	54	113	7	222
Lane Flow Rate	218	232	310	432
Geometry Grp	1	1	1	1
Degree of Util (X)	0.396	0.416	0.568	0.707
Departure Headway (Hd)	6.554	6.443	6.598	5.888
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	547	555	546	609
Service Time	4.633	4.52	4.669	3.95
HCM Lane V/C Ratio	0.399	0.418	0.568	0.709
HCM Control Delay	13.9	14.1	18.1	22
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	1.9	2	3.5	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Future Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			168			120			184
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	472	1157	263	293	609	168	423	2202	55	330	1613	278
Shared Lane Traffic (%)												
Lane Group Flow (vph)	472	1157	263	293	609	168	423	2202	55	330	1613	278
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

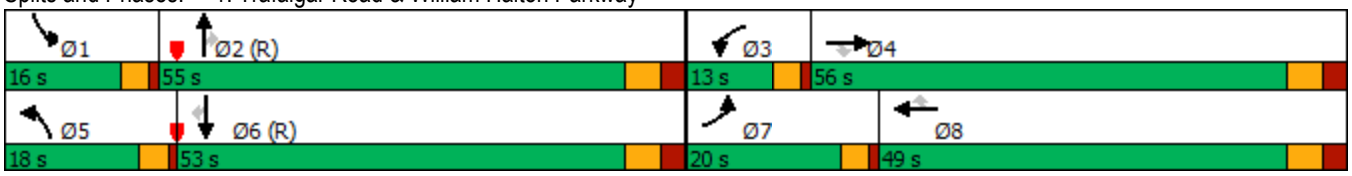


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.22	0.93	0.40	1.34	0.57	0.30	1.25	1.44	0.09	1.15	1.11	0.43
Control Delay	169.3	57.6	15.6	229.7	43.6	6.5	183.6	234.6	0.3	153.4	101.9	14.3
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	169.3	57.6	15.6	229.7	43.6	6.5	183.6	234.6	0.3	153.4	101.9	14.3
LOS	F	E	B	F	D	A	F	F	A	F	F	B
Approach Delay		79.7			88.7			221.7			98.6	
Approach LOS		E			F			F			F	
Queue Length 50th (m)	~82.3	162.1	21.3	~54.4	74.8	0.0	~75.0	~343.3	0.0	~55.0	~211.6	18.5
Queue Length 95th (m)	#116.6	#204.6	44.8	#83.7	94.3	16.4	#108.4	#374.9	0.0	#85.8	#245.1	43.2
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	388	1240	653	218	1065	558	339	1534	596	288	1457	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	1.22	0.93	0.40	1.34	0.57	0.30	1.25	1.44	0.09	1.15	1.11	0.43

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 134.7		Intersection LOS: F	
Intersection Capacity Utilization 102.3%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

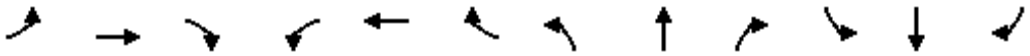
Splits and Phases: 1: Trafalgar Road & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Future Volume (vph)	434	1064	242	270	560	155	389	2026	51	304	1484	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	472	1157	263	293	609	168	423	2202	55	330	1613	278
RTOR Reduction (vph)	0	0	99	0	0	117	0	0	36	0	0	123
Lane Group Flow (vph)	472	1157	164	293	609	51	423	2202	19	330	1613	155
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Effective Green, g (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1240	554	218	1065	441	339	1534	518	288	1457	521
v/s Ratio Prot	c0.14	c0.33		0.09	0.17		c0.12	c0.50		0.10	0.37	
v/s Ratio Perm			0.10			0.04			0.01			0.10
v/c Ratio	1.22	0.93	0.30	1.34	0.57	0.12	1.25	1.44	0.04	1.15	1.11	0.30
Uniform Delay, d1	62.0	43.6	32.6	65.5	41.0	35.1	63.0	45.7	30.2	64.0	46.7	34.6
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	118.8	13.1	0.6	182.2	1.2	0.2	133.8	199.8	0.1	98.4	58.7	1.5
Delay (s)	180.8	56.7	33.2	247.7	42.2	35.4	196.8	245.5	30.4	162.4	105.4	36.0
Level of Service	F	E	C	F	D	D	F	F	C	F	F	D
Approach Delay (s)		84.4			97.4			233.4			105.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	142.8	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)	20.8
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Future Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor			0.99	1.00								
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3368	1566	1700	4415	1559	1750	4372	1559
Flt Permitted	0.490			0.345			0.087			0.095		
Satd. Flow (perm)	903	3500	1545	635	3368	1566	156	4415	1559	175	4372	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			141			178			104			104
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	238	379	141	268	291	178	236	2182	260	144	1787	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	379	141	268	291	178	236	2182	260	144	1787	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	19.0	42.0	42.0	19.0	42.0	42.0	13.0	48.0	48.0	11.0	46.0	46.0
Total Split (%)	15.8%	35.0%	35.0%	15.8%	35.0%	35.0%	10.8%	40.0%	40.0%	9.2%	38.3%	38.3%
Maximum Green (s)	15.0	35.6	35.6	15.0	35.6	35.6	9.0	41.7	41.7	7.0	39.7	39.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	35.4	18.6	18.6	36.1	18.9	18.9	72.2	53.7	53.7	56.5	42.0	42.0
Actuated g/C Ratio	0.30	0.16	0.16	0.30	0.16	0.16	0.60	0.45	0.45	0.47	0.35	0.35
v/c Ratio	0.65	0.70	0.39	0.82	0.55	0.45	0.59	1.10	0.34	0.59	1.17	0.16
Control Delay	39.5	55.0	10.1	52.4	50.2	9.8	30.8	87.7	15.4	31.1	118.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	55.0	10.1	52.4	50.2	9.8	30.8	87.7	15.4	31.1	118.8	5.4
LOS	D	D	B	D	D	A	C	F	B	C	F	A
Approach Delay		41.8			41.3			75.7			107.1	
Approach LOS		D			D			E			F	
Queue Length 50th (m)	43.2	45.1	0.0	49.6	33.8	0.0	34.1	~243.7	22.3	15.0	~201.5	0.0
Queue Length 95th (m)	61.0	58.2	16.5	#73.8	45.5	18.2	63.9	#311.5	48.4	36.1	#250.6	10.5
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	376	1038	557	331	999	589	401	1975	755	243	1530	613
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	0.63	0.37	0.25	0.81	0.29	0.30	0.59	1.10	0.34	0.59	1.17	0.16

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: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.17	

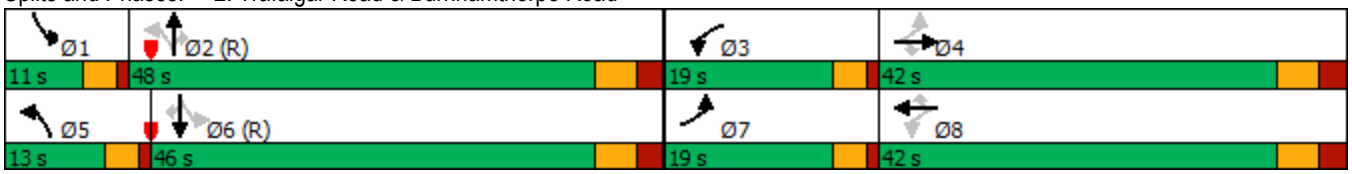
Intersection Signal Delay: 77.7	Intersection LOS: E
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

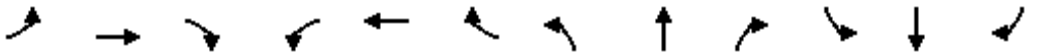
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Future Volume (vph)	214	341	127	241	262	160	212	1964	234	130	1608	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3500	1545	1750	3368	1566	1700	4415	1559	1750	4372	1559
Flt Permitted	0.49	1.00	1.00	0.34	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	903	3500	1545	635	3368	1566	156	4415	1559	175	4372	1559
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	238	379	141	268	291	178	236	2182	260	144	1787	98
RTOR Reduction (vph)	0	0	119	0	0	150	0	0	57	0	0	64
Lane Group Flow (vph)	238	379	22	268	291	28	236	2182	203	144	1787	34
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
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)	33.1	18.6	18.6	33.7	18.9	18.9	69.9	53.7	53.7	54.2	42.0	42.0
Effective Green, g (s)	33.1	18.6	18.6	33.7	18.9	18.9	69.9	53.7	53.7	54.2	42.0	42.0
Actuated g/C Ratio	0.28	0.16	0.16	0.28	0.16	0.16	0.58	0.45	0.45	0.45	0.35	0.35
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	351	542	239	315	530	246	398	1975	697	239	1530	545
v/s Ratio Prot	0.08	0.11		c0.10	0.09		c0.12	c0.49		0.06	0.41	
v/s Ratio Perm	0.10		0.01	c0.13		0.02	0.23		0.13	0.21		0.02
v/c Ratio	0.68	0.70	0.09	0.85	0.55	0.11	0.59	1.10	0.29	0.60	1.17	0.06
Uniform Delay, d1	36.5	48.0	43.5	37.2	46.6	43.4	28.2	33.1	21.1	26.2	39.0	25.9
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	5.1	3.9	0.2	19.2	1.2	0.2	2.4	55.4	1.1	4.2	83.0	0.2
Delay (s)	41.6	52.0	43.6	56.5	47.8	43.6	30.6	88.5	22.1	30.4	122.0	26.1
Level of Service	D	D	D	E	D	D	C	F	C	C	F	C
Approach Delay (s)		47.2			49.9			77.0			110.9	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	81.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1454	1	667	716	0	1095
Future Volume (vph)	1454	1	667	716	0	1095
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	2		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	0.97	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	3330	3466	1842	1566
Flt Permitted			0.950			
Satd. Flow (perm)	3500	0	3330	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						440
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1580	1	725	778	0	1190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1581	0	725	778	0	1190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			7.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.0	28.4	31.0	31.0
Total Split (s)	48.0		32.0	80.0	40.0	40.0
Total Split (%)	40.0%		26.7%	66.7%	33.3%	33.3%
Maximum Green (s)	41.6		28.0	73.6	36.0	36.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	41.6		27.6	73.2		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
v/c Ratio	1.30		0.94	0.37		1.53
Control Delay	174.4		67.0	12.2		266.0
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	174.4		67.0	12.2		266.0
LOS	F		E	B		F
Approach Delay	174.4			38.6	266.0	
Approach LOS	F			D	F	
Queue Length 50th (m)	~251.2		86.7	45.1		~317.9
Queue Length 95th (m)	#293.5		#121.8	56.7		#398.2
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1217		780	2133		778
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	1.30		0.93	0.36		1.53

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.6			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.53			
Intersection Signal Delay: 152.1		Intersection LOS: F	
Intersection Capacity Utilization 116.7%		ICU Level of Service H	
Analysis Period (min) 15			

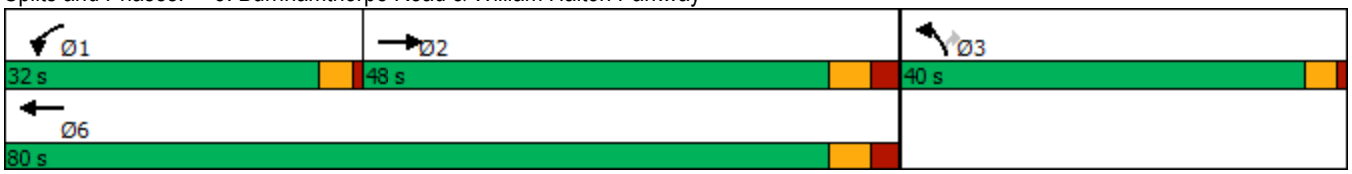
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

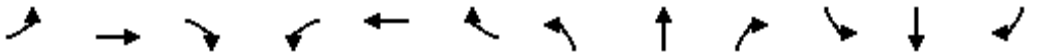
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



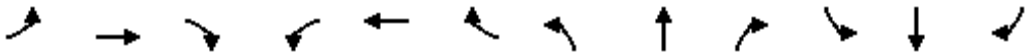


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1454	1	667	716	0	1095
Future Volume (vph)	1454	1	667	716	0	1095
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		0.97	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		3330	3466		1566
Flt Permitted	1.00		0.95	1.00		1.00
Satd. Flow (perm)	3500		3330	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1580	1	725	778	0	1190
RTOR Reduction (vph)	0	0	0	0	0	308
Lane Group Flow (vph)	1581	0	725	778	0	882
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases						3
Actuated Green, G (s)	41.6		27.6	73.2		36.0
Effective Green, g (s)	41.6		27.6	73.2		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1217		768	2121		471
v/s Ratio Prot	c0.45		c0.22	0.22		
v/s Ratio Perm						c0.56
v/c Ratio	1.30		0.94	0.37		1.87
Uniform Delay, d1	39.0		45.2	11.6		41.8
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	140.7		19.9	0.1		401.1
Delay (s)	179.7		65.2	11.7		442.9
Level of Service	F		E	B		F
Approach Delay (s)	179.7			37.5	442.9	
Approach LOS	F			D	F	

Intersection Summary			
HCM 2000 Control Delay	203.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	119.6	Sum of lost time (s)	14.4
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Future Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	3298	4214	1536	3330	4378	1566	3330	4378	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	4421	1529	3298	4214	1512	3328	4378	1543	3328	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			151			96			145
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			1233.0	
Travel Time (s)		28.8			31.0			36.1			74.0	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
Shared Lane Traffic (%)												
Lane Group Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
v/c Ratio	2.28	1.26	0.35	1.33	0.80	1.00	0.96	0.97	0.22	4.06	1.28	0.65
Control Delay	615.9	157.9	12.3	222.7	41.0	67.1	112.9	60.0	10.5	1402.9	170.3	28.8
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	615.9	157.9	12.3	222.7	41.0	67.1	112.9	60.0	10.5	1402.9	170.3	28.8
LOS	F	F	B	F	D	E	F	E	B	F	F	C
Approach Delay		236.8			71.2			62.4			485.8	
Approach LOS		F			E			E			F	
Queue Length 50th (m)	~127.6	~290.8	15.7	~45.6	118.7	~140.7	26.1	145.1	5.1	~199.0	~249.4	54.1
Queue Length 95th (m)	#163.3	#323.2	35.9	#73.4	140.1	#222.2	#49.7	#181.5	19.2	#237.7	#282.8	89.8
Internal Link Dist (m)		536.5			579.0			577.7			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1720	685	202	1575	659	204	1434	570	204	1434	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.28	1.26	0.35	1.33	0.80	1.00	0.96	0.97	0.22	4.06	1.28	0.65

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 4.06	
Intersection Signal Delay: 247.1	Intersection LOS: F

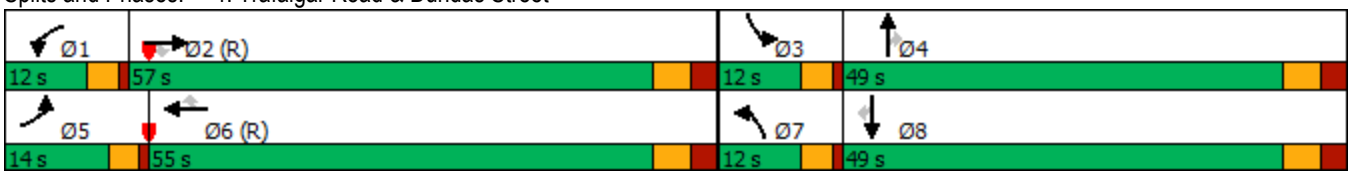
Intersection Capacity Utilization 119.6%	ICU Level of Service H
Analysis Period (min) 15	

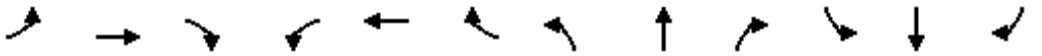
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

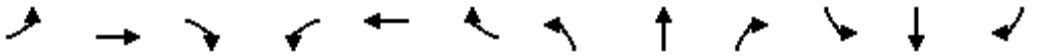




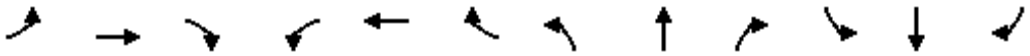
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Future Volume (vph)	572	2085	233	257	1206	634	187	1330	120	795	1768	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Flt Permitted	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 (perm)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	596	2172	243	268	1256	660	195	1385	125	828	1842	390
RTOR Reduction (vph)	0	0	90	0	0	95	0	0	65	0	0	97
Lane Group Flow (vph)	596	2172	153	268	1256	565	195	1385	60	828	1842	293
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Effective Green, g (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	261	1720	595	202	1575	565	204	1434	505	204	1434	499
v/s Ratio Prot	c0.18	c0.49		0.08	0.30		0.06	0.32		c0.25	c0.42	
v/s Ratio Perm			0.10			0.37			0.04			0.19
v/c Ratio	2.28	1.26	0.26	1.33	0.80	1.00	0.96	0.97	0.12	4.06	1.28	0.59
Uniform Delay, d1	60.0	39.7	26.9	61.0	36.3	40.7	60.8	43.0	30.6	61.0	43.7	36.4
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	589.6	123.1	1.0	177.1	4.3	38.1	50.3	16.3	0.1	1388.1	133.5	1.9
Delay (s)	649.6	162.8	28.0	238.1	40.6	78.8	111.1	59.3	30.7	1449.1	177.2	38.2
Level of Service	F	F	C	F	D	E	F	E	C	F	F	D
Approach Delay (s)		248.3			76.4			63.1			503.6	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	257.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Future Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962			0.976			0.972			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3367	0	1684	3315	0	1750	3377	0	1700	3456	0
Flt Permitted	0.586			0.620			0.421			0.284		
Satd. Flow (perm)	1079	3367	0	1099	3315	0	776	3377	0	508	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			26			48			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	157	53	136	226	43	203	748	175	89	600	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	210	0	136	269	0	203	923	0	89	611	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

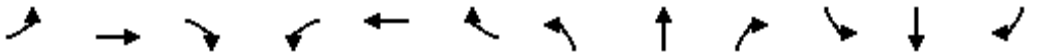


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
v/c Ratio	0.31	0.30		0.63	0.40		0.41	0.43		0.28	0.28	
Control Delay	29.3	19.7		41.1	25.2		11.3	7.9		10.4	7.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.3	19.7		41.1	25.2		11.3	7.9		10.4	7.2	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		22.0			30.5			8.6			7.6	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	8.0	10.0		17.9	15.8		12.3	27.9		4.8	17.4	
Queue Length 95th (m)	17.9	18.0		34.2	25.4		33.3	51.1		15.7	32.5	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	422	1350		430	1314		490	2151		320	2184	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.16		0.32	0.20		0.41	0.43		0.28	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

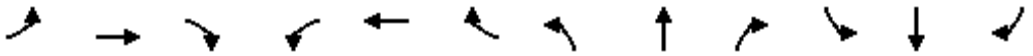
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



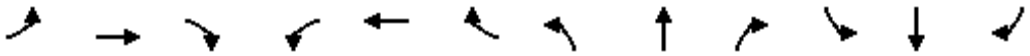


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Future Volume (vph)	58	140	47	121	201	38	181	666	156	79	534	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3367		1684	3315		1750	3375		1700	3457	
Flt Permitted	0.59	1.00		0.62	1.00		0.42	1.00		0.28	1.00	
Satd. Flow (perm)	1079	3367		1099	3315		775	3375		509	3457	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	157	53	136	226	43	203	748	175	89	600	11
RTOR Reduction (vph)	0	43	0	0	21	0	0	18	0	0	1	0
Lane Group Flow (vph)	65	167	0	136	248	0	203	905	0	89	610	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Effective Green, g (s)	14.9	14.9		14.9	14.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	663		216	653		490	2133		321	2185	
v/s Ratio Prot		0.05			0.07			c0.27			0.18	
v/s Ratio Perm	0.06			c0.12			0.26			0.17		
v/c Ratio	0.31	0.25		0.63	0.38		0.41	0.42		0.28	0.28	
Uniform Delay, d1	25.9	25.6		27.8	26.3		6.9	7.0		6.2	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		5.6	0.4		2.6	0.6		2.1	0.3	
Delay (s)	26.8	25.8		33.5	26.7		9.5	7.6		8.3	6.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.1			29.0			7.9			6.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	12.9
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Future Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.455			0.950	0.950		0.078					
Satd. Flow (perm)	512	0	1566	1449	1388	1487	98	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	454	0	3	2	2139	0	0	2191	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	227	227	3	2	2139	0	0	2191	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

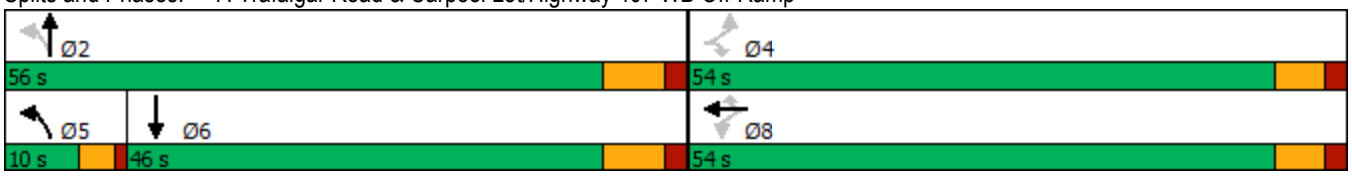


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	54.0		54.0	54.0	54.0	54.0	10.0	56.0			46.0	
Total Split (%)	49.1%		49.1%	49.1%	49.1%	49.1%	9.1%	50.9%			41.8%	
Maximum Green (s)	48.0		48.0	48.0	48.0	48.0	6.0	49.0			39.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	18.3		18.3	18.3	18.3	18.3	52.2	49.2			47.4	
Actuated g/C Ratio	0.23		0.23	0.23	0.23	0.23	0.65	0.61			0.59	
v/c Ratio	0.03		0.00	0.69	0.72	0.01	0.01	1.06			0.78	
Control Delay	23.3		0.0	39.6	42.0	0.0	7.0	56.9			17.7	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	23.3		0.0	39.6	42.0	0.0	7.0	56.9			17.7	
LOS	C		A	D	D	A	A	E			B	
Approach Delay		14.0			40.5			56.9			17.7	
Approach LOS		B			D			E			B	
Queue Length 50th (m)	0.4		0.0	33.4	35.2	0.0	0.1	~190.8			79.1	
Queue Length 95th (m)	2.3		0.0	56.0	59.2	0.0	1.0	#269.6			#176.5	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	306		968	866	830	921	145	2017			2795	
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	0.01		0.00	0.26	0.27	0.00	0.01	1.06			0.78	

Intersection Summary

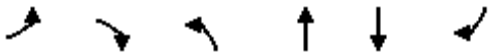
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 80.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 37.4 Intersection LOS: D
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Future Volume (vph)	3	0	2	404	0	3	2	1904	0	0	1950	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.46		1.00	0.95	0.95	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	512		1566	1449	1388	1487	97	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	454	0	3	2	2139	0	0	2191	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	227	227	1	2	2139	0	0	2191	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	18.3		18.3	18.3	18.3	18.3	52.4	52.4			47.4	
Effective Green, g (s)	18.3		18.3	18.3	18.3	18.3	52.4	52.4			47.4	
Actuated g/C Ratio	0.22		0.22	0.22	0.22	0.22	0.63	0.63			0.57	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	111		342	316	303	325	73	2069			2689	
v/s Ratio Prot							0.00	c0.65			0.46	
v/s Ratio Perm	0.01		0.00	0.16	0.16	0.00	0.02					
v/c Ratio	0.03		0.00	0.72	0.75	0.00	0.03	1.03			0.81	
Uniform Delay, d1	25.7		25.6	30.3	30.6	25.6	10.0	15.7			14.6	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	7.6	9.7	0.0	0.2	29.1			2.0	
Delay (s)	25.8		25.6	37.9	40.3	25.6	10.2	44.8			16.6	
Level of Service	C		C	D	D	C	B	D			B	
Approach Delay (s)		25.7			39.0			44.7			16.6	
Approach LOS		C			D			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	388	0	2074	2209	0
Future Volume (vph)	52	388	0	2074	2209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.885	0.850				
Flt Protected	0.988					
Satd. Flow (prot)	1471	1331	0	3275	3305	0
Flt Permitted	0.988					
Satd. Flow (perm)	1471	1331	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	57	426	0	2279	2427	0
Shared Lane Traffic (%)		44%				
Lane Group Flow (vph)	244	239	0	2279	2427	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

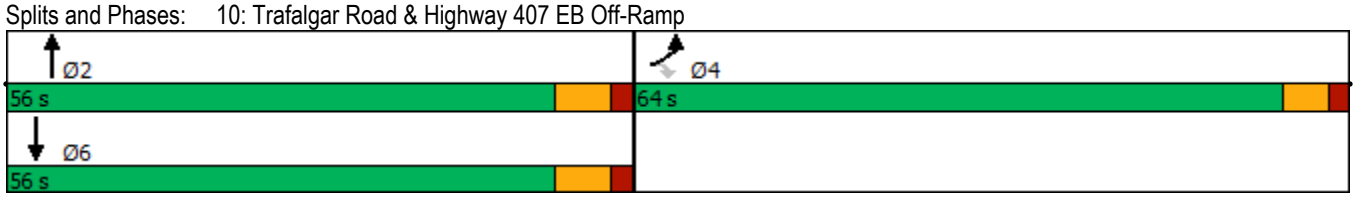
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	64.0	64.0		56.0	56.0	
Total Split (%)	53.3%	53.3%		46.7%	46.7%	
Maximum Green (s)	58.0	58.0		49.0	49.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.7	19.7		49.2	49.2	
Actuated g/C Ratio	0.24	0.24		0.60	0.60	
v/c Ratio	0.69	0.75		1.16	1.22	
Control Delay	38.9	43.7		97.4	125.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	38.9	43.7		97.4	125.2	
LOS	D	D		F	F	
Approach Delay	41.3			97.4	125.2	
Approach LOS	D			F	F	
Queue Length 50th (m)	34.6	36.2		~223.5	~247.5	
Queue Length 95th (m)	57.4	61.3		#308.8	#335.4	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1045	946		1967	1984	
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	0.23	0.25		1.16	1.22	

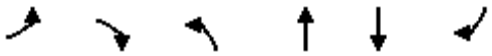
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 81.9			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 105.2		Intersection LOS: F	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

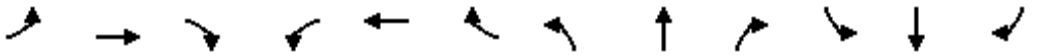
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp



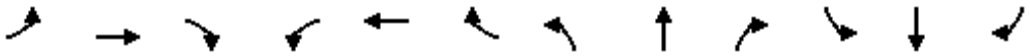


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	388	0	2074	2209	0
Future Volume (vph)	52	388	0	2074	2209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.89	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1472	1331		3275	3305	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1472	1331		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	57	426	0	2279	2427	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	244	239	0	2279	2427	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.7	19.7		49.2	49.2	
Effective Green, g (s)	19.7	19.7		49.2	49.2	
Actuated g/C Ratio	0.24	0.24		0.60	0.60	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	320		1967	1985	
v/s Ratio Prot	0.17			0.70	c0.73	
v/s Ratio Perm		c0.18				
v/c Ratio	0.69	0.75		1.16	1.22	
Uniform Delay, d1	28.3	28.8		16.4	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	9.2		77.5	105.0	
Delay (s)	33.8	37.9		93.9	121.3	
Level of Service	C	D		F	F	
Approach Delay (s)	35.9			93.9	121.3	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	101.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Future Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.541						0.950			0.950		
Satd. Flow (perm)	612	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				350			198			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	291	42	2342	404	590	2105	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	291	42	2342	404	590	2105	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	60.0		49.0	49.0	49.0	11.0	39.0	39.0	21.0	49.0	49.0
Total Split (%)	9.2%	50.0%		40.8%	40.8%	40.8%	9.2%	32.5%	32.5%	17.5%	40.8%	40.8%
Maximum Green (s)	7.0	53.5		42.5	42.5	42.5	7.0	32.5	32.5	17.0	42.5	42.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	23.5	21.0				10.0	7.0	32.5	32.5	17.0	46.9	46.9
Actuated g/C Ratio	0.27	0.24				0.11	0.08	0.37	0.37	0.19	0.54	0.54
v/c Ratio	0.67	0.27				0.60	0.32	1.29	0.57	0.90	0.79	0.28
Control Delay	46.1	10.8				7.3	44.9	162.2	14.4	52.7	20.2	8.2
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	10.8				7.3	44.9	162.2	14.4	52.7	20.2	8.2
LOS	D	B				A	D	F	B	D	C	A
Approach Delay		29.9			7.3			139.0			25.7	
Approach LOS		C			A			F			C	
Queue Length 50th (m)	18.9	3.1				0.0	6.8	~185.4	25.3	50.2	110.1	13.4
Queue Length 95th (m)	#42.8	15.8				11.7	16.6	#214.6	53.1	#78.4	132.1	27.7
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	201	944				940	132	1814	706	659	2668	888
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	0.67	0.12				0.31	0.32	1.29	0.57	0.90	0.79	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 87.5			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 75.3		Intersection LOS: E	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

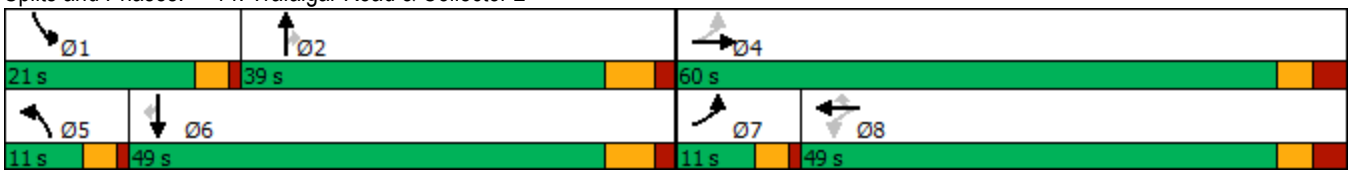
~ Volume exceeds capacity, queue is theoretically infinite.

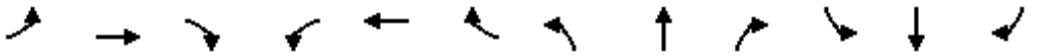
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

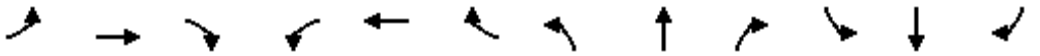
Splits and Phases: 14: Trafalgar Road & Collector 2



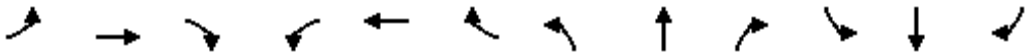


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Future Volume (vph)	124	22	83	0	0	262	39	2155	364	531	1937	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.54	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	612	1486				1566	1653	4885	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	291	42	2342	404	590	2105	252
RTOR Reduction (vph)	0	69	0	0	0	258	0	0	122	0	0	50
Lane Group Flow (vph)	135	45	0	0	0	33	42	2342	282	590	2105	202
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	21.0	21.0				10.0	4.2	34.1	34.1	17.0	46.9	46.9
Effective Green, g (s)	21.0	21.0				10.0	4.2	34.1	34.1	17.0	46.9	46.9
Actuated g/C Ratio	0.24	0.24				0.11	0.05	0.38	0.38	0.19	0.53	0.53
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	180	350				175	77	1869	599	647	2621	824
v/s Ratio Prot	c0.06	0.03					0.03	c0.48		c0.17	0.42	
v/s Ratio Perm	c0.12					0.02			0.18			0.13
v/c Ratio	0.75	0.13				0.19	0.55	1.25	0.47	0.91	0.80	0.25
Uniform Delay, d1	31.0	26.8				35.9	41.5	27.5	20.7	35.3	17.3	11.5
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.0	0.2				0.5	7.7	118.5	2.6	17.2	2.7	0.7
Delay (s)	47.0	27.0				36.4	49.2	146.0	23.3	52.5	20.0	12.2
Level of Service	D	C				D	D	F	C	D	C	B
Approach Delay (s)		37.9			36.4			126.7			25.9	
Approach LOS		D			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	71.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Future Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				0.97	0.99	0.99		0.99	0.99	
Frt		0.998				0.850		0.952			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1741	0	1750	1762	0
Flt Permitted	0.364			0.058			0.752			0.724		
Satd. Flow (perm)	668	3491	0	107	3500	1513	1377	1741	0	1326	1762	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				172		16			2	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		830.2			198.4			579.5			190.6	
Travel Time (s)		49.8			11.9			41.7			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1850	24	257	759	172	20	34	16	23	6	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1874	0	257	759	172	20	50	0	23	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		1	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		11.5	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	68.0	68.0		17.0	85.0	85.0	35.0	35.0		35.0	35.0	
Total Split (%)	56.7%	56.7%		14.2%	70.8%	70.8%	29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	62.9	62.9		13.0	79.9	79.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.0	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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	3.0	
Recall Mode	Max	Max		None	Max	Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5			5	5	5	5		5	5	
Act Effct Green (s)	64.7	64.7		83.0	83.0	83.0	13.3	13.3		13.3	13.3	
Actuated g/C Ratio	0.63	0.63		0.81	0.81	0.81	0.13	0.13		0.13	0.13	
v/c Ratio	0.04	0.85		0.87	0.27	0.14	0.11	0.21		0.13	0.03	
Control Delay	10.8	22.0		55.9	4.1	1.1	40.0	31.1		40.5	33.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.8	22.0		55.9	4.1	1.1	40.0	31.1		40.5	33.6	
LOS	B	C		E	A	A	D	C		D	C	
Approach Delay		21.9			14.9			33.6			38.7	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	1.1	141.6		33.8	15.6	0.0	3.6	6.2		4.2	1.1	
Queue Length 95th (m)	5.4	#287.8		#100.7	45.5	6.7	10.0	16.3		11.0	5.3	
Internal Link Dist (m)		806.2			174.4			555.5			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	422	2209		297	2839	1260	401	518		386	514	
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	0.04	0.85		0.87	0.27	0.14	0.05	0.10		0.06	0.02	

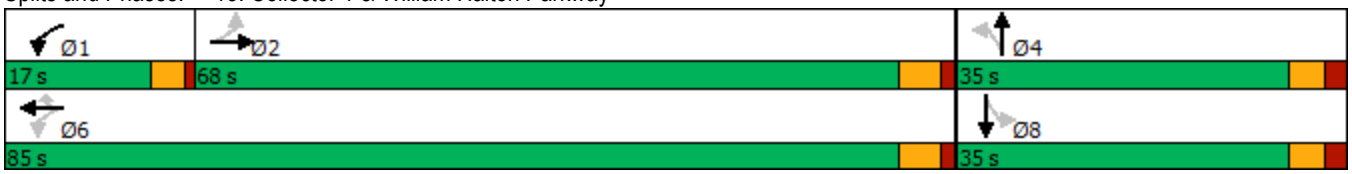
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.3			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 82.4%		ICU Level of Service E	

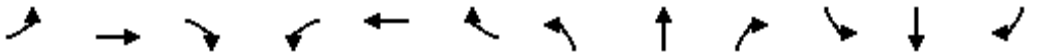
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 15: Collector 1 & William Halton Parkway

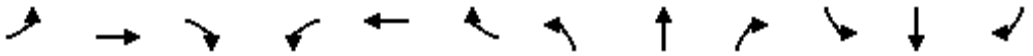




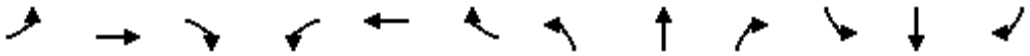
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Future Volume (vph)	14	1665	22	231	683	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	3492		1750	3500	1516	1741	1738		1741	1761	
Flt Permitted	0.36	1.00		0.06	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	668	3492		107	3500	1516	1379	1738		1328	1761	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1850	24	257	759	172	20	34	16	23	6	2
RTOR Reduction (vph)	0	1	0	0	0	36	0	14	0	0	2	0
Lane Group Flow (vph)	16	1873	0	257	759	136	20	36	0	23	6	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	64.8	64.8		81.9	81.9	81.9	11.1	11.1		11.1	11.1	
Effective Green, g (s)	64.8	64.8		81.9	81.9	81.9	11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.63	0.63		0.79	0.79	0.79	0.11	0.11		0.11	0.11	
Clearance Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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)	418	2186		292	2769	1199	147	186		142	188	
v/s Ratio Prot		0.54		c0.11	0.22			c0.02			0.00	
v/s Ratio Perm	0.02			c0.58		0.09	0.01			0.02		
v/c Ratio	0.04	0.86		0.88	0.27	0.11	0.14	0.19		0.16	0.03	
Uniform Delay, d1	7.4	15.6		33.5	2.9	2.5	41.9	42.1		42.0	41.4	
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	4.6		25.0	0.2	0.2	0.4	0.5		0.5	0.1	
Delay (s)	7.6	20.2		58.5	3.1	2.7	42.3	42.6		42.5	41.5	
Level of Service	A	C		E	A	A	D	D		D	D	
Approach Delay (s)		20.1			15.0			42.5			42.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	14.5
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Future Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Frt		0.998			0.960			0.926			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3331	0	1750	1689	0	1750	1830	0
Flt Permitted	0.450			0.405			0.722			0.574		
Satd. Flow (perm)	826	3491	0	744	3331	0	1324	1689	0	1053	1830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			77			64			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			579.5	
Travel Time (s)		9.8			17.7			34.4			41.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	640	10	84	398	143	21	101	99	20	52	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	650	0	84	541	0	21	200	0	20	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

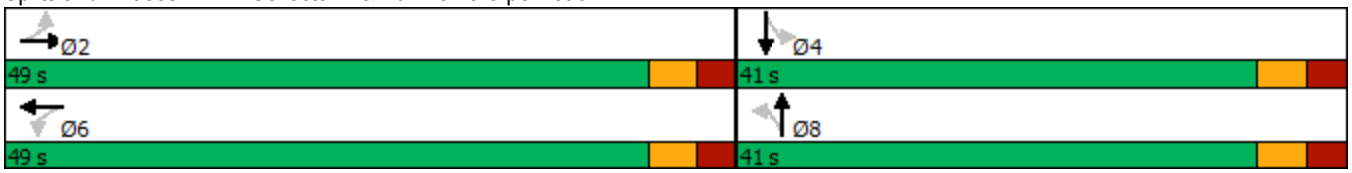


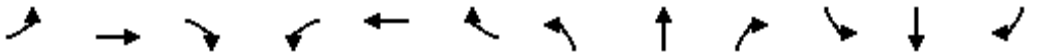
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65		0.18	0.18		0.18	0.18	
v/c Ratio	0.03	0.29		0.17	0.25		0.09	0.56		0.10	0.16	
Control Delay	7.3	6.9		8.2	5.8		22.1	22.4		22.6	22.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.3	6.9		8.2	5.8		22.1	22.4		22.6	22.3	
LOS	A	A		A	A		C	C		C	C	
Approach Delay		6.9			6.1			22.4			22.4	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.6	14.7		3.4	10.0		2.2	15.4		2.1	5.6	
Queue Length 95th (m)	4.2	40.1		14.9	29.2		7.0	31.6		6.8	13.2	
Internal Link Dist (m)		112.3			221.2			453.1			555.5	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	535	2264		482	2187		653	866		519	904	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.29		0.17	0.25		0.03	0.23		0.04	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road

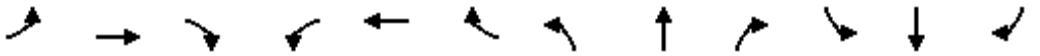




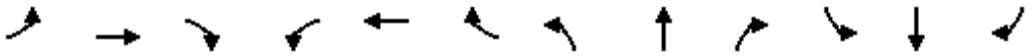
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Future Volume (vph)	15	576	9	76	358	129	19	91	89	18	47	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.93		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	3490		1745	3335		1744	1687		1745	1830	
Flt Permitted	0.45	1.00		0.40	1.00		0.72	1.00		0.57	1.00	
Satd. Flow (perm)	827	3490		744	3335		1325	1687		1055	1830	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	640	10	84	398	143	21	101	99	20	52	2
RTOR Reduction (vph)	0	1	0	0	27	0	0	52	0	0	2	0
Lane Group Flow (vph)	17	649	0	84	514	0	21	148	0	20	52	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Effective Green, g (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	537	2266		483	2165		241	307		192	333	
v/s Ratio Prot		c0.19			0.15			c0.09			0.03	
v/s Ratio Perm	0.02			0.11			0.02			0.02		
v/c Ratio	0.03	0.29		0.17	0.24		0.09	0.48		0.10	0.16	
Uniform Delay, d1	4.5	5.4		4.9	5.2		24.2	26.1		24.3	24.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.8	0.3		0.2	1.2		0.2	0.2	
Delay (s)	4.6	5.7		5.7	5.4		24.4	27.3		24.5	24.8	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		5.7			5.5			27.0			24.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Future Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.97		1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.896			0.939	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1628	0	1750	1716	0
Flt Permitted	0.363			0.127			0.712			0.694		
Satd. Flow (perm)	667	3500	1514	234	3496	0	1306	1628	0	1273	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38		1			30			28	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1454	50	32	717	4	189	30	67	89	41	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1454	50	32	721	0	189	97	0	89	69	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	

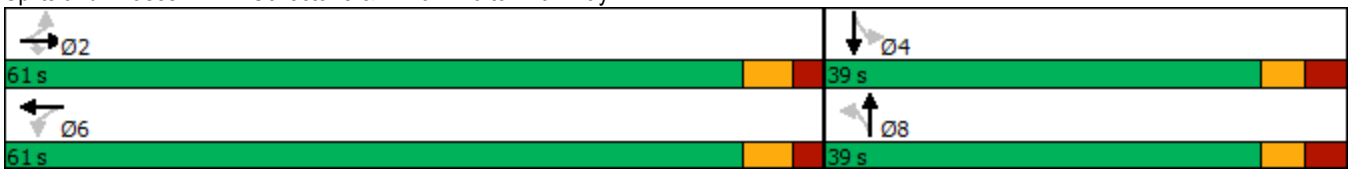


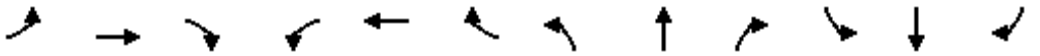
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.9	38.9	38.9	38.9	38.9		38.5	38.5		38.5	38.5	
Total Split (s)	61.0	61.0	61.0	61.0	61.0		39.0	39.0		39.0	39.0	
Total Split (%)	61.0%	61.0%	61.0%	61.0%	61.0%		39.0%	39.0%		39.0%	39.0%	
Maximum Green (s)	54.9	54.9	54.9	54.9	54.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	55.8	55.8	55.8	55.8	55.8		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
v/c Ratio	0.03	0.65	0.05	0.21	0.32		0.68	0.26		0.33	0.18	
Control Delay	8.6	12.6	4.0	13.7	8.5		43.7	21.0		31.1	18.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.6	12.6	4.0	13.7	8.5		43.7	21.0		31.1	18.4	
LOS	A	B	A	B	A		D	C		C	B	
Approach Delay		12.3			8.8			36.0			25.5	
Approach LOS		B			A			D			C	
Queue Length 50th (m)	0.6	66.1	0.6	1.9	24.1		28.7	9.1		12.4	5.5	
Queue Length 95th (m)	3.5	133.5	6.0	9.7	51.0		49.1	20.7		24.4	15.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	428	2246	985	150	2244		490	629		477	661	
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	0.03	0.65	0.05	0.21	0.32		0.39	0.15		0.19	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 24: Collector 5 & William Halton Parkway

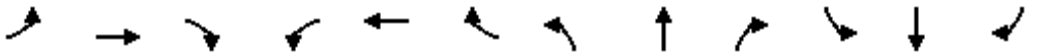




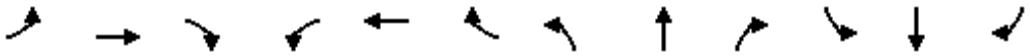
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Future Volume (vph)	10	1309	45	29	645	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3500	1517	1749	3496		1743	1627		1744	1715	
Flt Permitted	0.36	1.00	1.00	0.13	1.00		0.71	1.00		0.69	1.00	
Satd. Flow (perm)	666	3500	1517	233	3496		1307	1627		1274	1715	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1454	50	32	717	4	189	30	67	89	41	28
RTOR Reduction (vph)	0	0	14	0	0	0	0	24	0	0	22	0
Lane Group Flow (vph)	11	1454	36	32	721	0	189	73	0	89	47	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Effective Green, g (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	427	2248	974	149	2246		277	345		270	364	
v/s Ratio Prot		c0.42			0.21			0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.14			c0.14			0.07		
v/c Ratio	0.03	0.65	0.04	0.21	0.32		0.68	0.21		0.33	0.13	
Uniform Delay, d1	5.7	9.5	5.7	6.4	7.0		31.5	28.2		29.0	27.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.6	0.0	3.3	0.4		6.8	0.3		0.7	0.2	
Delay (s)	5.7	10.2	5.7	9.7	7.4		38.3	28.6		29.7	27.9	
Level of Service	A	B	A	A	A		D	C		C	C	
Approach Delay (s)		10.0			7.5			35.0			28.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Future Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.998			0.999			0.909			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3492	0	1750	3496	0	1750	1654	0	1750	1753	0
Flt Permitted	0.404			0.293			0.659			0.319		
Satd. Flow (perm)	742	3492	0	539	3496	0	1209	1654	0	586	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			100			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	873	9	88	633	4	32	133	208	22	110	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	882	0	88	637	0	32	341	0	22	154	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

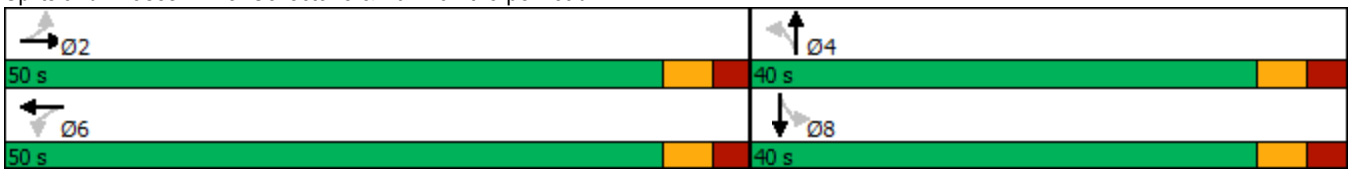


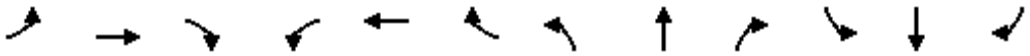
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		33.1	33.1		33.1	33.1	
Total Split (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	44.1	44.1		44.1	44.1		33.9	33.9		33.9	33.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	44.4	44.4		44.4	44.4		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.23	0.23		0.23	0.23	
v/c Ratio	0.09	0.42		0.27	0.30		0.12	0.75		0.17	0.37	
Control Delay	8.6	9.2		11.6	8.3		22.1	29.0		24.4	21.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.6	9.2		11.6	8.3		22.1	29.0		24.4	21.4	
LOS	A	A		B	A		C	C		C	C	
Approach Delay		9.2			8.7			28.4			21.8	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.9	29.1		5.0	19.2		3.5	30.5		2.4	14.6	
Queue Length 95th (m)	7.7	57.5		17.5	39.2		9.6	56.3		7.9	28.6	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	450	2121		327	2123		564	825		273	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	0.09	0.42		0.27	0.30		0.06	0.41		0.08	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

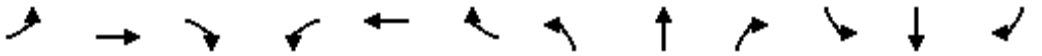




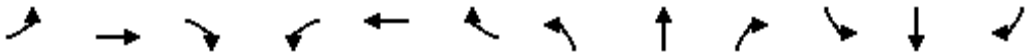
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Future Volume (vph)	35	786	8	79	570	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3493		1747	3496		1744	1652		1746	1753	
Flt Permitted	0.40	1.00		0.29	1.00		0.66	1.00		0.32	1.00	
Satd. Flow (perm)	742	3493		538	3496		1210	1652		586	1753	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	873	9	88	633	4	32	133	208	22	110	44
RTOR Reduction (vph)	0	1	0	0	0	0	0	77	0	0	20	0
Lane Group Flow (vph)	39	881	0	88	637	0	32	264	0	22	134	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	44.4	44.4		44.4	44.4		16.6	16.6		16.6	16.6	
Effective Green, g (s)	44.4	44.4		44.4	44.4		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.23	0.23		0.23	0.23	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	451	2124		327	2126		275	375		133	398	
v/s Ratio Prot		c0.25			0.18			c0.16			0.08	
v/s Ratio Perm	0.05			0.16			0.03			0.04		
v/c Ratio	0.09	0.41		0.27	0.30		0.12	0.70		0.17	0.34	
Uniform Delay, d1	5.9	7.5		6.7	6.9		22.4	25.9		22.6	23.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		2.0	0.4		0.2	5.9		0.6	0.5	
Delay (s)	6.3	8.1		8.7	7.2		22.6	31.8		23.2	24.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		8.0			7.4			31.0			24.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Future Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.663			0.551			0.065			0.065		
Satd. Flow (perm)	1216	1842	1532	1010	1842	1534	120	4421	1511	120	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2294	248	110	1981	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	126	219	371	148	66	99	2294	248	110	1981	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	11.0	59.0	59.0	11.0	59.0	59.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	9.2%	49.2%	49.2%	9.2%	49.2%	49.2%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	7.0	52.6	52.6	7.0	52.6	52.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	22.3	22.3	22.3	35.8	33.3	33.3	71.7	61.5	61.5	72.7	62.0	62.0
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.28	0.28	0.60	0.51	0.51	0.61	0.52	0.52
v/c Ratio	0.76	0.37	0.56	1.08	0.29	0.14	0.56	1.01	0.30	0.59	0.87	0.16
Control Delay	65.8	44.0	22.2	109.3	34.0	6.9	29.4	52.1	11.8	31.5	31.8	5.9
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	65.8	44.0	22.2	109.3	34.0	6.9	29.4	52.1	11.8	31.5	31.8	5.9
LOS	E	D	C	F	C	A	C	D	B	C	C	A
Approach Delay		41.9			78.7			47.5			30.3	
Approach LOS		D			E			D			C	
Queue Length 50th (m)	38.4	26.2	17.9	~86.3	27.5	0.0	8.3	~228.5	17.6	9.3	164.5	3.0
Queue Length 95th (m)	56.7	39.7	38.3	#119.8	39.8	9.0	#29.1	#303.0	39.8	#36.1	#239.9	14.9
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	329	498	511	344	667	598	178	2265	825	185	2283	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.25	0.43	1.08	0.22	0.11	0.56	1.01	0.30	0.59	0.87	0.16

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 43.7	Intersection LOS: D

Intersection Capacity Utilization 92.8%	ICU Level of Service F
Analysis Period (min) 15	

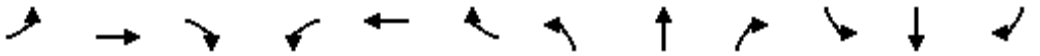
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 27: Trafalgar Road & Settlers Road

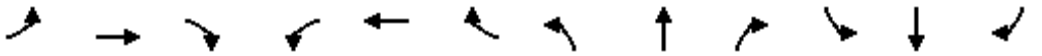




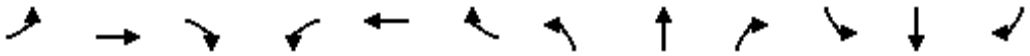
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Future Volume (vph)	153	113	197	334	133	59	89	2065	223	99	1783	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	1842	1529	1746	1842	1532	1750	4421	1512	1750	4421	1512
Flt Permitted	0.66	1.00	1.00	0.55	1.00	1.00	0.07	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1215	1842	1529	1013	1842	1532	120	4421	1512	119	4421	1512
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2294	248	110	1981	132
RTOR Reduction (vph)	0	0	107	0	0	48	0	0	51	0	0	51
Lane Group Flow (vph)	170	126	112	371	148	18	99	2294	197	110	1981	81
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	22.3	22.3	22.3	33.3	33.3	33.3	69.3	61.5	61.5	70.3	62.0	62.0
Effective Green, g (s)	22.3	22.3	22.3	33.3	33.3	33.3	69.3	61.5	61.5	70.3	62.0	62.0
Actuated g/C Ratio	0.19	0.19	0.19	0.28	0.28	0.28	0.58	0.51	0.51	0.59	0.52	0.52
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	342	284	323	511	425	175	2265	774	182	2284	781
v/s Ratio Prot		0.07		c0.07	0.08		0.04	c0.52		c0.04	0.45	
v/s Ratio Perm	0.14		0.07	c0.25		0.01	0.29		0.13	0.31		0.05
v/c Ratio	0.76	0.37	0.39	1.15	0.29	0.04	0.57	1.01	0.25	0.60	0.87	0.10
Uniform Delay, d1	46.3	42.7	42.9	43.2	34.1	31.7	21.4	29.2	16.4	25.9	25.4	14.8
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	13.4	0.7	0.9	96.7	0.3	0.0	4.1	22.1	0.8	5.6	4.8	0.3
Delay (s)	59.7	43.4	43.8	139.9	34.4	31.7	25.5	51.4	17.2	31.5	30.2	15.1
Level of Service	E	D	D	F	C	C	C	D	B	C	C	B
Approach Delay (s)		48.9			101.0			47.2			29.3	
Approach LOS		D			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Future Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.673			0.565			0.079			0.085		
Satd. Flow (perm)	1234	1842	1532	1036	1842	1534	146	4421	1511	157	4421	1510
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188			104			105			141
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2569	52	114	2439	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	78	297	264	131	60	261	2569	52	114	2439	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	17.0	59.0	59.0	11.0	53.0	53.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	14.2%	49.2%	49.2%	9.2%	44.2%	44.2%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	13.0	52.6	52.6	7.0	46.6	46.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	16.0	16.0	16.0	29.5	27.0	27.0	66.4	52.9	52.9	56.3	46.9	46.9
Actuated g/C Ratio	0.15	0.15	0.15	0.28	0.26	0.26	0.64	0.51	0.51	0.54	0.45	0.45
v/c Ratio	0.20	0.28	0.75	0.77	0.27	0.13	0.88	1.14	0.06	0.59	1.22	0.03
Control Delay	39.2	40.1	27.8	48.0	31.4	1.5	56.7	95.9	0.1	29.3	133.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	40.1	27.8	48.0	31.4	1.5	56.7	95.9	0.1	29.3	133.3	0.1
LOS	D	D	C	D	C	A	E	F	A	C	F	A
Approach Delay		31.2			37.1			90.7			127.6	
Approach LOS		C			D			F			F	
Queue Length 50th (m)	6.6	14.0	20.4	44.6	21.0	0.0	33.7	~240.2	0.0	7.4	~240.6	0.0
Queue Length 95th (m)	15.3	26.5	48.4	67.4	35.4	2.0	#100.9	#355.9	0.0	#35.5	#352.7	0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	388	579	610	342	775	706	295	2249	820	192	1993	758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.13	0.49	0.77	0.17	0.08	0.88	1.14	0.06	0.59	1.22	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 104			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 98.0		Intersection LOS: F	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	

Analysis Period (min) 15

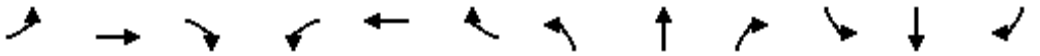
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

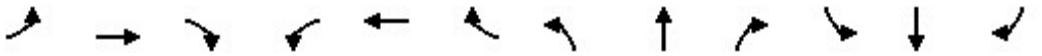




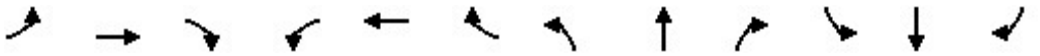
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Future Volume (vph)	33	70	267	238	118	54	235	2312	47	103	2195	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1743	1842	1528	1746	1842	1533	1750	4421	1514	1750	4421	1513
Flt Permitted	0.67	1.00	1.00	0.57	1.00	1.00	0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1235	1842	1528	1038	1842	1533	145	4421	1514	157	4421	1513
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2569	52	114	2439	22
RTOR Reduction (vph)	0	0	159	0	0	44	0	0	25	0	0	12
Lane Group Flow (vph)	37	78	138	264	131	16	261	2569	27	114	2439	10
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.0	16.0	16.0	27.0	27.0	27.0	64.0	53.0	53.0	53.9	46.9	46.9
Effective Green, g (s)	16.0	16.0	16.0	27.0	27.0	27.0	64.0	53.0	53.0	53.9	46.9	46.9
Actuated g/C Ratio	0.15	0.15	0.15	0.26	0.26	0.26	0.62	0.51	0.51	0.52	0.45	0.45
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	190	283	235	317	478	398	291	2255	772	188	1995	682
v/s Ratio Prot		0.04		c0.06	0.07		c0.11	0.58		0.04	c0.55	
v/s Ratio Perm	0.03		0.09	c0.16		0.01	0.44		0.02	0.27		0.01
v/c Ratio	0.19	0.28	0.59	0.83	0.27	0.04	0.90	1.14	0.03	0.61	1.22	0.01
Uniform Delay, d1	38.3	38.8	40.9	36.0	30.6	28.8	31.6	25.5	12.7	22.3	28.5	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.5	3.7	16.8	0.3	0.0	27.7	68.6	0.1	5.4	104.9	0.0
Delay (s)	38.8	39.4	44.6	52.8	31.0	28.8	59.3	94.1	12.8	27.7	133.4	15.8
Level of Service	D	D	D	D	C	C	E	F	B	C	F	B
Approach Delay (s)		43.1			43.3			89.5			127.7	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	98.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	103.9	Sum of lost time (s)	20.9
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Future Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			121			89			150
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	1.35	0.84	0.25	1.38	1.01	1.02	1.08	1.25	0.10	1.39	1.29	0.57
Control Delay	218.8	54.2	9.3	228.6	77.1	80.7	126.7	157.4	2.5	250.0	176.6	25.3
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	218.8	54.2	9.3	228.6	77.1	80.7	126.7	157.4	2.5	250.0	176.6	25.3
LOS	F	D	A	F	E	F	F	F	A	F	F	C
Approach Delay		107.9			116.4			148.7			163.2	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~103.9	122.8	3.3	~104.7	~158.1	~142.2	~61.9	~294.0	0.0	~48.7	~273.5	43.9
Queue Length 95th (m)	#140.0	149.0	18.9	#140.8	#204.8	#213.3	#94.1	#326.2	4.6	#76.9	#306.6	75.4
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	105.0		60.0	120.0		205.0	85.0		55.0	80.0		60.0
Base Capacity (vph)	412	1065	559	404	1065	560	363	1629	622	186	1439	604
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	1.35	0.84	0.25	1.38	1.01	1.02	1.08	1.25	0.10	1.39	1.29	0.57

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.39	
Intersection Signal Delay: 137.2	Intersection LOS: F

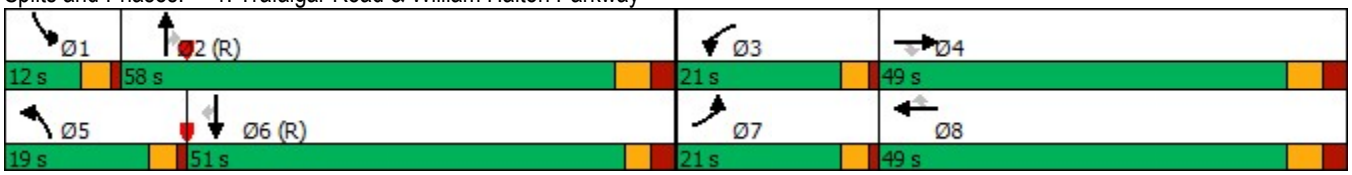
Intersection Capacity Utilization 103.2%	ICU Level of Service G
Analysis Period (min) 15	

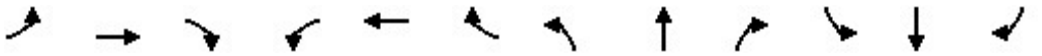
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Future Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
RTOR Reduction (vph)	0	0	83	0	0	84	0	0	39	0	0	101
Lane Group Flow (vph)	557	899	54	556	1071	487	391	2043	23	258	1863	242
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1629	566	186	1439	503
v/s Ratio Prot	0.16	0.26		c0.17	0.31		c0.12	c0.46		c0.08	0.42	
v/s Ratio Perm			0.03			c0.31			0.01			0.16
v/c Ratio	1.35	0.84	0.11	1.38	1.01	1.02	1.08	1.25	0.04	1.39	1.29	0.48
Uniform Delay, d1	61.5	45.6	35.1	61.5	48.7	48.7	62.5	44.2	28.3	66.0	47.2	37.7
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	173.7	6.9	0.2	184.3	29.0	47.1	69.4	119.6	0.1	203.8	137.9	3.3
Delay (s)	235.2	52.5	35.3	245.8	77.7	95.8	131.9	163.8	28.5	269.8	185.1	41.0
Level of Service	F	D	D	F	E	F	F	F	C	F	F	D
Approach Delay (s)		114.9			124.9			155.4			173.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	145.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Future Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		0.0	120.0		0.0	130.0		0.0	170.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.949			0.952			0.987			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3321	0	1750	3332	0	1750	4358	0	1750	4286	0
Flt Permitted	0.376			0.350			0.066			0.062		
Satd. Flow (perm)	660	3321	0	645	3332	0	122	4358	0	114	4286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			66			15			37	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	186	341	175	344	329	155	134	2105	193	195	1759	282
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	516	0	344	484	0	134	2298	0	195	2041	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.02	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		10.0	10.0		7.0	10.0	
Minimum Split (s)	41.4	41.4		41.4	41.4		37.3	37.3		11.0	37.3	
Total Split (s)	42.0	42.0		42.0	42.0		67.0	67.0		11.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.8%	55.8%		9.2%	65.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		60.7	60.7		7.0	71.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		1.0	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	28.0	28.0		28.0	28.0		24.0	24.0			24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	35.6	35.6		35.6	35.6		60.7	60.7		74.0	71.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.51	0.51		0.62	0.60	
v/c Ratio	0.95	0.52		1.80	0.47		2.20	1.04		1.18	0.79	
Control Delay	96.2	35.8		408.4	31.2		609.1	59.8		153.5	21.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	96.2	35.8		408.4	31.2		609.1	59.8		153.5	21.0	
LOS	F	D		F	C		F	E		F	C	
Approach Delay		51.8			187.9			90.1			32.6	
Approach LOS		D			F			F			C	
Queue Length 50th (m)	42.9	51.0		~121.7	42.1		~36.5	~242.9		~39.1	142.1	
Queue Length 95th (m)	#88.3	67.9		#178.5	58.0		#76.4	#275.9		#85.9	165.5	
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0			120.0			130.0			170.0		
Base Capacity (vph)	195	999		191	1034		61	2211		165	2575	
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	0.95	0.52		1.80	0.47		2.20	1.04		1.18	0.79	

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: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.20			
Intersection Signal Delay: 78.1		Intersection LOS: E	
Intersection Capacity Utilization 104.6%		ICU Level of Service G	

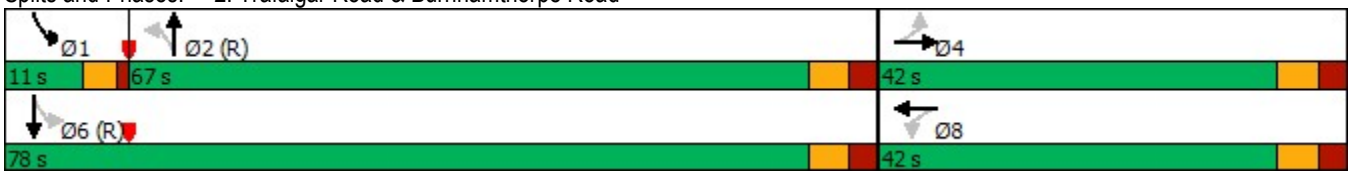
Analysis Period (min) 15

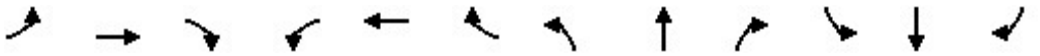
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Future Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.95		1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3322		1750	3332		1750	4359		1750	4287	
Flt Permitted	0.38	1.00		0.35	1.00		0.07	1.00		0.06	1.00	
Satd. Flow (perm)	659	3322		645	3332		121	4359		114	4287	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	341	175	344	329	155	134	2105	193	195	1759	282
RTOR Reduction (vph)	0	14	0	0	46	0	0	7	0	0	15	0
Lane Group Flow (vph)	186	502	0	344	438	0	134	2291	0	195	2026	0
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.6	35.6		35.6	35.6		60.7	60.7		71.7	71.7	
Effective Green, g (s)	35.6	35.6		35.6	35.6		60.7	60.7		71.7	71.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.51	0.51		0.60	0.60	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.3	6.3		4.0	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	195	985		191	988		61	2204		163	2561	
v/s Ratio Prot		0.15			0.13			0.53		c0.07	0.47	
v/s Ratio Perm	0.28			c0.53			c1.10			0.64		
v/c Ratio	0.95	0.51		1.80	0.44		2.20	1.04		1.20	0.79	
Uniform Delay, d1	41.4	35.0		42.2	34.2		29.6	29.6		36.2	18.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.9	0.4		380.5	0.3		588.1	30.3		133.0	2.6	
Delay (s)	92.3	35.4		422.7	34.5		617.8	59.9		169.3	21.0	
Level of Service	F	D		F	C		F	E		F	C	
Approach Delay (s)		50.5			195.8			90.7			34.0	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	79.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1166	1	993	1661	0	871
Future Volume (vph)	1166	1	993	1661	0	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.079			
Satd. Flow (perm)	3433	0	146	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						453
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1215	1	1034	1730	0	907
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1216	0	1034	1730	0	907
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	53.0		36.0	89.0	31.0	31.0
Total Split (%)	44.2%		30.0%	74.2%	25.8%	25.8%
Maximum Green (s)	46.6		32.0	82.6	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.6		85.0	82.6		27.0
Actuated g/C Ratio	0.39		0.71	0.69		0.22
v/c Ratio	0.91		1.95	0.72		1.29
Control Delay	46.2		457.2	13.7		161.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	46.2		457.2	13.7		161.5
LOS	D		F	B		F
Approach Delay	46.2			179.6	161.5	
Approach LOS	D			F	F	
Queue Length 50th (m)	141.0		~364.4	119.4		~184.8
Queue Length 95th (m)	#183.2		#443.1	144.3		#261.1
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			100.0			
Base Capacity (vph)	1333		531	2409		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	0.91		1.95	0.72		1.29

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.95			
Intersection Signal Delay: 143.1		Intersection LOS: F	
Intersection Capacity Utilization 95.9%		ICU Level of Service F	
Analysis Period (min) 15			

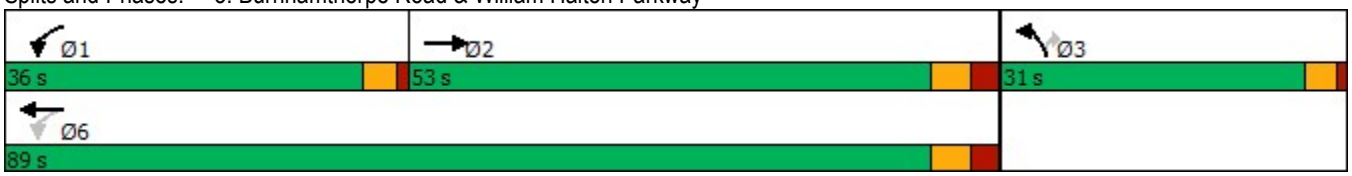
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

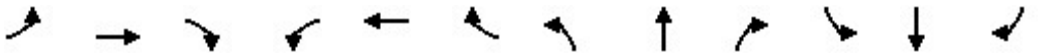
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



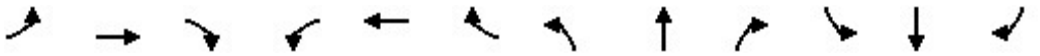


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1166	1	993	1661	0	871
Future Volume (vph)	1166	1	993	1661	0	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.08	1.00		1.00
Satd. Flow (perm)	3432		146	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1215	1	1034	1730	0	907
RTOR Reduction (vph)	0	0	0	0	0	351
Lane Group Flow (vph)	1216	0	1034	1730	0	556
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	46.6		82.6	82.6		27.0
Effective Green, g (s)	46.6		82.6	82.6		27.0
Actuated g/C Ratio	0.39		0.69	0.69		0.22
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1332		528	2409		352
v/s Ratio Prot	0.35		c0.52	0.49		
v/s Ratio Perm			c0.83			c0.36
v/c Ratio	0.91		1.96	0.72		1.58
Uniform Delay, d1	34.8		37.1	11.5		46.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	11.1		438.1	1.0		274.0
Delay (s)	45.8		475.2	12.6		320.5
Level of Service	D		F	B		F
Approach Delay (s)	45.8			185.6	320.5	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	175.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Future Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	3395	4421	1566	3395	4421	1566	3362	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3394	4378	1527	3391	4421	1540	3392	4421	1541	3361	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			162			96			151
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			1233.0	
Travel Time (s)		30.4			42.0			38.7			74.0	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



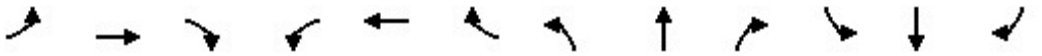
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	2.11	1.04	0.29	1.26	1.13	1.08	1.35	1.29	0.40	2.82	0.91	0.66
Control Delay	541.2	72.6	9.0	192.8	104.5	90.7	228.8	173.7	21.6	851.7	52.4	28.7
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	541.2	72.6	9.0	192.8	104.5	90.7	228.8	173.7	21.6	851.7	52.4	28.7
LOS	F	E	A	F	F	F	F	F	C	F	D	C
Approach Delay		173.2			110.2			166.5			268.5	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~115.3	~195.0	7.6	~48.7	~225.2	~179.2	~55.0	~254.5	25.7	~147.4	134.9	55.3
Queue Length 95th (m)	#150.4	#228.7	24.4	#77.4	#258.7	#253.8	#84.3	#287.7	48.3	#184.2	#165.7	91.6
Internal Link Dist (m)		568.0			792.3			620.9			1209.0	
Turn Bay Length (m)	125.0		85.0	80.0		85.0	90.0		50.0	85.0		65.0
Base Capacity (vph)	261	1636	663	235	1618	666	235	1448	569	232	1448	605
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	2.11	1.04	0.29	1.26	1.13	1.08	1.35	1.29	0.40	2.82	0.91	0.66

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.82	
Intersection Signal Delay: 176.3	Intersection LOS: F

Intersection Capacity Utilization 122.4%	ICU Level of Service H
Analysis Period (min) 15	
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 4: Trafalgar Road & Dundas Street

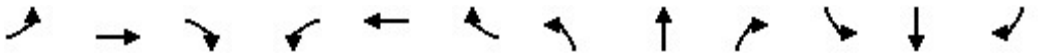




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Future Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Flt Permitted	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 (perm)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
RTOR Reduction (vph)	0	0	93	0	0	103	0	0	65	0	0	102
Lane Group Flow (vph)	551	1698	101	295	1825	619	318	1872	165	654	1321	298
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1636	570	235	1618	563	235	1448	504	232	1448	503
v/s Ratio Prot	c0.16	0.39		0.09	c0.41		0.09	c0.42		c0.19	0.30	
v/s Ratio Perm			0.07			0.40			0.11			0.19
v/c Ratio	2.11	1.04	0.18	1.26	1.13	1.10	1.35	1.29	0.33	2.82	0.91	0.59
Uniform Delay, d1	60.0	40.7	27.3	60.5	41.2	41.2	60.5	43.7	32.9	60.5	41.9	36.5
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	512.8	32.7	0.7	144.8	66.1	68.2	184.3	137.0	0.8	830.4	9.5	2.8
Delay (s)	572.8	73.4	28.0	205.3	107.3	109.4	244.8	180.7	33.7	890.9	51.4	39.3
Level of Service	F	E	C	F	F	F	F	F	C	F	D	D
Approach Delay (s)		182.5			118.0			175.2			280.5	
Approach LOS		F			F			F			F	

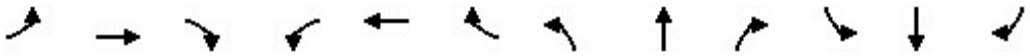
Intersection Summary			
HCM 2000 Control Delay	185.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	122.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



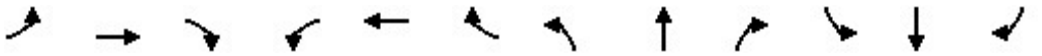
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	552	65	229	689	559	11	275	146	292	341	272
Future Volume (vph)	231	552	65	229	689	559	11	275	146	292	341	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.989			0.943			0.949			0.955	
Flt Protected		0.987			0.992			0.999			0.984	
Satd. Flow (prot)	0	3416	0	0	3274	0	0	3318	0	0	3289	0
Flt Permitted		0.987			0.992			0.999			0.984	
Satd. Flow (perm)	0	3416	0	0	3274	0	0	3318	0	0	3289	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			825.2			671.6			229.3	
Travel Time (s)		28.6			49.5			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	236	563	66	234	703	570	11	281	149	298	348	278
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	865	0	0	1507	0	0	441	0	0	924	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	120.2%	ICU Level of Service	H
Analysis Period (min)	15		

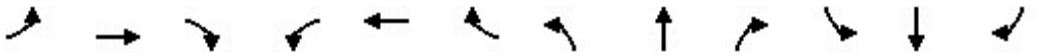


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	231	552	65	229	689	559	11	275	146	292	341	272
Future Volume (veh/h)	231	552	65	229	689	559	11	275	146	292	341	272
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	236	563	66	234	703	570	11	281	149	298	348	278
Approach Volume (veh/h)		865			1507			441			924	
Crossing Volume (veh/h)		880			528			1097			948	
High Capacity (veh/h)		687			913			575			650	
High v/c (veh/h)		1.26			1.65			0.77			1.42	
Low Capacity (veh/h)		538			736			442			506	
Low v/c (veh/h)		1.61			2.05			1.00			1.83	

Intersection Summary				
Maximum v/c High	1.65			
Maximum v/c Low	2.05			
Intersection Capacity Utilization	120.2%	ICU Level of Service	H	



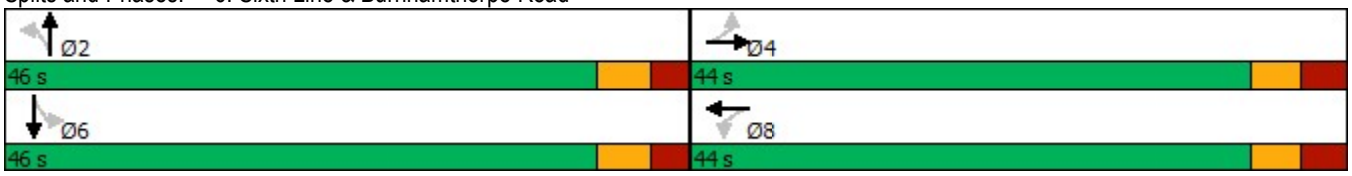
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Future Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	40.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.958			0.976			0.952			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3353	0	1750	3369	0	1750	3322	0	1750	3475	0
Flt Permitted	0.563			0.641			0.351			0.401		
Satd. Flow (perm)	1037	3353	0	1181	3369	0	647	3322	0	739	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			29			108			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	35	127	49	194	262	49	99	441	205	80	713	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	176	0	194	311	0	99	646	0	80	746	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

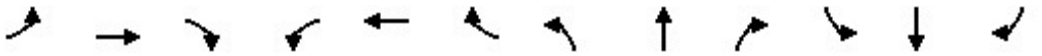


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.57	0.57		0.57	0.57	
v/c Ratio	0.14	0.21		0.69	0.37		0.27	0.33		0.19	0.37	
Control Delay	21.1	14.9		36.7	20.6		11.7	7.7		10.3	9.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	14.9		36.7	20.6		11.7	7.7		10.3	9.5	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		15.9			26.8			8.2			9.6	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	3.6	6.7		22.8	15.8		5.7	16.5		4.4	24.2	
Queue Length 95th (m)	9.8	13.5		42.0	25.4		18.5	34.4		14.3	46.8	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			40.0			30.0			30.0		
Base Capacity (vph)	563	1842		641	1842		370	1950		423	1995	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.10		0.30	0.17		0.27	0.33		0.19	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.5			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

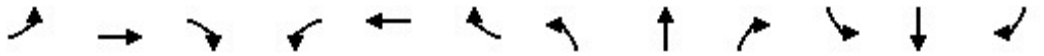
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



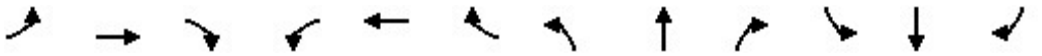


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Future Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3354		1750	3370		1750	3323		1750	3477	
Flt Permitted	0.56	1.00		0.64	1.00		0.35	1.00		0.40	1.00	
Satd. Flow (perm)	1037	3354		1180	3370		647	3323		739	3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	127	49	194	262	49	99	441	205	80	713	33
RTOR Reduction (vph)	0	37	0	0	22	0	0	46	0	0	3	0
Lane Group Flow (vph)	35	139	0	194	289	0	99	600	0	80	743	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Effective Green, g (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	807		283	810		371	1905		423	1994	
v/s Ratio Prot		0.04			0.09			0.18			c0.21	
v/s Ratio Perm	0.03			c0.16			0.15			0.11		
v/c Ratio	0.14	0.17		0.69	0.36		0.27	0.31		0.19	0.37	
Uniform Delay, d1	20.7	20.9		24.0	21.9		7.5	7.7		7.1	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		6.7	0.3		1.8	0.4		1.0	0.5	
Delay (s)	21.0	21.0		30.7	22.2		9.2	8.1		8.1	8.6	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.0			25.4			8.3			8.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Future Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1541	1431	1750	3500	0	0	4980	0
Flt Permitted	0.297			0.950	0.953		0.059					
Satd. Flow (perm)	477	0	1331	1615	1541	1431	109	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	578	2	19	7	2943	0	0	2061	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	289	293	17	7	2943	0	0	2061	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



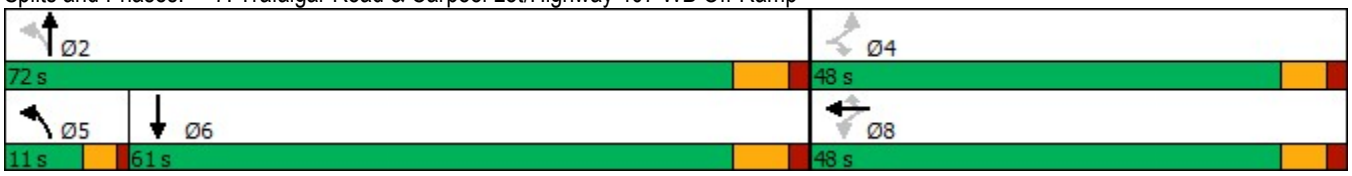
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	48.0		48.0	48.0	48.0	48.0	11.0	72.0			61.0	
Total Split (%)	40.0%		40.0%	40.0%	40.0%	40.0%	9.2%	60.0%			50.8%	
Maximum Green (s)	42.0		42.0	42.0	42.0	42.0	7.0	65.0			54.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	24.8		24.8	24.8	24.8	24.8	68.3	65.3			63.5	
Actuated g/C Ratio	0.24		0.24	0.24	0.24	0.24	0.66	0.63			0.62	
v/c Ratio	0.06		0.02	0.74	0.79	0.04	0.04	1.33			0.67	
Control Delay	29.9		0.0	48.2	52.4	0.2	8.7	172.9			16.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	29.9		0.0	48.2	52.4	0.2	8.7	172.9			16.4	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		16.1			48.9			172.5			16.4	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	1.1		0.0	56.3	60.4	0.0	0.4	~400.2			85.2	
Queue Length 95th (m)	4.5		0.0	85.4	92.1	0.0	2.4	#513.6			165.8	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	195		587	660	630	628	183	2215			3063	
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		0.01	0.44	0.47	0.03	0.04	1.33			0.67	

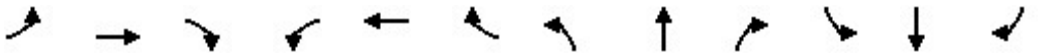
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 103.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.33			
Intersection Signal Delay: 101.7		Intersection LOS: F	
Intersection Capacity Utilization 111.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Future Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1541	1431	1750	3500			4980	
Flt Permitted	0.30		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	477		1331	1615	1541	1431	109	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	578	2	19	7	2943	0	0	2061	0
RTOR Reduction (vph)	0	0	5	0	0	13	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	1	289	293	4	7	2943	0	0	2061	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	24.8		24.8	24.8	24.8	24.8	68.6	68.6			63.5	
Effective Green, g (s)	24.8		24.8	24.8	24.8	24.8	68.6	68.6			63.5	
Actuated g/C Ratio	0.23		0.23	0.23	0.23	0.23	0.64	0.64			0.60	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	111		310	376	359	333	87	2256			2972	
v/s Ratio Prot							0.00	c0.84			0.41	
v/s Ratio Perm	0.01		0.00	0.18	0.19	0.00	0.05					
v/c Ratio	0.06		0.00	0.77	0.82	0.01	0.08	1.30			0.69	
Uniform Delay, d1	31.8		31.3	38.1	38.6	31.4	10.6	18.9			14.8	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	9.1	13.3	0.0	0.4	140.4			0.7	
Delay (s)	32.0		31.3	47.2	52.0	31.4	11.0	159.3			15.5	
Level of Service	C		C	D	D	C	B	F			B	
Approach Delay (s)		31.7			49.1			158.9			15.5	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	94.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	106.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	111.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2832	2588	45
Future Volume (vph)	0	0	0	2832	2588	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	2950	2696	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2950	2696	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2832	267	0	2588
Future Volume (vph)	0	0	2832	267	0	2588
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	2950	278	0	2696
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2950	278	0	2696
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	333	0	3370	2386	0
Future Volume (vph)	38	333	0	3370	2386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1278	0	3500	3466	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1278	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	40	354	0	3585	2538	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	354	0	3585	2538	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						



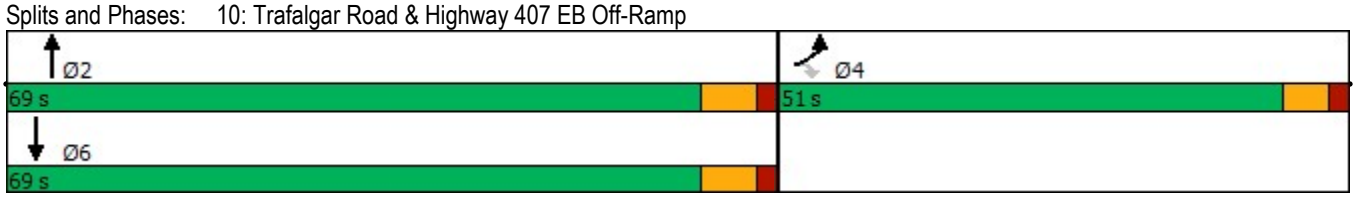
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	34.3	34.3		62.4	62.4	
Actuated g/C Ratio	0.31	0.31		0.57	0.57	
v/c Ratio	0.07	0.89		1.80	1.29	
Control Delay	25.5	59.8		384.9	158.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.5	59.8		384.9	158.2	
LOS	C	E		F	F	
Approach Delay	56.3			384.9	158.2	
Approach LOS	E			F	F	
Queue Length 50th (m)	6.0	71.1		~614.7	~369.5	
Queue Length 95th (m)	13.4	108.8		#724.1	#463.5	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	722	527		1990	1970	
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	0.06	0.67		1.80	1.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 109.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.80			
Intersection Signal Delay: 276.7		Intersection LOS: F	
Intersection Capacity Utilization 109.0%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	333	0	3370	2386	0
Future Volume (vph)	38	333	0	3370	2386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1278		3500	3466	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1278		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	354	0	3585	2538	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	40	353	0	3585	2538	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	34.3	34.3		62.4	62.4	
Effective Green, g (s)	34.3	34.3		62.4	62.4	
Actuated g/C Ratio	0.31	0.31		0.57	0.57	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	547	399		1990	1971	
v/s Ratio Prot	0.02			c1.02	0.73	
v/s Ratio Perm		c0.28				
v/c Ratio	0.07	0.89		1.80	1.29	
Uniform Delay, d1	26.5	35.8		23.7	23.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	20.2		362.7	133.4	
Delay (s)	26.6	56.1		386.4	157.1	
Level of Service	C	E		F	F	
Approach Delay (s)	53.1			386.4	157.1	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	276.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3094	2386	21
Future Volume (vph)	0	0	0	3094	2386	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	3291	2538	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3291	2538	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 109.0%		ICU Level of Service G	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	3094	2386	21
Future Volume (Veh/h)	0	0	0	3094	2386	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	3291	2538	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.62	0.63	0.63			
vC, conflicting volume	4184	1269	2560			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2242	264	2304			
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)	22	465	136			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1646	1646	1269	1269	22
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	22
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.97	0.97	0.75	0.75	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

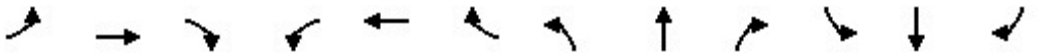
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3370	322	0	2717
Future Volume (vph)	0	0	3370	322	0	2717
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3585	343	0	2890
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3585	343	0	2890
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

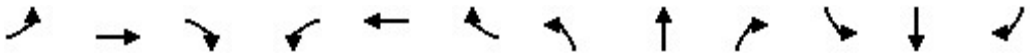
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.5%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



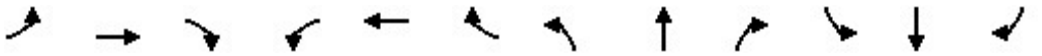
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1719	355	147	1953	137	540	673	240	117	347	117
Future Volume (vph)	43	1719	355	147	1953	137	540	673	240	117	347	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.975			0.991			0.975			0.970	
Flt Protected		0.999			0.997			0.982			0.990	
Satd. Flow (prot)	0	3363	0	0	3458	0	0	3339	0	0	3361	0
Flt Permitted		0.999			0.997			0.982			0.990	
Satd. Flow (perm)	0	3363	0	0	3458	0	0	3339	0	0	3361	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	45	1791	370	153	2034	143	563	701	250	122	361	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2206	0	0	2330	0	0	1514	0	0	605	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 194.7%		ICU Level of Service H	
Analysis Period (min) 15			

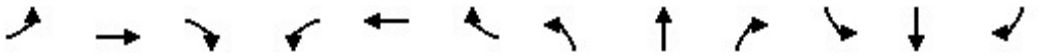


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	43	1719	355	147	1953	137	540	673	240	117	347	117
Future Volume (veh/h)	43	1719	355	147	1953	137	540	673	240	117	347	117
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	45	1791	370	153	2034	143	562	701	250	122	361	122
Approach Volume (veh/h)		2206			2330			1513			605	
Crossing Volume (veh/h)		636			1308#			1958#			2749#	
High Capacity (veh/h)		837			482			278			139	
High v/c (veh/h)		2.64			4.83			5.44			4.35	
Low Capacity (veh/h)		669			364			197			90	
Low v/c (veh/h)		3.30			6.40			7.68			6.69	

Intersection Summary				
Maximum v/c High	5.44			
Maximum v/c Low	7.68			
Intersection Capacity Utilization	194.7%	ICU Level of Service	H	
# Crossing flow exceeds 1200, method is not applicable				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Future Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	105.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			139			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	2953	333	481	2456	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	870	41	2953	333	481	2456	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



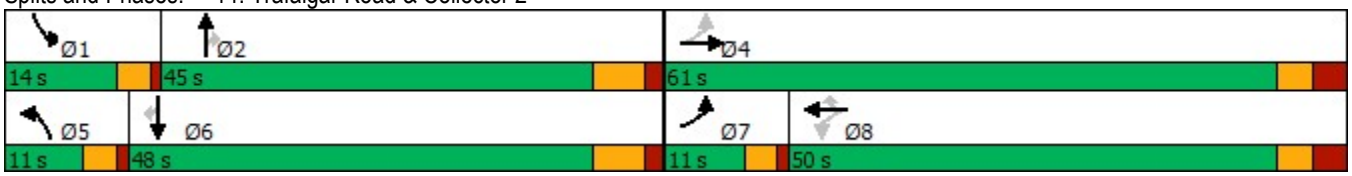
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.28	0.40	1.83	0.56	1.71	1.34	0.30
Control Delay	28.2	8.5				162.7	66.5	403.3	23.1	365.7	189.8	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				162.7	66.5	403.3	23.1	365.7	189.8	14.5
LOS	C	A				F	E	F	C	F	F	B
Approach Delay		20.4			162.7			361.1			205.9	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~231.6	9.5	~385.2	37.1	~85.7	~284.7	14.5
Queue Length 95th (m)	90.6	29.7				#307.4	21.2	#411.4	66.3	#118.6	#312.9	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	105.0		40.0
Base Capacity (vph)	634	826				682	102	1613	596	282	1831	637
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	0.64	0.32				1.28	0.40	1.83	0.56	1.71	1.34	0.30

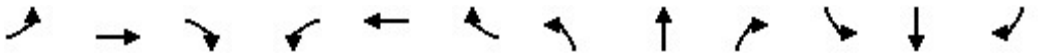
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.83			
Intersection Signal Delay: 250.4		Intersection LOS: F	
Intersection Capacity Utilization 134.1%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

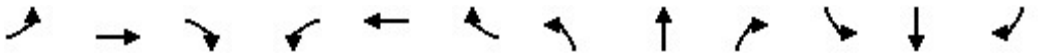




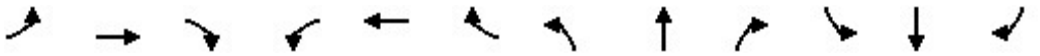
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Future Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	5029	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	2953	333	481	2456	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	94	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	755	41	2953	239	481	2456	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1636	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c0.59		c0.14	0.49	
v/s Ratio Perm	0.26					c0.48			0.15			0.08
v/c Ratio	0.67	0.23				1.34	0.51	1.81	0.47	1.71	1.35	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	32.5	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				165.0	4.9	364.7	3.1	335.0	161.3	0.9
Delay (s)	29.4	20.5				203.7	61.2	405.5	35.6	390.4	199.9	27.7
Level of Service	C	C				F	E	F	D	F	F	C
Approach Delay (s)		25.9			203.7			364.2			218.5	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	261.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	134.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Future Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	50.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.97	1.00	0.98		1.00	0.99	
Frt		0.998				0.850		0.862			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1559	0	1750	1757	0
Flt Permitted	0.110			0.223			0.724			0.700		
Satd. Flow (perm)	203	3491	0	410	3500	1516	1328	1559	0	1284	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				29		79			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		825.2			198.4			580.4			190.6	
Travel Time (s)		49.5			11.9			41.8			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1083	16	148	1560	31	54	7	81	152	37	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1099	0	148	1560	31	54	88	0	152	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%	61.1%	38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	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)	20.0	20.0		20.0	20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)	53.1	53.1		53.1	53.1	53.1	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
v/c Ratio	0.02	0.47		0.54	0.67	0.03	0.20	0.23		0.59	0.14	
Control Delay	8.0	8.3		19.6	11.2	3.2	25.9	8.6		37.1	19.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	8.3		19.6	11.2	3.2	25.9	8.6		37.1	19.1	
LOS	A	A		B	B	A	C	A		D	B	
Approach Delay		8.3			11.8			15.2			32.6	
Approach LOS		A			B			B			C	
Queue Length 50th (m)	0.1	32.7		9.0	57.6	0.1	6.5	1.1		19.8	4.3	
Queue Length 95th (m)	1.5	77.0		#48.2	134.2	3.7	14.9	10.7		36.3	12.1	
Internal Link Dist (m)		801.2			174.4			556.4			166.6	
Turn Bay Length (m)	30.0			50.0		30.0	30.0			30.0		
Base Capacity (vph)	135	2327		273	2332	1020	497	633		481	667	
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	0.02	0.47		0.54	0.67	0.03	0.11	0.14		0.32	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

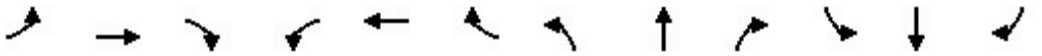
Splits and Phases: 15: Collector 1 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Future Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3491		1748	3500	1519	1743	1556		1744	1756	
Flt Permitted	0.11	1.00		0.22	1.00	1.00	0.72	1.00		0.70	1.00	
Satd. Flow (perm)	203	3491		411	3500	1519	1328	1556		1285	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1083	16	148	1560	31	54	7	81	152	37	14
RTOR Reduction (vph)	0	1	0	0	0	10	0	63	0	0	11	0
Lane Group Flow (vph)	3	1098	0	148	1560	21	54	25	0	152	40	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Effective Green, g (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
Clearance Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
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)	135	2327		274	2333	1012	267	313		258	353	
v/s Ratio Prot		0.31			c0.45			0.02			0.02	
v/s Ratio Perm	0.01			0.36		0.01	0.04			c0.12		
v/c Ratio	0.02	0.47		0.54	0.67	0.02	0.20	0.08		0.59	0.11	
Uniform Delay, d1	4.5	6.4		6.9	8.0	4.5	26.4	25.8		28.8	25.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7		7.4	1.5	0.0	0.4	0.1		3.4	0.1	
Delay (s)	4.8	7.1		14.4	9.5	4.5	26.8	25.9		32.2	26.1	
Level of Service	A	A		B	A	A	C	C		C	C	
Approach Delay (s)		7.1			9.8			26.2			30.7	
Approach LOS		A			A			C			C	

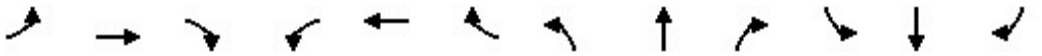
Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1174	11	0	1526	152	0	0	293	0	0	39
Future Volume (vph)	0	1174	11	0	1526	152	0	0	293	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			359.5	
Travel Time (s)		11.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1304	12	0	1696	169	0	0	326	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1316	0	0	1696	169	0	0	326	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

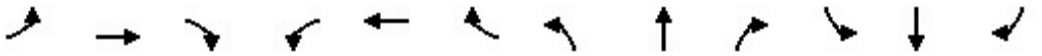
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1174	11	0	1526	152	0	0	293	0	0	39
Future Volume (Veh/h)	0	1174	11	0	1526	152	0	0	293	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1304	12	0	1696	169	0	0	326	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.71			0.85			0.79	0.79	0.85	0.79	0.79	0.71
vC, conflicting volume	1870			1321			2211	3185	668	2684	3022	858
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1407			1015			1114	2353	243	1716	2145	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	49	100	100	94
cM capacity (veh/h)	340			572			119	28	635	22	37	762

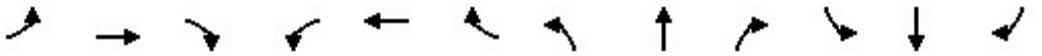
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	869	447	848	848	169	326	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	12	0	0	169	326	43
cSH	1700	1700	1700	1700	1700	635	762
Volume to Capacity	0.51	0.26	0.50	0.50	0.10	0.51	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	22.4	1.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	16.5	10.0
Lane LOS						C	B
Approach Delay (s)	0.0		0.0			16.5	10.0
Approach LOS						C	B

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	58.2%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Future Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.994			0.905			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3482	0	1750	3479	0	1750	1667	0	1750	1805	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	3482	0	1750	3479	0	1750	1667	0	1750	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			580.4	
Travel Time (s)		9.8			17.7			34.4			41.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	532	20	102	657	27	14	48	83	127	91	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	552	0	102	684	0	14	131	0	127	105	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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 43.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	479	18	92	591	24	13	43	75	114	82	13
Future Volume (Veh/h)	3	479	18	92	591	24	13	43	75	114	82	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	532	20	102	657	27	14	48	83	127	91	14
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					245							
pX, platoon unblocked												
vC, conflicting volume	689			557			1150	1446	286	1264	1442	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	689			557			1150	1446	286	1264	1442	352
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			90			71	59	88	0	22	98
cM capacity (veh/h)	897			1005			49	116	704	69	116	638

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	3	355	197	102	438	246	14	131	127	105
Volume Left	3	0	0	102	0	0	14	0	127	0
Volume Right	0	0	20	0	0	27	0	83	0	14
cSH	897	1700	1700	1005	1700	1700	49	246	69	131
Volume to Capacity	0.00	0.21	0.12	0.10	0.26	0.14	0.29	0.53	1.85	0.80
Queue Length 95th (m)	0.1	0.0	0.0	2.6	0.0	0.0	7.5	21.7	87.0	37.1
Control Delay (s)	9.0	0.0	0.0	9.0	0.0	0.0	106.2	35.2	532.0	97.7
Lane LOS	A			A			F	E	F	F
Approach Delay (s)	0.0			1.2			42.0		335.4	
Approach LOS							E		F	

Intersection Summary				
Average Delay	49.4			
Intersection Capacity Utilization	43.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	460	3	28	560	2	20
Future Volume (vph)	460	3	28	560	2	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.850
Flt Protected				0.998	0.950	
Satd. Flow (prot)	3496	0	0	3493	1750	1566
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	3496	0	0	3493	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	511	3	31	622	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	514	0	0	653	2	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	460	3	28	560	2	20
Future Volume (Veh/h)	460	3	28	560	2	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	511	3	31	622	2	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			519		896	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			519		896	267
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	97
cM capacity (veh/h)			1038		269	724

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	341	173	238	415	2	22
Volume Left	0	0	31	0	2	0
Volume Right	0	3	0	0	0	22
cSH	1700	1700	1038	1700	269	724
Volume to Capacity	0.20	0.10	0.03	0.24	0.01	0.03
Queue Length 95th (m)	0.0	0.0	0.7	0.0	0.2	0.7
Control Delay (s)	0.0	0.0	1.4	0.0	18.5	10.1
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.5		10.8	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	0	29	581	0	20
Future Volume (vph)	480	0	29	581	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.998		
Satd. Flow (prot)	3500	0	0	3493	1842	1566
Flt Permitted				0.998		
Satd. Flow (perm)	3500	0	0	3493	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	533	0	32	646	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	533	0	0	678	0	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

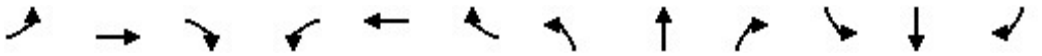
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	480	0	29	581	0	20
Future Volume (Veh/h)	480	0	29	581	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	533	0	32	646	0	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				382		
pX, platoon unblocked						
vC, conflicting volume			538		930	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			538		930	276
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	97
cM capacity (veh/h)			1021		255	714

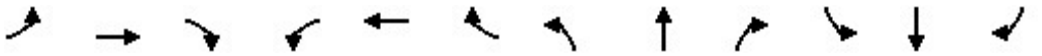
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	355	178	247	431	0	22
Volume Left	0	0	32	0	0	0
Volume Right	0	0	0	0	0	22
cSH	1700	1700	1021	1700	1700	714
Volume to Capacity	0.21	0.10	0.03	0.25	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.7	0.0	0.0	0.7
Control Delay (s)	0.0	0.0	1.4	0.0	0.0	10.2
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.5		10.2	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1107	27	0	1578	100	0	0	18	0	0	466
Future Volume (vph)	0	1107	27	0	1578	100	0	0	18	0	0	466
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1230	30	0	1753	111	0	0	20	0	0	518
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1260	0	0	1753	111	0	0	20	0	0	518
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

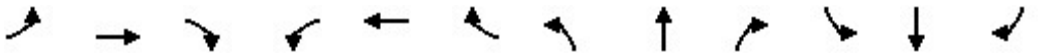
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1107	27	0	1578	100	0	0	18	0	0	466
Future Volume (Veh/h)	0	1107	27	0	1578	100	0	0	18	0	0	466
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1230	30	0	1753	111	0	0	20	0	0	518
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.60			0.76			0.72	0.72	0.76	0.72	0.72	0.60
vC, conflicting volume	1869			1265			2650	3119	640	2398	3023	886
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1108			715			1003	1657	0	653	1524	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	98	100	100	19
cM capacity (veh/h)	372			666			27	69	815	243	83	642

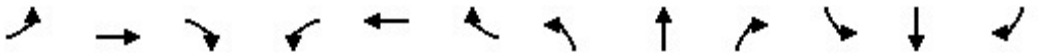
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	820	440	876	876	111	20	518
Volume Left	0	0	0	0	0	0	0
Volume Right	0	30	0	0	111	20	518
cSH	1700	1700	1700	1700	1700	815	642
Volume to Capacity	0.48	0.26	0.52	0.52	0.07	0.02	0.81
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.6	62.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5	29.8
Lane LOS						A	D
Approach Delay (s)	0.0		0.0			9.5	29.8
Approach LOS						A	D

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	79.7%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	664	26	0	760	11	0	0	105	0	0	18
Future Volume (vph)	0	664	26	0	760	11	0	0	105	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.998				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3479	0	0	3493	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3479	0	0	3493	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	738	29	0	844	12	0	0	117	0	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	767	0	0	856	0	0	0	117	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

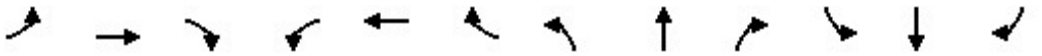
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	664	26	0	760	11	0	0	105	0	0	18
Future Volume (Veh/h)	0	664	26	0	760	11	0	0	105	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	738	29	0	844	12	0	0	117	0	0	20
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	861			772			1204	1618	394	1346	1627	438
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	861			589			1057	1505	180	1210	1514	438
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	96
cM capacity (veh/h)	773			903			157	110	762	106	109	561

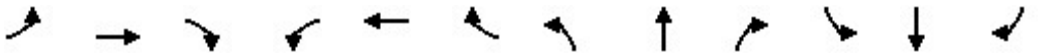
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	492	275	563	293	117	20
Volume Left	0	0	0	0	0	0
Volume Right	0	29	0	12	117	20
cSH	1700	1700	1700	1700	762	561
Volume to Capacity	0.29	0.16	0.33	0.17	0.15	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.1	0.8
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	11.7
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.6	11.7
Approach LOS					B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	33.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	127	0	0	74	0	2212	109	0	2235	131
Future Volume (vph)	0	0	127	0	0	74	0	2212	109	0	2235	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	141	0	0	82	0	2458	121	0	2483	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	141	0	0	82	0	2458	121	0	2483	146
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

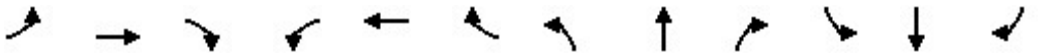
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	127	0	0	74	0	2212	109	0	2235	131
Future Volume (Veh/h)	0	0	127	0	0	74	0	2212	109	0	2235	131
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	141	0	0	82	0	2458	121	0	2483	146
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.69	0.69	0.69	0.69	0.69	0.54	0.69			0.54		
vC, conflicting volume	3394	5072	838	3437	5097	829	2634			2584		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2328	0	0	2364	0	1804			951		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	81	100	100	86	100			100		
cM capacity (veh/h)	599	25	743	565	24	580	233			386		

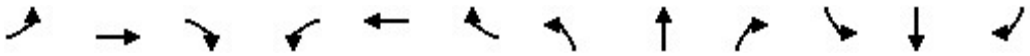
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	141	82	819	819	819	121	828	828	828	146
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	141	82	0	0	0	121	0	0	0	146
cSH	743	580	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.14	0.48	0.48	0.48	0.07	0.49	0.49	0.49	0.09
Queue Length 95th (m)	5.3	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	11.0	12.2	0.0				0.0			
Approach LOS	B	B								

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
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
Ped Bike Factor												
Frt		0.979			0.955			0.998			0.935	
Flt Protected		0.964			0.992			0.977			0.998	
Satd. Flow (prot)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Flt Permitted		0.964			0.992			0.977			0.998	
Satd. Flow (perm)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			275.5			250.4			181.9	
Travel Time (s)		24.8			19.8			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	12	20	6	18	12	113	120	4	8	110	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	129	0	0	36	0	0	237	0	0	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	12	20	6	18	12	113	120	4	8	110	110

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	129	36	237	228
Volume Left (vph)	97	6	113	8
Volume Right (vph)	20	12	4	110
Hadj (s)	0.09	-0.13	0.12	-0.25
Departure Headway (s)	5.1	5.1	4.7	4.4
Degree Utilization, x	0.18	0.05	0.31	0.28
Capacity (veh/h)	641	631	731	779
Control Delay (s)	9.3	8.3	9.8	9.1
Approach Delay (s)	9.3	8.3	9.8	9.1
Approach LOS	A	A	A	A

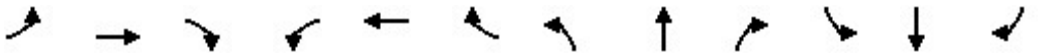
Intersection Summary				
Delay	9.4			
Level of Service	A			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

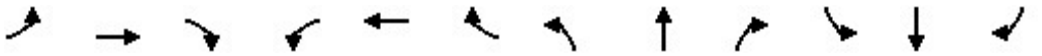
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Future Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	12	20	6	18	12	113	120	4	8	110	110
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.3	9.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	75%	16%	3%
Vol Thru, %	50%	9%	50%	48%
Vol Right, %	2%	16%	34%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	116	32	205
LT Vol	102	87	5	7
Through Vol	108	11	16	99
RT Vol	4	18	11	99
Lane Flow Rate	238	129	36	228
Geometry Grp	1	1	1	1
Degree of Util (X)	0.309	0.182	0.049	0.275
Departure Headway (Hd)	4.685	5.083	4.994	4.348
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	702	713	825
Service Time	2.725	3.135	3.056	2.387
HCM Lane V/C Ratio	0.311	0.184	0.05	0.276
HCM Control Delay	9.8	9.3	8.3	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.7	0.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Future Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.891			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1618	0	1750	1755	0
Flt Permitted	0.086			0.230			0.710			0.714		
Satd. Flow (perm)	158	3500	1515	423	3496	0	1303	1618	0	1310	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			141		1			48			9	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1057	141	91	1714	12	130	18	48	171	52	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1057	141	91	1726	0	130	66	0	171	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.1	38.1	38.1	38.1	38.1		38.5	38.5		38.5	38.5	
Total Split (s)	51.0	51.0	51.0	51.0	51.0		39.0	39.0		39.0	39.0	
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%		43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	44.9	44.9	44.9	44.9	44.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	None	None		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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	46.7	46.7	46.7	46.7	46.7		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
v/c Ratio	0.31	0.49	0.14	0.35	0.80		0.46	0.17		0.60	0.18	
Control Delay	21.9	10.5	2.4	15.1	17.2		29.7	10.5		34.5	20.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.9	10.5	2.4	15.1	17.2		29.7	10.5		34.5	20.9	
LOS	C	B	A	B	B		C	B		C	C	
Approach Delay		9.8			17.1			23.2			30.5	
Approach LOS		A			B			C			C	
Queue Length 50th (m)	1.7	35.5	0.0	5.2	80.0		15.7	2.0		21.4	7.1	
Queue Length 95th (m)	12.6	84.1	8.6	23.6	#203.4		29.4	10.1		38.0	16.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0			30.0			30.0			40.0		
Base Capacity (vph)	96	2148	984	259	2146		561	724		564	761	
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	0.31	0.49	0.14	0.35	0.80		0.23	0.09		0.30	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	

Analysis Period (min) 15

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

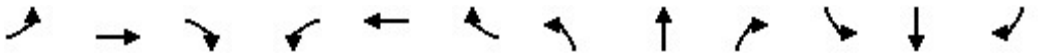
Splits and Phases: 24: Collector 5 & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Future Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3500	1519	1747	3496		1744	1617		1744	1755	
Flt Permitted	0.09	1.00	1.00	0.23	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	158	3500	1519	424	3496		1304	1617		1311	1755	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1057	141	91	1714	12	130	18	48	171	52	20
RTOR Reduction (vph)	0	0	54	0	0	0	0	37	0	0	7	0
Lane Group Flow (vph)	30	1057	87	91	1726	0	130	29	0	171	65	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Effective Green, g (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	97	2151	933	260	2149		285	354		287	384	
v/s Ratio Prot		0.30			c0.49			0.02			0.04	
v/s Ratio Perm	0.19		0.06	0.21			0.10			c0.13		
v/c Ratio	0.31	0.49	0.09	0.35	0.80		0.46	0.08		0.60	0.17	
Uniform Delay, d1	6.9	8.1	6.0	7.2	11.1		25.7	23.5		26.6	24.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	0.8	0.2	0.8	2.3		1.2	0.1		3.3	0.2	
Delay (s)	15.0	8.9	6.2	8.0	13.4		26.8	23.6		29.9	24.2	
Level of Service	B	A	A	A	B		C	C		C	C	
Approach Delay (s)		8.7			13.1			25.8			28.2	
Approach LOS		A			B			C			C	

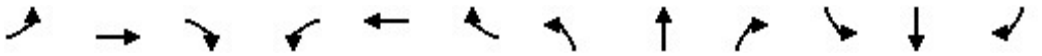
Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Future Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.998			0.917			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3486	0	1750	3493	0	1750	1689	0	1750	1789	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	3486	0	1750	3493	0	1750	1689	0	1750	1789	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	727	19	200	806	12	20	106	131	16	130	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	746	0	200	818	0	20	237	0	16	161	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

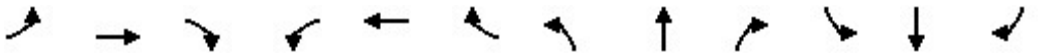


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	654	17	180	725	11	18	95	118	14	117	28
Future Volume (Veh/h)	98	654	17	180	725	11	18	95	118	14	117	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	727	19	200	806	12	20	106	131	16	130	31
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347										
pX, platoon unblocked												
vC, conflicting volume	823			751			1864	2182	383	1988	2186	419
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	823			751			1864	2182	383	1988	2186	419
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 %	86			76			0	0	78	0	0	95
cM capacity (veh/h)	799			850			0	30	609	0	30	577

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	109	485	261	200	537	281	20	237	16	161
Volume Left	109	0	0	200	0	0	20	0	16	0
Volume Right	0	0	19	0	0	12	0	131	0	31
cSH	799	1700	1700	850	1700	1700	0	63	0	36
Volume to Capacity	0.14	0.29	0.15	0.24	0.32	0.17	Err	3.79	Err	4.46
Queue Length 95th (m)	3.6	0.0	0.0	6.9	0.0	0.0	Err	Err	Err	Err
Control Delay (s)	10.2	0.0	0.0	10.5	0.0	0.0	Err	Err	Err	Err
Lane LOS	B			B			F	F	F	F
Approach Delay (s)	1.3			2.1			Err		Err	
Approach LOS							F		F	

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2198	44	131	1946	80
Future Volume (vph)	51	5	26	62	7	62	27	2198	44	131	1946	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.98		1.00	0.98		1.00	1.00			1.00	
Frt		0.876			0.866			0.997			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1586	0	1750	1566	0	1750	5010	0	1750	4992	0
Flt Permitted	0.707			0.734			0.070			0.065		
Satd. Flow (perm)	1296	1586	0	1345	1566	0	129	5010	0	120	4992	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			69			4			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2442	49	146	2162	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	35	0	69	77	0	30	2491	0	146	2251	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



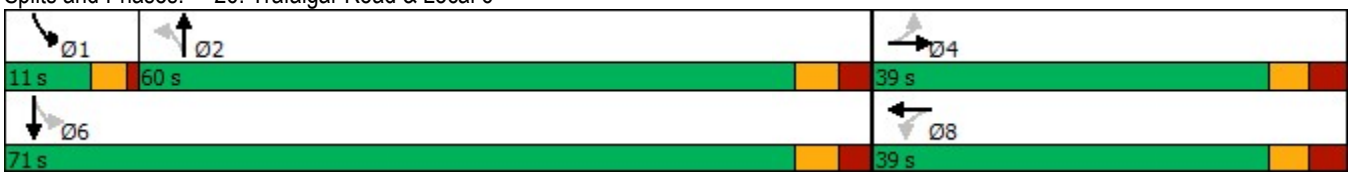
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		33.4	33.4		11.0	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		60.0	60.0		11.0	71.0	
Total Split (%)	35.5%	35.5%		35.5%	35.5%		54.5%	54.5%		10.0%	64.5%	
Maximum Green (s)	32.5	32.5		32.5	32.5		53.6	53.6		7.0	64.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
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	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		20.0	20.0			20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5			5	
Act Effct Green (s)	14.1	14.1		14.1	14.1		57.2	57.2		70.8	69.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.62	0.62		0.77	0.76	
v/c Ratio	0.29	0.14		0.33	0.26		0.38	0.80		0.67	0.59	
Control Delay	37.1	28.3		38.2	11.8		32.0	18.3		32.4	8.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.1	28.3		38.2	11.8		32.0	18.3		32.4	8.6	
LOS	D	C		D	B		C	B		C	A	
Approach Delay		33.8			24.3			18.5			10.0	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	9.0	4.3		11.0	1.2		2.3	106.7		8.5	53.5	
Queue Length 95th (m)	19.1	11.9		22.1	11.9		#18.9	#235.3		#50.0	141.7	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	462	569		479	602		80	3122		217	3789	
Starvation Cap Reductn	0	0		0	0		0	0		0	174	
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	0.06		0.14	0.13		0.38	0.80		0.67	0.62	

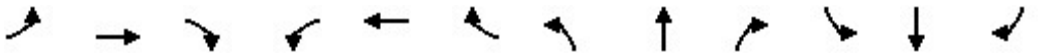
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 91.9			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	

Analysis Period (min) 15

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

Splits and Phases: 26: Trafalgar Road & Local 6

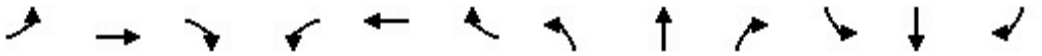




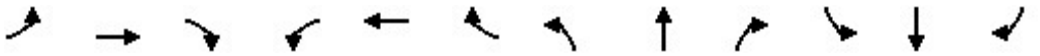
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2198	44	131	1946	80
Future Volume (vph)	51	5	26	62	7	62	27	2198	44	131	1946	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1743	1580		1743	1559		1749	5011		1750	4993	
Flt Permitted	0.71	1.00		0.73	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	1297	1580		1347	1559		129	5011		120	4993	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2442	49	146	2162	89
RTOR Reduction (vph)	0	6	0	0	60	0	0	2	0	0	3	0
Lane Group Flow (vph)	57	29	0	69	17	0	30	2489	0	146	2248	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.9	11.9		11.9	11.9		57.2	57.2		68.3	68.3	
Effective Green, g (s)	11.9	11.9		11.9	11.9		57.2	57.2		68.3	68.3	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.61	0.61		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	201		172	199		79	3078		212	3662	
v/s Ratio Prot		0.02			0.01			c0.50		0.05	c0.45	
v/s Ratio Perm	0.04			c0.05			0.23			0.45		
v/c Ratio	0.35	0.14		0.40	0.08		0.38	0.81		0.69	0.61	
Uniform Delay, d1	37.0	36.1		37.3	35.8		9.0	13.8		19.7	6.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.3		1.5	0.2		13.3	2.4		9.0	0.8	
Delay (s)	38.3	36.4		38.9	36.0		22.3	16.2		28.6	6.8	
Level of Service	D	D		D	D		C	B		C	A	
Approach Delay (s)		37.6			37.3			16.2			8.1	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	93.1	Sum of lost time (s)	16.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Future Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		30.0	85.0		30.0	90.0		0.0	60.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98	1.00		0.98		1.00			1.00	
Frt			0.850			0.850		0.985			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4936	0	1750	4973	0
Flt Permitted	0.685			0.540			0.075			0.080		
Satd. Flow (perm)	1262	1842	1532	990	1842	1534	138	4936	0	147	4973	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156			67		20			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2388	268	161	1972	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	124	156	222	111	36	220	2656	0	161	2101	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	14.0	59.0		11.0	56.0	
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	11.7%	49.2%		9.2%	46.7%	
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	10.0	52.6		7.0	49.6	
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0		20.0			20.0	
Pedestrian Calls (#/hr)	5	5	5		5	5		5			5	
Act Effct Green (s)	15.7	15.7	15.7	29.3	26.8	26.8	65.4	52.9		59.3	49.9	
Actuated g/C Ratio	0.15	0.15	0.15	0.28	0.26	0.26	0.63	0.51		0.57	0.48	
v/c Ratio	0.51	0.45	0.43	0.67	0.23	0.08	0.91	1.05		0.83	0.88	
Control Delay	49.1	44.3	9.5	41.6	30.8	1.8	63.7	59.1		55.1	30.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.1	44.3	9.5	41.6	30.8	1.8	63.7	59.1		55.1	30.2	
LOS	D	D	A	D	C	A	E	E		E	C	
Approach Delay		31.1			34.5			59.5			32.0	
Approach LOS		C			C			E			C	
Queue Length 50th (m)	18.1	22.9	0.0	36.5	17.6	0.0	26.5	~202.0		15.0	125.4	
Queue Length 95th (m)	33.1	39.3	15.7	56.5	30.6	2.1	#89.3	#307.7		#64.9	#219.7	
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		30.0	85.0		30.0	90.0			60.0		
Base Capacity (vph)	397	580	589	331	777	685	243	2528		193	2397	
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	0.24	0.21	0.26	0.67	0.14	0.05	0.91	1.05		0.83	0.88	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 103.7			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 45.5		Intersection LOS: D	
Intersection Capacity Utilization 88.2%		ICU Level of Service E	

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

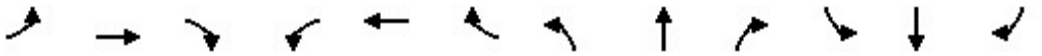
Splits and Phases: 27: Trafalgar Road & Settlers Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Future Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1842	1528	1746	1842	1533	1750	4936		1750	4972	
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1263	1842	1528	994	1842	1533	139	4936		148	4972	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2388	268	161	1972	129
RTOR Reduction (vph)	0	0	132	0	0	27	0	10	0	0	5	0
Lane Group Flow (vph)	97	124	24	222	111	9	220	2646	0	161	2096	0
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	15.8	15.8	15.8	26.8	26.8	26.8	63.1	53.0		56.9	49.9	
Effective Green, g (s)	15.8	15.8	15.8	26.8	26.8	26.8	63.1	53.0		56.9	49.9	
Actuated g/C Ratio	0.15	0.15	0.15	0.26	0.26	0.26	0.61	0.51		0.55	0.48	
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
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)	192	280	232	307	476	396	241	2522		189	2392	
v/s Ratio Prot		0.07		c0.05	0.06		c0.09	c0.54		0.06	0.42	
v/s Ratio Perm	0.08		0.02	c0.14		0.01	0.47			0.41		
v/c Ratio	0.51	0.44	0.10	0.72	0.23	0.02	0.91	1.05		0.85	0.88	
Uniform Delay, d1	40.4	39.9	37.8	34.4	30.3	28.7	29.0	25.4		24.8	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.1	0.2	8.2	0.3	0.0	35.3	32.5		29.0	4.9	
Delay (s)	42.4	41.1	38.0	42.6	30.6	28.7	64.3	57.9		53.8	29.0	
Level of Service	D	D	D	D	C	C	E	E		D	C	
Approach Delay (s)		40.2			37.6			58.4			30.8	
Approach LOS		D			D			E			C	

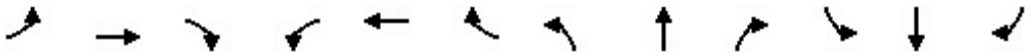
Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	20.9
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Future Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
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
Ped Bike Factor												
Frt		0.974			0.983			0.938			0.994	
Flt Protected		0.997			0.981			0.993			0.989	
Satd. Flow (prot)	0	1789	0	0	1776	0	0	1716	0	0	1811	0
Flt Permitted		0.997			0.981			0.993			0.989	
Satd. Flow (perm)	0	1789	0	0	1776	0	0	1716	0	0	1811	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	143	36	116	140	37	32	86	100	39	122	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	293	0	0	218	0	0	169	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Future Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	143	36	116	140	37	32	86	100	39	122	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	189	293	218	169
Volume Left (vph)	10	116	32	39
Volume Right (vph)	36	37	100	8
Hadj (s)	-0.07	0.04	-0.21	0.05
Departure Headway (s)	5.4	5.3	5.3	5.7
Degree Utilization, x	0.28	0.43	0.32	0.27
Capacity (veh/h)	605	630	611	572
Control Delay (s)	10.5	12.4	10.8	10.7
Approach Delay (s)	10.5	12.4	10.8	10.7
Approach LOS	B	B	B	B

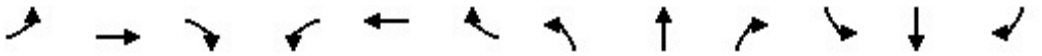
Intersection Summary				
Delay	11.3			
Level of Service	B			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	129	32	104	126	33	29	77	90	35	110	7
Future Vol, veh/h	9	129	32	104	126	33	29	77	90	35	110	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	143	36	116	140	37	32	86	100	39	122	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

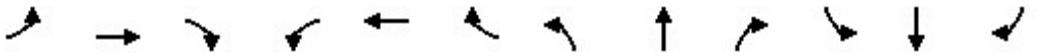
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.5	12.3	10.8	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	5%	40%	23%
Vol Thru, %	39%	76%	48%	72%
Vol Right, %	46%	19%	13%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	170	263	152
LT Vol	29	9	104	35
Through Vol	77	129	126	110
RT Vol	90	32	33	7
Lane Flow Rate	218	189	292	169
Geometry Grp	1	1	1	1
Degree of Util (X)	0.32	0.282	0.431	0.264
Departure Headway (Hd)	5.288	5.376	5.313	5.623
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	679	667	678	637
Service Time	3.331	3.421	3.354	3.67
HCM Lane V/C Ratio	0.321	0.283	0.431	0.265
HCM Control Delay	10.8	10.5	12.3	10.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.2	2.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
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
Ped Bike Factor												
Frt		0.967			0.989			0.990			0.948	
Flt Protected		0.986			0.995			0.994			0.998	
Satd. Flow (prot)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Flt Permitted		0.986			0.995			0.994			0.998	
Satd. Flow (perm)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	146	236	122	22	193	19	27	191	17	13	152	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	504	0	0	234	0	0	235	0	0	267	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	146	236	122	22	193	19	27	191	17	13	152	102

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	504	234	235	267
Volume Left (vph)	146	22	27	13
Volume Right (vph)	122	19	17	102
Hadj (s)	-0.05	0.00	0.01	-0.19
Departure Headway (s)	6.2	6.9	7.1	6.8
Degree Utilization, x	0.87	0.45	0.46	0.50
Capacity (veh/h)	560	472	465	488
Control Delay (s)	36.7	15.3	15.9	16.4
Approach Delay (s)	36.7	15.3	15.9	16.4
Approach LOS	E	C	C	C

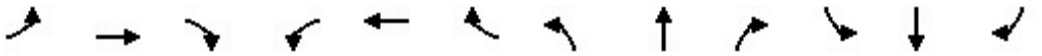
Intersection Summary				
Delay	24.3			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	23.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Future Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	236	122	22	193	19	27	191	17	13	152	102
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

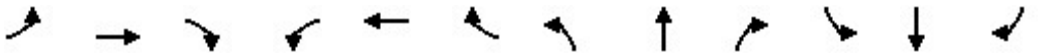
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	35.6	15.2	15.8	16.3
HCM LOS	E	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	29%	9%	5%
Vol Thru, %	82%	47%	82%	57%
Vol Right, %	7%	24%	8%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	453	211	241
LT Vol	24	131	20	12
Through Vol	172	212	174	137
RT Vol	15	110	17	92
Lane Flow Rate	234	503	234	268
Geometry Grp	1	1	1	1
Degree of Util (X)	0.454	0.857	0.441	0.498
Departure Headway (Hd)	6.979	6.127	6.774	6.7
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	513	589	527	533
Service Time	5.075	4.201	4.87	4.792
HCM Lane V/C Ratio	0.456	0.854	0.444	0.503
HCM Control Delay	15.8	35.6	15.2	16.3
HCM Lane LOS	C	E	C	C
HCM 95th-tile Q	2.3	9.4	2.2	2.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
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
Ped Bike Factor												
Frt		0.981			0.967			0.982			0.940	
Flt Protected		0.982			0.993			0.992			0.995	
Satd. Flow (prot)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Flt Permitted		0.982			0.993			0.992			0.995	
Satd. Flow (perm)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	131	38	31	142	57	23	102	19	23	112	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	0	0	230	0	0	144	0	0	242	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	131	38	31	142	57	23	102	19	23	112	107

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	266	230	144	242
Volume Left (vph)	97	31	23	23
Volume Right (vph)	38	57	19	107
Hadj (s)	0.02	-0.09	-0.01	-0.21
Departure Headway (s)	5.4	5.3	5.7	5.3
Degree Utilization, x	0.40	0.34	0.23	0.36
Capacity (veh/h)	621	620	558	620
Control Delay (s)	11.9	11.1	10.3	11.2
Approach Delay (s)	11.9	11.1	10.3	11.2
Approach LOS	B	B	B	B

Intersection Summary				
Delay	11.2			
Level of Service	B			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Future Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	131	38	31	142	57	23	102	19	23	112	107
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	11.1	10.3	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	36%	14%	10%
Vol Thru, %	71%	49%	62%	46%
Vol Right, %	13%	14%	25%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	239	207	218
LT Vol	21	87	28	21
Through Vol	92	118	128	101
RT Vol	17	34	51	96
Lane Flow Rate	144	266	230	242
Geometry Grp	1	1	1	1
Degree of Util (X)	0.226	0.395	0.339	0.355
Departure Headway (Hd)	5.64	5.359	5.313	5.278
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	636	672	676	681
Service Time	3.689	3.399	3.355	3.322
HCM Lane V/C Ratio	0.226	0.396	0.34	0.355
HCM Control Delay	10.3	11.9	11.1	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.9	1.9	1.5	1.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	21	2566	101	0	2087
Future Volume (vph)	0	21	2566	101	0	2087
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.80	0.91	1.00	*0.80
Frt		0.865	0.994			
Flt Protected						
Satd. Flow (prot)	0	1593	4394	0	0	4421
Flt Permitted						
Satd. Flow (perm)	0	1593	4394	0	0	4421
Link Speed (k/h)	50		60			60
Link Distance (m)	87.7		148.7			268.7
Travel Time (s)	6.3		8.9			16.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	23	2851	112	0	2319
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	2963	0	0	2319
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

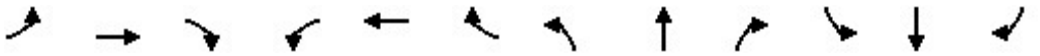
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



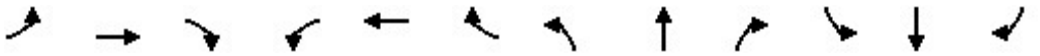
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	21	2566	101	0	2087
Future Volume (Veh/h)	0	21	2566	101	0	2087
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	2851	112	0	2319
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.68	0.50			0.50	
vC, conflicting volume	3680	1006			2963	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			1396	
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	96			100	
cM capacity (veh/h)	697	537			241	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	23	1140	1140	682	773	773	773
Volume Left	0	0	0	0	0	0	0
Volume Right	23	0	0	112	0	0	0
cSH	537	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.67	0.67	0.40	0.45	0.45	0.45
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.0	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Future Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	90.0		30.0	110.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	1.00		0.98		1.00			1.00	
Frt			0.850			0.850		0.993				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4985	0	1750	5028	0
Flt Permitted	0.691			0.540			0.077			0.084		
Satd. Flow (perm)	1267	1842	1532	990	1842	1534	142	4985	0	155	5028	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			104		8				
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	2919	150	101	2219	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	110	169	162	102	72	247	3069	0	101	2223	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	16.0	59.0		11.0	54.0	
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	13.3%	49.2%		9.2%	45.0%	
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	12.0	52.6		7.0	47.6	
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	25.0	25.0	25.0		25.0	25.0		20.0			20.0	
Pedestrian Calls (#/hr)	5	5	5		5	5		5			5	
Act Effct Green (s)	14.7	14.7	14.7	28.3	25.7	25.7	66.4	52.9		57.3	47.9	
Actuated g/C Ratio	0.14	0.14	0.14	0.28	0.25	0.25	0.65	0.52		0.56	0.47	
v/c Ratio	0.12	0.42	0.47	0.50	0.22	0.16	0.88	1.19		0.52	0.95	
Control Delay	37.9	44.1	9.9	35.0	30.9	2.7	56.2	116.5		23.2	37.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	37.9	44.1	9.9	35.0	30.9	2.7	56.2	116.5		23.2	37.2	
LOS	D	D	A	C	C	A	E	F		C	D	
Approach Delay		24.4			26.8			112.0			36.6	
Approach LOS		C			C			F			D	
Queue Length 50th (m)	3.7	20.1	0.0	25.6	16.1	0.0	30.2	~255.7		6.0	138.9	
Queue Length 95th (m)	10.1	35.4	16.1	41.7	28.6	4.6	#97.0	#380.2		#27.3	#247.0	
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		30.0	90.0		30.0	110.0			30.0		
Base Capacity (vph)	403	586	602	324	784	713	280	2572		196	2343	
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	0.05	0.19	0.28	0.50	0.13	0.10	0.88	1.19		0.52	0.95	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.7			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 75.4		Intersection LOS: E	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	

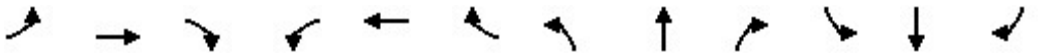
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

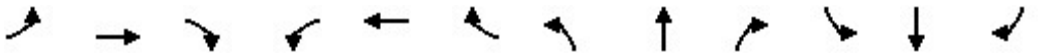




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Future Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1743	1842	1528	1746	1842	1533	1750	4984		1750	5027	
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1268	1842	1528	993	1842	1533	142	4984		154	5027	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	2919	150	101	2219	4
RTOR Reduction (vph)	0	0	145	0	0	54	0	4	0	0	0	0
Lane Group Flow (vph)	21	110	24	162	102	18	247	3065	0	101	2223	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	14.8	14.8	14.8	25.8	25.8	25.8	64.0	53.0		54.9	47.9	
Effective Green, g (s)	14.8	14.8	14.8	25.8	25.8	25.8	64.0	53.0		54.9	47.9	
Actuated g/C Ratio	0.14	0.14	0.14	0.25	0.25	0.25	0.62	0.52		0.53	0.47	
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4		4.0	6.4	
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)	182	265	220	300	462	385	277	2572		191	2344	
v/s Ratio Prot		0.06		c0.04	0.06		c0.10	c0.62		0.04	0.44	
v/s Ratio Perm	0.02		0.02	c0.10		0.01	0.45			0.25		
v/c Ratio	0.12	0.42	0.11	0.54	0.22	0.05	0.89	1.19		0.53	0.95	
Uniform Delay, d1	38.3	40.0	38.2	32.2	30.5	29.1	30.4	24.9		21.7	26.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.1	0.2	2.0	0.2	0.1	28.0	90.4		2.6	9.9	
Delay (s)	38.5	41.1	38.5	34.2	30.7	29.2	58.4	115.3		24.4	36.1	
Level of Service	D	D	D	C	C	C	E	F		C	D	
Approach Delay (s)		39.4			32.1			111.0			35.6	
Approach LOS		D			C			F			D	

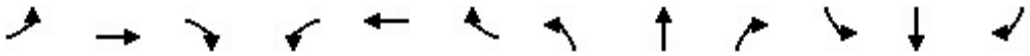
Intersection Summary			
HCM 2000 Control Delay	75.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	20.9
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Future Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
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
Ped Bike Factor												
Frt		0.997			0.908			0.982			0.987	
Flt Protected		0.989			0.999			0.997			0.969	
Satd. Flow (prot)	0	1816	0	0	1671	0	0	1803	0	0	1762	0
Flt Permitted		0.989			0.999			0.997			0.969	
Satd. Flow (perm)	0	1816	0	0	1671	0	0	1803	0	0	1762	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	120	4	6	86	197	4	54	9	149	59	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	289	0	0	67	0	0	231	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Future Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	120	4	6	86	197	4	54	9	149	59	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	160	289	67	231
Volume Left (vph)	36	6	4	149
Volume Right (vph)	4	197	9	23
Hadj (s)	0.06	-0.37	-0.03	0.10
Departure Headway (s)	5.2	4.6	5.4	5.2
Degree Utilization, x	0.23	0.37	0.10	0.33
Capacity (veh/h)	643	739	588	640
Control Delay (s)	9.7	10.2	8.9	10.8
Approach Delay (s)	9.7	10.2	8.9	10.8
Approach LOS	A	B	A	B

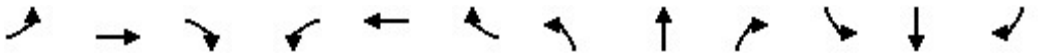
Intersection Summary				
Delay	10.2			
Level of Service	B			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	108	4	5	77	177	4	49	8	134	53	21
Future Vol, veh/h	32	108	4	5	77	177	4	49	8	134	53	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	120	4	6	86	197	4	54	9	149	59	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

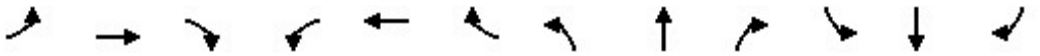
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	10.1	8.9	10.7
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	22%	2%	64%
Vol Thru, %	80%	75%	30%	25%
Vol Right, %	13%	3%	68%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	144	259	208
LT Vol	4	32	5	134
Through Vol	49	108	77	53
RT Vol	8	4	177	21
Lane Flow Rate	68	160	288	231
Geometry Grp	1	1	1	1
Degree of Util (X)	0.101	0.225	0.36	0.329
Departure Headway (Hd)	5.342	5.072	4.506	5.125
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	675	699	791	693
Service Time	3.342	3.161	2.581	3.212
HCM Lane V/C Ratio	0.101	0.229	0.364	0.333
HCM Control Delay	8.9	9.7	10.1	10.7
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.3	0.9	1.6	1.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
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
Ped Bike Factor												
Frt		0.968			0.987			0.949			0.921	
Flt Protected		0.980			0.973			0.991			0.998	
Satd. Flow (prot)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Flt Permitted		0.980			0.973			0.991			0.998	
Satd. Flow (perm)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	118	76	121	78	22	76	177	153	13	99	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	323	0	0	221	0	0	406	0	0	271	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	129	118	76	121	78	22	76	177	153	13	99	159

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	323	221	406	271
Volume Left (vph)	129	121	76	13
Volume Right (vph)	76	22	153	159
Hadj (s)	-0.03	0.08	-0.15	-0.31
Departure Headway (s)	6.7	7.0	6.3	6.5
Degree Utilization, x	0.60	0.43	0.71	0.49
Capacity (veh/h)	491	442	542	492
Control Delay (s)	19.0	15.3	23.0	15.4
Approach Delay (s)	19.0	15.3	23.0	15.4
Approach LOS	C	C	C	C

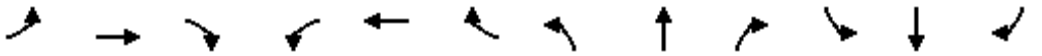
Intersection Summary				
Delay	18.9			
Level of Service	C			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

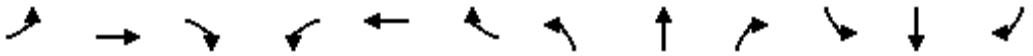
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Future Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	129	118	76	121	78	22	76	177	153	13	99	159
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.8	15.2	22.6	15.3
HCM LOS	C	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	40%	55%	5%
Vol Thru, %	44%	37%	35%	36%
Vol Right, %	38%	23%	10%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	365	290	199	244
LT Vol	68	116	109	12
Through Vol	159	106	70	89
RT Vol	138	68	20	143
Lane Flow Rate	406	322	221	271
Geometry Grp	1	1	1	1
Degree of Util (X)	0.699	0.589	0.427	0.48
Departure Headway (Hd)	6.207	6.577	6.948	6.371
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	580	545	515	561
Service Time	4.287	4.664	5.048	4.462
HCM Lane V/C Ratio	0.7	0.591	0.429	0.483
HCM Control Delay	22.6	18.8	15.2	15.3
HCM Lane LOS	C	C	C	C
HCM 95th-tile Q	5.5	3.8	2.1	2.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Future Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3394	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			121			89			194
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	1.35	0.84	0.25	1.38	1.01	1.02	1.08	1.25	0.10	1.39	1.29	0.54
Control Delay	218.8	54.2	9.3	228.6	77.1	80.7	126.7	157.4	2.5	250.0	176.6	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	218.8	54.2	9.3	228.6	77.1	80.7	126.7	157.4	2.5	250.0	176.6	19.5
LOS	F	D	A	F	E	F	F	F	A	F	F	B
Approach Delay		107.9			116.4			148.7			162.4	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~103.9	122.8	3.3	~104.7	~158.1	~142.2	~61.9	~294.0	0.0	~48.7	~273.5	32.6
Queue Length 95th (m)	#140.0	149.0	18.9	#140.8	#204.8	#213.3	#94.1	#326.2	4.6	#76.9	#306.6	63.0
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	412	1065	559	404	1065	560	363	1629	622	186	1439	634
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	1.35	0.84	0.25	1.38	1.01	1.02	1.08	1.25	0.10	1.39	1.29	0.54

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.39	
Intersection Signal Delay: 137.0	Intersection LOS: F

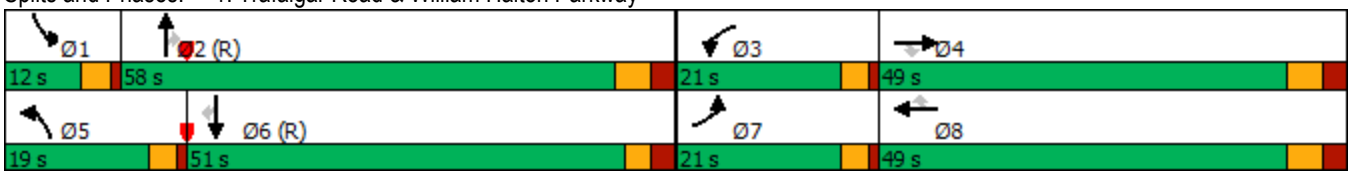
Intersection Capacity Utilization 103.2%	ICU Level of Service G
Analysis Period (min) 15	

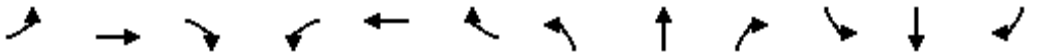
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway



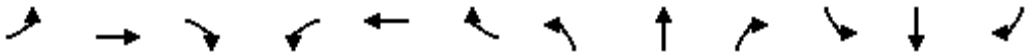


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Future Volume (vph)	518	836	127	517	996	531	364	1900	58	240	1733	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	557	899	137	556	1071	571	391	2043	62	258	1863	343
RTOR Reduction (vph)	0	0	83	0	0	84	0	0	39	0	0	131
Lane Group Flow (vph)	557	899	54	556	1071	487	391	2043	23	258	1863	212
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1629	566	186	1439	503
v/s Ratio Prot	0.16	0.26		c0.17	0.31		c0.12	c0.46		c0.08	0.42	
v/s Ratio Perm			0.03			c0.31			0.01			0.14
v/c Ratio	1.35	0.84	0.11	1.38	1.01	1.02	1.08	1.25	0.04	1.39	1.29	0.42
Uniform Delay, d1	61.5	45.6	35.1	61.5	48.7	48.7	62.5	44.2	28.3	66.0	47.2	36.9
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	173.7	6.9	0.2	184.3	29.0	47.1	69.4	119.6	0.1	203.8	137.9	2.6
Delay (s)	235.2	52.5	35.3	245.8	77.7	95.8	131.9	163.8	28.5	269.8	185.1	39.5
Level of Service	F	D	D	F	E	F	F	F	C	F	F	D
Approach Delay (s)		114.9			124.9			155.4			173.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	145.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Future Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3500	1566	1750	3500	1566	1750	4415	1559	1750	4372	1559
Flt Permitted	0.543			0.319			0.092			0.085		
Satd. Flow (perm)	953	3500	1566	588	3500	1566	169	4415	1559	157	4372	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			175			155			104			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	186	341	175	344	329	155	134	2105	193	195	1759	282
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	341	175	344	329	155	134	2105	193	195	1759	282
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	23.0	42.0	42.0	23.0	42.0	42.0	11.0	44.0	44.0	11.0	44.0	44.0
Total Split (%)	19.2%	35.0%	35.0%	19.2%	35.0%	35.0%	9.2%	36.7%	36.7%	9.2%	36.7%	36.7%
Maximum Green (s)	19.0	35.6	35.6	19.0	35.6	35.6	7.0	37.7	37.7	7.0	37.7	37.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	34.6	17.3	17.3	41.1	21.1	21.1	56.9	43.4	43.4	69.6	52.1	52.1
Actuated g/C Ratio	0.29	0.14	0.14	0.34	0.18	0.18	0.47	0.36	0.36	0.58	0.43	0.43
v/c Ratio	0.51	0.68	0.47	0.90	0.54	0.39	0.59	1.32	0.31	0.55	0.93	0.38
Control Delay	33.1	55.4	10.6	59.1	48.5	9.5	31.0	180.6	14.7	27.7	42.6	17.1
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	33.1	55.4	10.6	59.1	48.5	9.5	31.0	180.6	14.7	27.7	42.6	17.1
LOS	C	E	B	E	D	A	C	F	B	C	D	B
Approach Delay		38.3			45.6			159.2			38.1	
Approach LOS		D			D			F			D	
Queue Length 50th (m)	31.6	40.7	0.0	64.6	37.5	0.0	13.6	~261.1	13.8	25.3	159.5	26.5
Queue Length 95th (m)	46.6	53.3	18.5	#96.9	51.6	17.4	34.6	#321.0	34.3	51.1	#233.7	55.4
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	420	1038	587	385	1038	573	227	1597	630	354	1898	736
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.33	0.30	0.89	0.32	0.27	0.59	1.32	0.31	0.55	0.93	0.38

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: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 86.6		Intersection LOS: F	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	

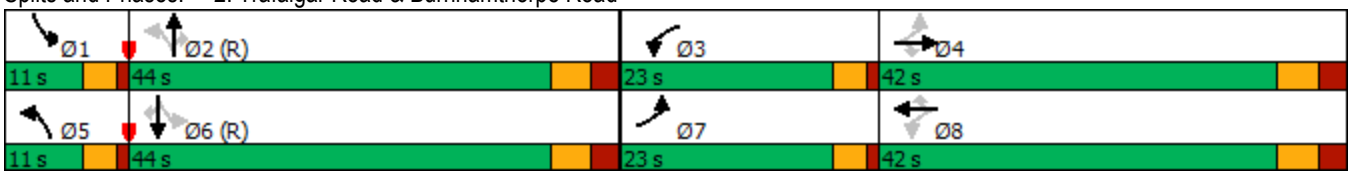
Analysis Period (min) 15

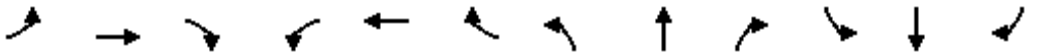
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Future Volume (vph)	177	324	166	327	313	147	127	2000	183	185	1671	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	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)	1668	3500	1566	1750	3500	1566	1750	4415	1559	1750	4372	1559
Flt Permitted	0.54	1.00	1.00	0.32	1.00	1.00	0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	953	3500	1566	588	3500	1566	170	4415	1559	156	4372	1559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	341	175	344	329	155	134	2105	193	195	1759	282
RTOR Reduction (vph)	0	0	150	0	0	128	0	0	66	0	0	60
Lane Group Flow (vph)	186	341	25	344	329	27	134	2105	127	195	1759	223
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
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)	32.3	17.3	17.3	39.9	21.1	21.1	54.5	43.3	43.3	67.2	52.0	52.0
Effective Green, g (s)	32.3	17.3	17.3	39.9	21.1	21.1	54.5	43.3	43.3	67.2	52.0	52.0
Actuated g/C Ratio	0.27	0.14	0.14	0.33	0.18	0.18	0.45	0.36	0.36	0.56	0.43	0.43
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	345	504	225	377	615	275	224	1593	562	351	1894	675
v/s Ratio Prot	0.07	0.10		c0.14	0.09		0.06	c0.48		c0.09	c0.40	
v/s Ratio Perm	0.08		0.02	c0.16		0.02	0.21		0.08	0.22		0.14
v/c Ratio	0.54	0.68	0.11	0.91	0.53	0.10	0.60	1.32	0.23	0.56	0.93	0.33
Uniform Delay, d1	36.1	48.7	44.7	34.1	45.0	41.5	24.7	38.4	26.7	26.5	32.2	22.5
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	1.6	3.6	0.2	25.8	0.9	0.2	4.3	149.1	0.9	1.9	9.5	1.3
Delay (s)	37.7	52.3	44.9	59.9	45.9	41.6	28.9	187.5	27.6	28.4	41.8	23.8
Level of Service	D	D	D	E	D	D	C	F	C	C	D	C
Approach Delay (s)		46.6			50.9			166.1			38.4	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	91.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1166	1	993	1661	0	871
Future Volume (vph)	1166	1	993	1661	0	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	2		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	0.97	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	3395	3500	1842	1566
Flt Permitted			0.096			
Satd. Flow (perm)	3433	0	343	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						565
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1215	1	1034	1730	0	907
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1216	0	1034	1730	0	907
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			7.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	44.0		44.0	88.0	32.0	32.0
Total Split (%)	36.7%		36.7%	73.3%	26.7%	26.7%
Maximum Green (s)	37.6		40.0	81.6	28.0	28.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	37.7		78.6	76.2		28.1
Actuated g/C Ratio	0.33		0.69	0.66		0.24
v/c Ratio	1.08		0.90	0.74		1.12
Control Delay	88.4		39.7	15.1		86.8
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	88.4		39.7	15.1		86.8
LOS	F		D	B		F
Approach Delay	88.4			24.3	86.8	
Approach LOS	F			C	F	
Queue Length 50th (m)	~164.0		96.1	123.3		~134.0
Queue Length 95th (m)	#216.4		122.6	148.9		#216.2
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1127		1301	2494		809
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	1.08		0.79	0.69		1.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 114.7			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 51.9		Intersection LOS: D	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			

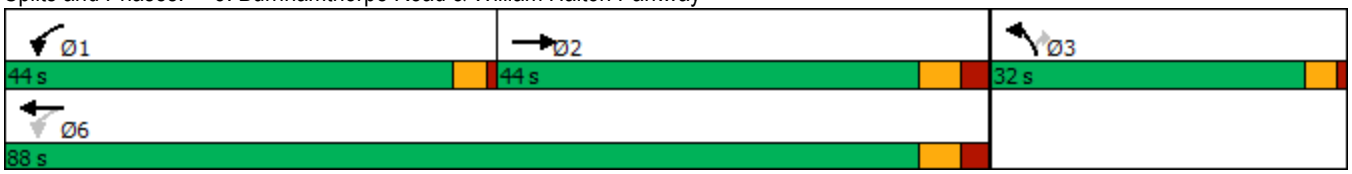
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

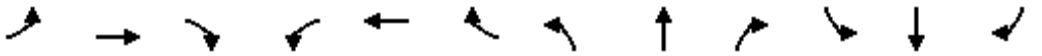
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



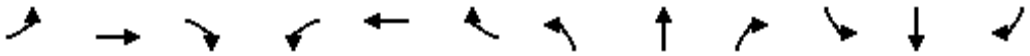


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1166	1	993	1661	0	871
Future Volume (vph)	1166	1	993	1661	0	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		0.97	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		3395	3500		1566
Flt Permitted	1.00		0.10	1.00		1.00
Satd. Flow (perm)	3432		343	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1215	1	1034	1730	0	907
RTOR Reduction (vph)	0	0	0	0	0	427
Lane Group Flow (vph)	1216	0	1034	1730	0	480
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	37.7		76.3	76.3		28.1
Effective Green, g (s)	37.7		76.3	76.3		28.1
Actuated g/C Ratio	0.33		0.66	0.66		0.24
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1127		1147	2326		383
v/s Ratio Prot	c0.35		c0.27	0.49		
v/s Ratio Perm			0.33			c0.31
v/c Ratio	1.08		0.90	0.74		1.25
Uniform Delay, d1	38.5		31.5	12.8		43.3
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	50.8		9.9	1.3		134.1
Delay (s)	89.4		41.4	14.1		177.4
Level of Service	F		D	B		F
Approach Delay (s)	89.4			24.3	177.4	
Approach LOS	F			C	F	

Intersection Summary			
HCM 2000 Control Delay	68.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	114.8	Sum of lost time (s)	14.4
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Future Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	3395	4421	1566	3395	4421	1566	3362	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3394	4378	1527	3391	4421	1540	3392	4421	1541	3361	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			162			96			151
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			1233.0	
Travel Time (s)		30.4			42.0			38.7			74.0	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	2.11	1.04	0.29	1.26	1.13	1.08	1.35	1.29	0.40	2.82	0.91	0.66
Control Delay	541.2	72.6	9.0	192.8	104.5	90.7	228.8	173.7	21.6	851.7	52.4	28.7
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	541.2	72.6	9.0	192.8	104.5	90.7	228.8	173.7	21.6	851.7	52.4	28.7
LOS	F	E	A	F	F	F	F	F	C	F	D	C
Approach Delay		173.2			110.2			166.5			268.5	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~115.3	~195.0	7.6	~48.7	~225.2	~179.2	~55.0	~254.5	25.7	~147.4	134.9	55.3
Queue Length 95th (m)	#150.4	#228.7	24.4	#77.4	#258.7	#253.8	#84.3	#287.7	48.3	#184.2	#165.7	91.6
Internal Link Dist (m)		568.0			792.3			620.9			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1636	663	235	1618	666	235	1448	569	232	1448	605
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	2.11	1.04	0.29	1.26	1.13	1.08	1.35	1.29	0.40	2.82	0.91	0.66

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.82	
Intersection Signal Delay: 176.3	Intersection LOS: F

Intersection Capacity Utilization 122.4%	ICU Level of Service H
Analysis Period (min) 15	

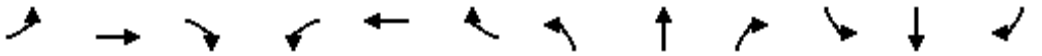
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

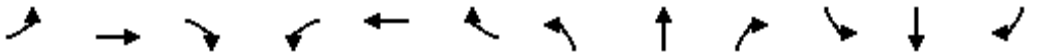




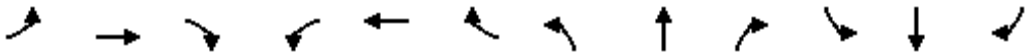
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Future Volume (vph)	534	1647	188	286	1770	700	308	1816	223	634	1281	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Flt Permitted	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 (perm)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	551	1698	194	295	1825	722	318	1872	230	654	1321	400
RTOR Reduction (vph)	0	0	93	0	0	103	0	0	65	0	0	102
Lane Group Flow (vph)	551	1698	101	295	1825	619	318	1872	165	654	1321	298
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1636	570	235	1618	563	235	1448	504	232	1448	503
v/s Ratio Prot	c0.16	0.39		0.09	c0.41		0.09	c0.42		c0.19	0.30	
v/s Ratio Perm			0.07			0.40			0.11			0.19
v/c Ratio	2.11	1.04	0.18	1.26	1.13	1.10	1.35	1.29	0.33	2.82	0.91	0.59
Uniform Delay, d1	60.0	40.7	27.3	60.5	41.2	41.2	60.5	43.7	32.9	60.5	41.9	36.5
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	512.8	32.7	0.7	144.8	66.1	68.2	184.3	137.0	0.8	830.4	9.5	2.8
Delay (s)	572.8	73.4	28.0	205.3	107.3	109.4	244.8	180.7	33.7	890.9	51.4	39.3
Level of Service	F	E	C	F	F	F	F	F	C	F	D	D
Approach Delay (s)		182.5			118.0			175.2			280.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	185.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	122.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



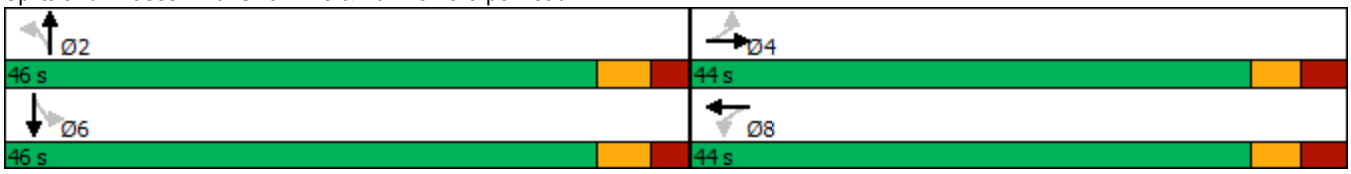
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Future Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.958			0.976			0.952			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3353	0	1750	3369	0	1750	3322	0	1750	3475	0
Flt Permitted	0.563			0.641			0.351			0.401		
Satd. Flow (perm)	1037	3353	0	1181	3369	0	647	3322	0	739	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			29			108			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	35	127	49	194	262	49	99	441	205	80	713	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	176	0	194	311	0	99	646	0	80	746	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

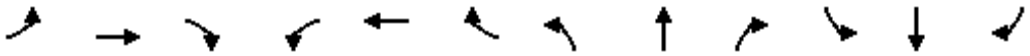


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.57	0.57		0.57	0.57	
v/c Ratio	0.14	0.21		0.69	0.37		0.27	0.33		0.19	0.37	
Control Delay	21.1	14.9		36.7	20.6		11.7	7.7		10.3	9.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	14.9		36.7	20.6		11.7	7.7		10.3	9.5	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		15.9			26.8			8.2			9.6	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	3.6	6.7		22.8	15.8		5.7	16.5		4.4	24.2	
Queue Length 95th (m)	9.8	13.5		42.0	25.4		18.5	34.4		14.3	46.8	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	563	1842		641	1842		370	1950		423	1995	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.10		0.30	0.17		0.27	0.33		0.19	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.5			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

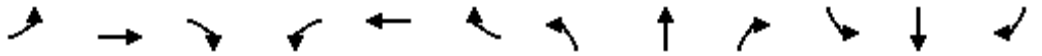
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



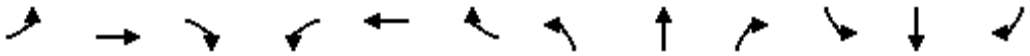


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Future Volume (vph)	33	119	46	182	246	46	93	415	193	75	670	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3354		1750	3370		1750	3323		1750	3477	
Flt Permitted	0.56	1.00		0.64	1.00		0.35	1.00		0.40	1.00	
Satd. Flow (perm)	1037	3354		1180	3370		647	3323		739	3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	127	49	194	262	49	99	441	205	80	713	33
RTOR Reduction (vph)	0	37	0	0	22	0	0	46	0	0	3	0
Lane Group Flow (vph)	35	139	0	194	289	0	99	600	0	80	743	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Effective Green, g (s)	16.7	16.7		16.7	16.7		39.8	39.8		39.8	39.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	807		283	810		371	1905		423	1994	
v/s Ratio Prot		0.04			0.09			0.18			c0.21	
v/s Ratio Perm	0.03			c0.16			0.15			0.11		
v/c Ratio	0.14	0.17		0.69	0.36		0.27	0.31		0.19	0.37	
Uniform Delay, d1	20.7	20.9		24.0	21.9		7.5	7.7		7.1	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		6.7	0.3		1.8	0.4		1.0	0.5	
Delay (s)	21.0	21.0		30.7	22.2		9.2	8.1		8.1	8.6	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.0			25.4			8.3			8.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Future Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1541	1431	1750	3500	0	0	4980	0
Flt Permitted	0.373			0.950	0.953		0.092					
Satd. Flow (perm)	599	0	1331	1615	1541	1431	169	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	578	2	19	7	2943	0	0	2061	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	289	293	17	7	2943	0	0	2061	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



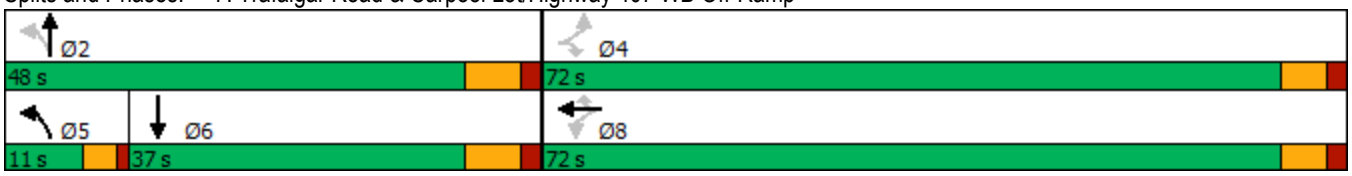
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	72.0		72.0	72.0	72.0	72.0	11.0	48.0			37.0	
Total Split (%)	60.0%		60.0%	60.0%	60.0%	60.0%	9.2%	40.0%			30.8%	
Maximum Green (s)	66.0		66.0	66.0	66.0	66.0	7.0	41.0			30.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.2		19.2	19.2	19.2	19.2	44.2	41.2			39.4	
Actuated g/C Ratio	0.26		0.26	0.26	0.26	0.26	0.60	0.56			0.54	
v/c Ratio	0.04		0.01	0.69	0.73	0.04	0.03	1.50			0.77	
Control Delay	19.9		0.0	33.1	35.8	0.2	8.0	247.7			18.6	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	19.9		0.0	33.1	35.8	0.2	8.0	247.7			18.6	
LOS	B		A	C	D	A	A	F			B	
Approach Delay		10.7			33.5			247.1			18.6	
Approach LOS		B			C			F			B	
Queue Length 50th (m)	0.7		0.0	37.5	40.3	0.0	0.3	~298.8			69.8	
Queue Length 95th (m)	3.4		0.0	62.2	67.1	0.0	2.1	#394.2			#161.2	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	540		1209	1458	1391	1299	253	1963			2671	
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	0.01		0.00	0.20	0.21	0.01	0.03	1.50			0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 73.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.50			
Intersection Signal Delay: 140.1		Intersection LOS: F	
Intersection Capacity Utilization 111.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

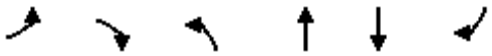
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Future Volume (vph)	7	0	6	555	2	18	7	2825	0	0	1979	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1541	1431	1750	3500			4980	
Flt Permitted	0.37		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	600		1331	1615	1541	1431	170	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	578	2	19	7	2943	0	0	2061	0
RTOR Reduction (vph)	0	0	4	0	0	13	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	2	289	293	4	7	2943	0	0	2061	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.2		19.2	19.2	19.2	19.2	44.5	44.5			39.4	
Effective Green, g (s)	19.2		19.2	19.2	19.2	19.2	44.5	44.5			39.4	
Actuated g/C Ratio	0.25		0.25	0.25	0.25	0.25	0.58	0.58			0.51	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	150		333	404	385	358	121	2030			2558	
v/s Ratio Prot							0.00	c0.84			0.41	
v/s Ratio Perm	0.01		0.00	0.18	0.19	0.00	0.03					
v/c Ratio	0.05		0.00	0.72	0.76	0.01	0.06	1.45			0.81	
Uniform Delay, d1	21.8		21.6	26.3	26.6	21.6	10.6	16.1			15.5	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	5.9	8.6	0.0	0.2	205.2			1.9	
Delay (s)	21.9		21.6	32.2	35.2	21.6	10.8	221.3			17.4	
Level of Service	C		C	C	D	C	B	F			B	
Approach Delay (s)		21.8			33.4			220.8			17.4	
Approach LOS		C			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	125.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	111.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	333	0	3370	2386	0
Future Volume (vph)	38	333	0	3370	2386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.880	0.850				
Flt Protected	0.990					
Satd. Flow (prot)	1360	1214	0	3500	3466	0
Flt Permitted	0.990					
Satd. Flow (perm)	1360	1214	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1	1				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	40	354	0	3585	2538	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	199	195	0	3585	2538	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

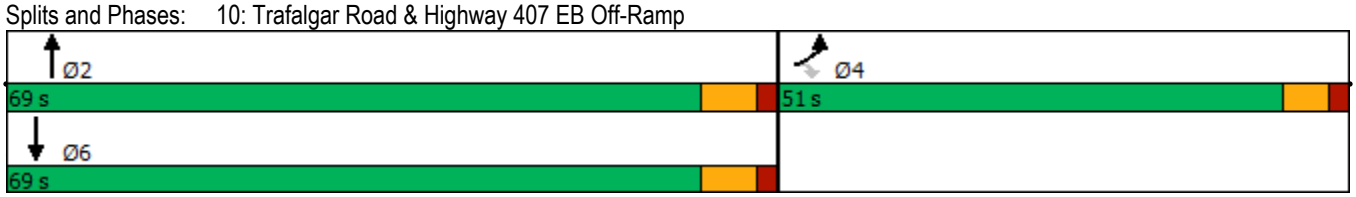
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	20.3	20.3		62.3	62.3	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
v/c Ratio	0.69	0.76		1.57	1.12	
Control Delay	47.0	53.5		280.7	82.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.0	53.5		280.7	82.1	
LOS	D	D		F	F	
Approach Delay	50.2			280.7	82.1	
Approach LOS	D			F	F	
Queue Length 50th (m)	33.8	35.4		~495.8	~285.7	
Queue Length 95th (m)	56.4	60.1		#609.1	#381.2	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	643	574		2279	2257	
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	0.34		1.57	1.12	

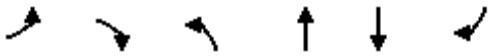
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 95.6			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 189.4		Intersection LOS: F	
Intersection Capacity Utilization 112.9%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

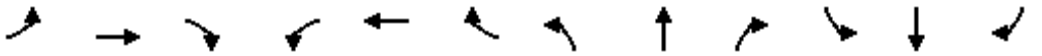
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp



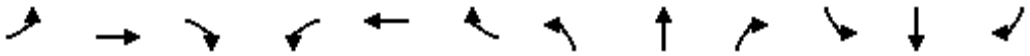


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	333	0	3370	2386	0
Future Volume (vph)	38	333	0	3370	2386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1360	1214		3500	3466	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1360	1214		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	354	0	3585	2538	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	198	194	0	3585	2538	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.3	20.3		62.3	62.3	
Effective Green, g (s)	20.3	20.3		62.3	62.3	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	288	257		2280	2258	
v/s Ratio Prot	0.15			c1.02	0.73	
v/s Ratio Perm		c0.16				
v/c Ratio	0.69	0.76		1.57	1.12	
Uniform Delay, d1	34.7	35.3		16.6	16.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	11.9		259.7	62.3	
Delay (s)	41.4	47.2		276.4	78.9	
Level of Service	D	D		F	E	
Approach Delay (s)	44.3			276.4	78.9	
Approach LOS	D			F	E	

Intersection Summary			
HCM 2000 Control Delay	185.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	112.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Future Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			139			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	2953	333	481	2456	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	870	41	2953	333	481	2456	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



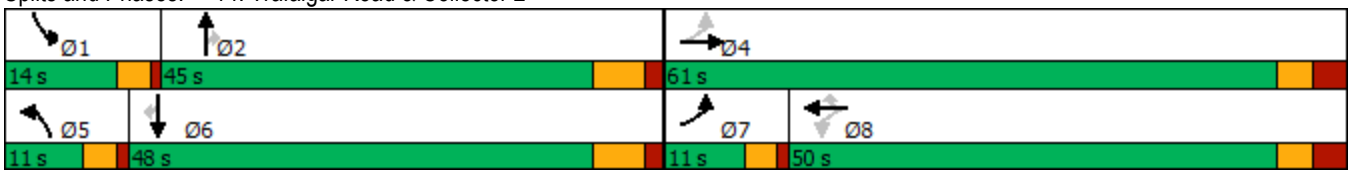
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.28	0.40	1.83	0.56	1.71	1.34	0.30
Control Delay	28.2	8.5				162.7	66.5	403.3	23.1	365.7	189.8	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				162.7	66.5	403.3	23.1	365.7	189.8	14.5
LOS	C	A				F	E	F	C	F	F	B
Approach Delay		20.4			162.7			361.1			205.9	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~231.6	9.5	~385.2	37.1	~85.7	~284.7	14.5
Queue Length 95th (m)	90.6	29.7				#307.4	21.2	#411.4	66.3	#118.6	#312.9	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	634	826				682	102	1613	596	282	1831	637
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	0.64	0.32				1.28	0.40	1.83	0.56	1.71	1.34	0.30

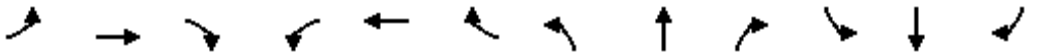
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.83			
Intersection Signal Delay: 250.4		Intersection LOS: F	
Intersection Capacity Utilization 134.1%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

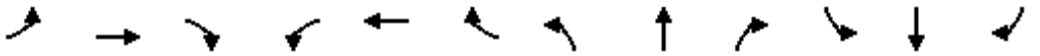




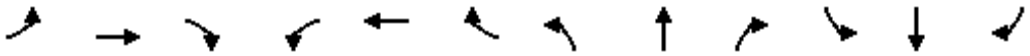
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Future Volume (vph)	363	44	192	0	0	783	37	2658	300	433	2210	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	5029	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	2953	333	481	2456	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	94	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	755	41	2953	239	481	2456	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1636	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c0.59		c0.14	0.49	
v/s Ratio Perm	0.26					c0.48			0.15			0.08
v/c Ratio	0.67	0.23				1.34	0.51	1.81	0.47	1.71	1.35	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	32.5	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				165.0	4.9	364.7	3.1	335.0	161.3	0.9
Delay (s)	29.4	20.5				203.7	61.2	405.5	35.6	390.4	199.9	27.7
Level of Service	C	C				F	E	F	D	F	F	C
Approach Delay (s)		25.9			203.7			364.2			218.5	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	261.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	134.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Future Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.97	1.00	0.98		1.00	0.99	
Frt		0.998				0.850		0.862			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1559	0	1750	1757	0
Flt Permitted	0.110			0.223			0.724			0.700		
Satd. Flow (perm)	203	3491	0	410	3500	1516	1328	1559	0	1284	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				29		79			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		825.2			198.4			580.4			190.6	
Travel Time (s)		49.5			11.9			41.8			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1083	16	148	1560	31	54	7	81	152	37	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1099	0	148	1560	31	54	88	0	152	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%	61.1%	38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	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)	20.0	20.0		20.0	20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)	53.1	53.1		53.1	53.1	53.1	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
v/c Ratio	0.02	0.47		0.54	0.67	0.03	0.20	0.23		0.59	0.14	
Control Delay	8.0	8.3		19.6	11.2	3.2	25.9	8.6		37.1	19.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	8.3		19.6	11.2	3.2	25.9	8.6		37.1	19.1	
LOS	A	A		B	B	A	C	A		D	B	
Approach Delay		8.3			11.8			15.2			32.6	
Approach LOS		A			B			B			C	
Queue Length 50th (m)	0.1	32.7		9.0	57.6	0.1	6.5	1.1		19.8	4.3	
Queue Length 95th (m)	1.5	77.0		#48.2	134.2	3.7	14.9	10.7		36.3	12.1	
Internal Link Dist (m)		801.2			174.4			556.4			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	135	2327		273	2332	1020	497	633		481	667	
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	0.02	0.47		0.54	0.67	0.03	0.11	0.14		0.32	0.08	

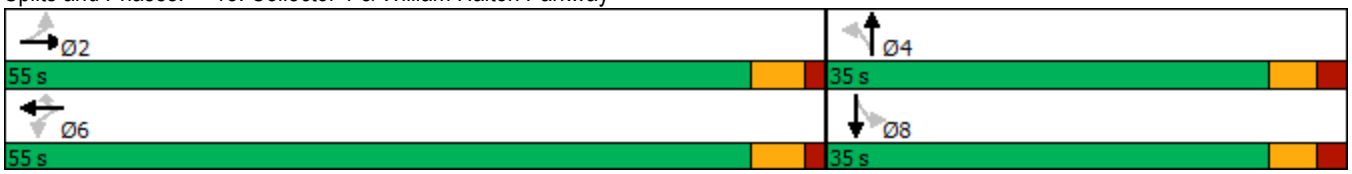
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	

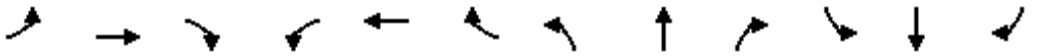
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 15: Collector 1 & William Halton Parkway

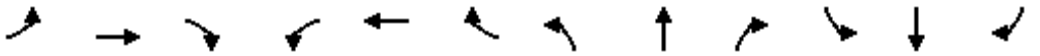




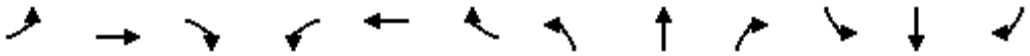
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Future Volume (vph)	3	975	14	133	1404	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3491		1748	3500	1519	1743	1556		1744	1756	
Flt Permitted	0.11	1.00		0.22	1.00	1.00	0.72	1.00		0.70	1.00	
Satd. Flow (perm)	203	3491		411	3500	1519	1328	1556		1285	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1083	16	148	1560	31	54	7	81	152	37	14
RTOR Reduction (vph)	0	1	0	0	0	10	0	63	0	0	11	0
Lane Group Flow (vph)	3	1098	0	148	1560	21	54	25	0	152	40	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Effective Green, g (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
Clearance Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
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)	135	2327		274	2333	1012	267	313		258	353	
v/s Ratio Prot		0.31			c0.45			0.02			0.02	
v/s Ratio Perm	0.01			0.36		0.01	0.04			c0.12		
v/c Ratio	0.02	0.47		0.54	0.67	0.02	0.20	0.08		0.59	0.11	
Uniform Delay, d1	4.5	6.4		6.9	8.0	4.5	26.4	25.8		28.8	25.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7		7.4	1.5	0.0	0.4	0.1		3.4	0.1	
Delay (s)	4.8	7.1		14.4	9.5	4.5	26.8	25.9		32.2	26.1	
Level of Service	A	A		B	A	A	C	C		C	C	
Approach Delay (s)		7.1			9.8			26.2			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Future Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Frt		0.995			0.994			0.905			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3478	0	1750	3474	0	1750	1646	0	1750	1800	0
Flt Permitted	0.387			0.446			0.689			0.673		
Satd. Flow (perm)	711	3478	0	818	3474	0	1264	1646	0	1235	1800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			83			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			580.4	
Travel Time (s)		9.8			17.7			34.4			41.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	532	20	102	657	27	14	48	83	127	91	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	552	0	102	684	0	14	131	0	127	105	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

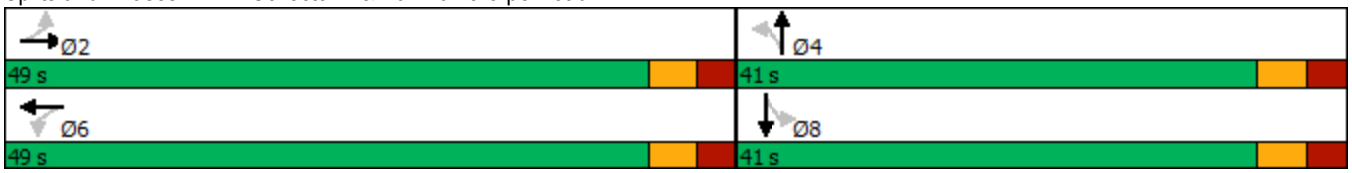


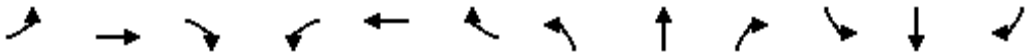
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	45.7	45.7		45.7	45.7		13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.19	0.19		0.19	0.19	
v/c Ratio	0.01	0.25		0.20	0.31		0.06	0.34		0.53	0.29	
Control Delay	7.7	6.9		8.5	7.3		21.2	12.0		32.7	22.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.7	6.9		8.5	7.3		21.2	12.0		32.7	22.5	
LOS	A	A		A	A		C	B		C	C	
Approach Delay		6.9			7.5			12.9			28.1	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.1	13.0		4.5	17.0		1.5	5.1		14.7	10.4	
Queue Length 95th (m)	1.4	33.3		17.4	42.3		5.4	16.7		28.5	21.4	
Internal Link Dist (m)		112.3			221.2			453.1			556.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	453	2220		521	2218		619	848		605	886	
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	0.01	0.25		0.20	0.31		0.02	0.15		0.21	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road

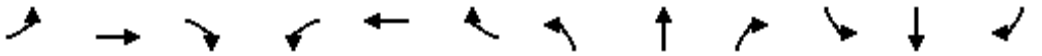




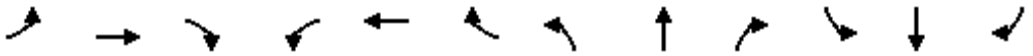
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Future Volume (vph)	3	479	18	92	591	24	13	43	75	114	82	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3477		1744	3475		1744	1644		1744	1800	
Flt Permitted	0.39	1.00		0.45	1.00		0.69	1.00		0.67	1.00	
Satd. Flow (perm)	710	3477		818	3475		1265	1644		1236	1800	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	532	20	102	657	27	14	48	83	127	91	14
RTOR Reduction (vph)	0	2	0	0	2	0	0	67	0	0	8	0
Lane Group Flow (vph)	3	550	0	102	682	0	14	64	0	127	97	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.8	45.8		45.8	45.8		13.9	13.9		13.9	13.9	
Effective Green, g (s)	45.8	45.8		45.8	45.8		13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.19	0.19		0.19	0.19	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	453	2221		522	2219		245	318		239	348	
v/s Ratio Prot		0.16			c0.20			0.04			0.05	
v/s Ratio Perm	0.00			0.12			0.01			c0.10		
v/c Ratio	0.01	0.25		0.20	0.31		0.06	0.20		0.53	0.28	
Uniform Delay, d1	4.7	5.6		5.3	5.8		23.6	24.2		26.0	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3		0.8	0.4		0.1	0.3		2.3	0.4	
Delay (s)	4.7	5.8		6.2	6.2		23.7	24.6		28.2	25.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		5.8			6.2			24.5			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Future Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.891			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1618	0	1750	1755	0
Flt Permitted	0.086			0.230			0.710			0.714		
Satd. Flow (perm)	158	3500	1515	423	3496	0	1303	1618	0	1310	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100		1			48			9	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1057	141	91	1714	12	130	18	48	171	52	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1057	141	91	1726	0	130	66	0	171	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.1	38.1	38.1	38.1	38.1		38.5	38.5		38.5	38.5	
Total Split (s)	51.0	51.0	51.0	51.0	51.0		39.0	39.0		39.0	39.0	
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%		43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	44.9	44.9	44.9	44.9	44.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	None	None		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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	46.7	46.7	46.7	46.7	46.7		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
v/c Ratio	0.31	0.49	0.15	0.35	0.80		0.46	0.17		0.60	0.18	
Control Delay	21.9	10.5	3.8	15.1	17.2		29.7	10.5		34.5	20.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.9	10.5	3.8	15.1	17.2		29.7	10.5		34.5	20.9	
LOS	C	B	A	B	B		C	B		C	C	
Approach Delay		10.0			17.1			23.2			30.5	
Approach LOS		A			B			C			C	
Queue Length 50th (m)	1.7	35.5	1.9	5.2	80.0		15.7	2.0		21.4	7.1	
Queue Length 95th (m)	12.6	84.1	12.5	23.6	#203.4		29.4	10.1		38.0	16.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	96	2148	968	259	2146		561	724		564	761	
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	0.31	0.49	0.15	0.35	0.80		0.23	0.09		0.30	0.09	

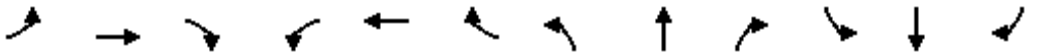
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	

Analysis Period (min) 15

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

Splits and Phases: 24: Collector 5 & William Halton Parkway

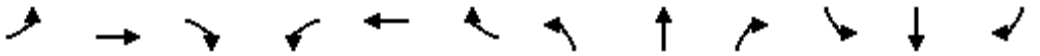




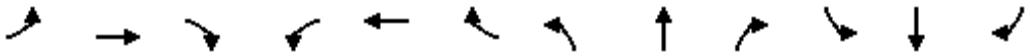
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Future Volume (vph)	27	951	127	82	1543	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3500	1519	1747	3496		1744	1617		1744	1755	
Flt Permitted	0.09	1.00	1.00	0.23	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	158	3500	1519	424	3496		1304	1617		1311	1755	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1057	141	91	1714	12	130	18	48	171	52	20
RTOR Reduction (vph)	0	0	39	0	0	0	0	37	0	0	7	0
Lane Group Flow (vph)	30	1057	102	91	1726	0	130	29	0	171	65	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Effective Green, g (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	97	2151	933	260	2149		285	354		287	384	
v/s Ratio Prot		0.30			c0.49			0.02			0.04	
v/s Ratio Perm	0.19		0.07	0.21			0.10			c0.13		
v/c Ratio	0.31	0.49	0.11	0.35	0.80		0.46	0.08		0.60	0.17	
Uniform Delay, d1	6.9	8.1	6.0	7.2	11.1		25.7	23.5		26.6	24.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	0.8	0.2	0.8	2.3		1.2	0.1		3.3	0.2	
Delay (s)	15.0	8.9	6.3	8.0	13.4		26.8	23.6		29.9	24.2	
Level of Service	B	A	A	A	B		C	C		C	C	
Approach Delay (s)		8.7			13.1			25.8			28.2	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Future Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Frt		0.996			0.998			0.917			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3483	0	1750	3491	0	1750	1670	0	1750	1782	0
Flt Permitted	0.328			0.358			0.653			0.464		
Satd. Flow (perm)	603	3483	0	658	3491	0	1198	1670	0	852	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			3			72			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	727	19	200	806	12	20	106	131	16	130	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	746	0	200	818	0	20	237	0	16	161	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



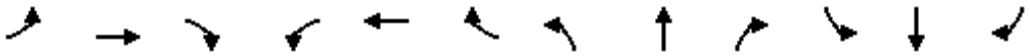
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	
Maximum Green (s)	50.1	50.1		50.1	50.1		27.9	27.9		27.9	27.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
v/c Ratio	0.27	0.32		0.46	0.36		0.09	0.65		0.10	0.47	
Control Delay	9.7	7.1		12.8	7.3		25.1	27.9		25.7	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.7	7.1		12.8	7.3		25.1	27.9		25.7	29.4	
LOS	A	A		B	A		C	C		C	C	
Approach Delay		7.4			8.4			27.7			29.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	5.3	19.7		11.5	22.3		2.4	21.7		1.9	19.0	
Queue Length 95th (m)	20.3	46.1		41.6	51.6		7.5	42.0		6.6	34.7	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	397	2296		433	2300		438	656		311	660	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.27	0.32		0.46	0.36		0.05	0.36		0.05	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.8			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 62.7%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

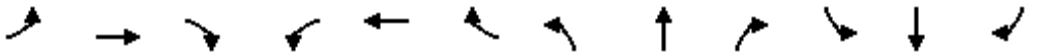




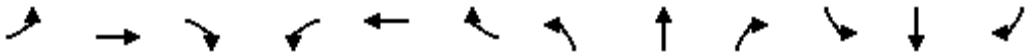
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Future Volume (vph)	98	654	17	180	725	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3484		1745	3491		1744	1669		1745	1781	
Flt Permitted	0.33	1.00		0.36	1.00		0.65	1.00		0.46	1.00	
Satd. Flow (perm)	602	3484		658	3491		1198	1669		853	1781	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	727	19	200	806	12	20	106	131	16	130	31
RTOR Reduction (vph)	0	2	0	0	1	0	0	59	0	0	11	0
Lane Group Flow (vph)	109	744	0	200	817	0	20	178	0	16	150	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Effective Green, g (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	397	2298		434	2303		220	306		156	327	
v/s Ratio Prot		0.21			0.23			c0.11			0.08	
v/s Ratio Perm	0.18			c0.30			0.02			0.02		
v/c Ratio	0.27	0.32		0.46	0.35		0.09	0.58		0.10	0.46	
Uniform Delay, d1	5.4	5.6		6.4	5.8		26.0	28.6		26.0	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.4		3.5	0.4		0.2	2.8		0.3	1.0	
Delay (s)	7.1	6.0		9.9	6.2		26.2	31.4		26.3	28.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		6.2			6.9			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Future Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor			0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.685			0.513			0.066			0.070		
Satd. Flow (perm)	1262	1842	1532	941	1842	1534	122	4421	1511	129	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2388	268	161	1972	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	124	156	222	111	36	220	2388	268	161	1972	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	13.0	59.0	59.0	11.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	10.8%	49.2%	49.2%	9.2%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	9.0	52.6	52.6	7.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	17.1	17.1	17.1	30.6	28.1	28.1	81.0	62.6	62.6	71.7	56.9	56.9
Actuated g/C Ratio	0.14	0.14	0.14	0.26	0.23	0.23	0.68	0.52	0.52	0.60	0.47	0.47
v/c Ratio	0.54	0.47	0.45	0.77	0.26	0.09	0.67	1.04	0.32	0.66	0.94	0.17
Control Delay	56.9	51.3	10.4	56.8	37.0	1.9	42.5	43.7	14.6	38.3	40.7	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	51.3	10.4	56.8	37.0	1.9	42.5	43.7	14.6	38.3	40.7	6.2
LOS	E	D	B	E	D	A	D	D	B	D	D	A
Approach Delay		35.8			45.5			40.9			38.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	22.1	28.0	0.4	46.2	22.1	0.0	43.0	~167.5	19.2	19.1	174.2	2.9
Queue Length 95th (m)	33.3	39.3	16.2	56.6	30.8	2.1	m#42.2	m#218.4	m24.1	#67.0	#245.5	14.8
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	341	498	527	287	667	598	327	2305	838	244	2095	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.30	0.77	0.17	0.06	0.67	1.04	0.32	0.66	0.94	0.17

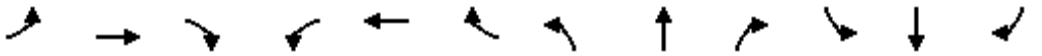
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 14 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 39.9	Intersection LOS: D

Intersection Capacity Utilization 82.8%	ICU Level of Service E
Analysis Period (min) 15	

* User Entered Value
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: Trafalgar Road & Settlers Road

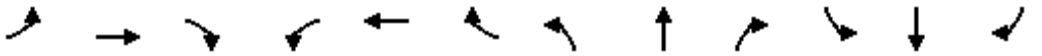




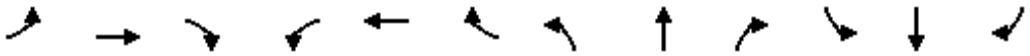
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Future Volume (vph)	87	112	140	200	100	32	198	2149	241	145	1775	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	1842	1526	1746	1842	1531	1750	4421	1512	1750	4421	1511
Flt Permitted	0.69	1.00	1.00	0.51	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1263	1842	1526	943	1842	1531	121	4421	1512	129	4421	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2388	268	161	1972	129
RTOR Reduction (vph)	0	0	132	0	0	28	0	0	50	0	0	55
Lane Group Flow (vph)	97	124	24	222	111	8	220	2388	218	161	1972	74
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	17.1	17.1	17.1	28.1	28.1	28.1	79.0	62.6	62.6	69.3	56.9	56.9
Effective Green, g (s)	17.1	17.1	17.1	28.1	28.1	28.1	79.0	62.6	62.6	69.3	56.9	56.9
Actuated g/C Ratio	0.14	0.14	0.14	0.23	0.23	0.23	0.66	0.52	0.52	0.58	0.47	0.47
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	262	217	267	431	358	325	2306	788	242	2096	716
v/s Ratio Prot		0.07		c0.05	0.06		c0.10	c0.54		0.07	0.45	
v/s Ratio Perm	0.08		0.02	c0.15		0.01	0.34		0.14	0.31		0.05
v/c Ratio	0.54	0.47	0.11	0.83	0.26	0.02	0.68	1.04	0.28	0.67	0.94	0.10
Uniform Delay, d1	47.8	47.3	44.8	43.3	37.4	35.4	33.2	28.7	16.0	29.8	30.0	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.68	0.85	1.32	1.00	1.00	1.00
Incremental Delay, d2	3.3	1.4	0.2	19.3	0.3	0.0	0.5	17.8	0.1	6.7	9.9	0.3
Delay (s)	51.1	48.7	45.0	62.6	37.8	35.4	56.2	42.2	21.2	36.5	39.9	17.7
Level of Service	D	D	D	E	D	D	E	D	C	D	D	B
Approach Delay (s)		47.8			52.5			41.3			38.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Future Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.691			0.539			0.069			0.074		
Satd. Flow (perm)	1267	1842	1532	988	1842	1534	127	4421	1511	136	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			72			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	2919	150	101	2219	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	110	169	162	102	72	247	2919	150	101	2219	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	13.0	59.0	59.0	11.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	10.8%	49.2%	49.2%	9.2%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	9.0	52.6	52.6	7.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	15.9	15.9	15.9	29.4	26.9	26.9	82.2	68.3	68.3	64.4	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.24	0.22	0.22	0.68	0.57	0.57	0.54	0.45	0.45
v/c Ratio	0.13	0.45	0.48	0.57	0.25	0.18	0.64	1.16	0.17	0.57	1.11	0.01
Control Delay	43.2	51.9	10.5	44.6	37.7	7.8	36.2	102.8	6.0	31.8	79.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	51.9	10.5	44.6	37.7	7.8	36.2	102.8	6.0	31.8	79.1	0.0
LOS	D	D	B	D	D	A	D	F	A	C	E	A
Approach Delay		28.0			34.6			93.4			76.9	
Approach LOS		C			C			F			E	
Queue Length 50th (m)	4.6	25.1	0.0	33.2	20.7	0.0	35.8	~326.2	4.2	12.3	~231.4	0.0
Queue Length 95th (m)	10.1	35.4	16.2	42.0	28.8	9.5	#109.8	#427.9	18.3	m18.9	m#285.1	m0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	343	498	538	286	667	601	384	2517	905	178	1997	739
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.22	0.31	0.57	0.15	0.12	0.64	1.16	0.17	0.57	1.11	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 81.0	Intersection LOS: F

Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

* User Entered Value

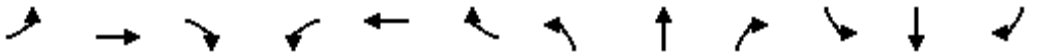
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

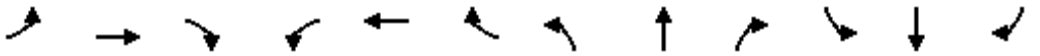




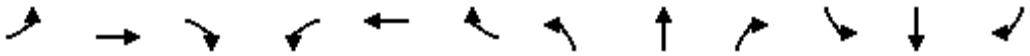
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Future Volume (vph)	19	99	152	146	92	65	222	2627	135	91	1997	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1741	1842	1525	1746	1842	1531	1750	4421	1512	1750	4421	1511
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1267	1842	1525	990	1842	1531	127	4421	1512	136	4421	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	2919	150	101	2219	4
RTOR Reduction (vph)	0	0	147	0	0	56	0	0	45	0	0	2
Lane Group Flow (vph)	21	110	22	162	102	16	247	2919	105	101	2219	2
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	15.9	15.9	15.9	26.9	26.9	26.9	80.2	68.4	68.4	62.0	54.2	54.2
Effective Green, g (s)	15.9	15.9	15.9	26.9	26.9	26.9	80.2	68.4	68.4	62.0	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.22	0.22	0.22	0.67	0.57	0.57	0.52	0.45	0.45
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	244	202	266	412	343	382	2519	861	175	1996	682
v/s Ratio Prot		0.06		c0.04	0.06		c0.12	c0.66		0.04	0.50	
v/s Ratio Perm	0.02		0.01	c0.10		0.01	0.31		0.07	0.26		0.00
v/c Ratio	0.13	0.45	0.11	0.61	0.25	0.05	0.65	1.16	0.12	0.58	1.11	0.00
Uniform Delay, d1	45.9	48.0	45.8	41.0	38.2	36.5	32.8	25.8	11.9	26.0	32.9	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.47	0.74	1.00
Incremental Delay, d2	0.3	1.3	0.2	3.9	0.3	0.1	3.7	76.3	0.3	2.1	54.0	0.0
Delay (s)	46.3	49.3	46.1	44.9	38.6	36.6	36.5	102.1	12.2	40.3	78.5	18.1
Level of Service	D	D	D	D	D	D	D	F	B	D	E	B
Approach Delay (s)		47.3			41.2			93.2			76.7	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	82.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Future Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1565	1487	1750	3500	0	0	5029	0
Flt Permitted	0.334			0.950	0.953		0.068					
Satd. Flow (perm)	314	0	1566	1630	1565	1487	125	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79		79	79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	486	0	24	1	2337	0	0	1955	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	243	245	22	1	2337	0	0	1955	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

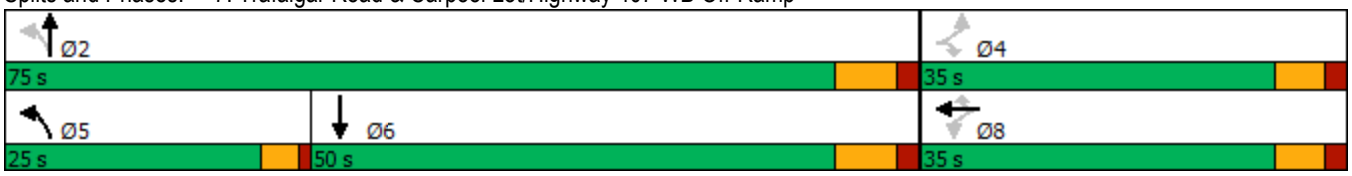


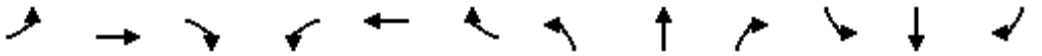
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	35.0		35.0	35.0	35.0	35.0	25.0	75.0			50.0	
Total Split (%)	31.8%		31.8%	31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	
Maximum Green (s)	29.0		29.0	29.0	29.0	29.0	21.0	68.0			43.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	20.2		20.2	20.2	20.2	20.2	71.2	68.2			66.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.70	0.67			0.65	
v/c Ratio	0.02		0.01	0.75	0.66	0.06	0.01	0.99			0.59	
Control Delay	32.0		0.0	52.9	33.3	0.3	6.0	35.1			12.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	32.0		0.0	52.9	33.3	0.3	6.0	35.1			12.3	
LOS	C		A	D	C	A	A	D			B	
Approach Delay		8.0			41.2			35.1			12.3	
Approach LOS		A			D			D			B	
Queue Length 50th (m)	0.2		0.0	47.5	32.9	0.0	0.1	212.2			67.0	
Queue Length 95th (m)	1.5		0.0	74.6	60.2	0.0	0.6	#337.2			130.7	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	90		505	467	505	482	425	2353			3294	
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	0.01		0.01	0.52	0.49	0.05	0.00	0.99			0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 101.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

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

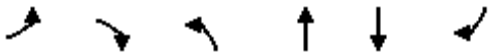
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Future Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1565	1487	1750	3500			5029	
Flt Permitted	0.33		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	313		1566	1630	1565	1487	125	3500			5029	
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)	1	0	3	486	0	24	1	2337	0	0	1955	0
RTOR Reduction (vph)	0	0	2	0	64	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	243	181	4	1	2337	0	0	1955	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	20.2		20.2	20.2	20.2	20.2	71.4	71.4			66.4	
Effective Green, g (s)	20.2		20.2	20.2	20.2	20.2	71.4	71.4			66.4	
Actuated g/C Ratio	0.19		0.19	0.19	0.19	0.19	0.68	0.68			0.63	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	60		302	314	302	287	100	2389			3192	
v/s Ratio Prot							0.00	c0.67			0.39	
v/s Ratio Perm	0.00		0.00	c0.15	0.12	0.00	0.01					
v/c Ratio	0.02		0.00	0.77	0.60	0.01	0.01	0.98			0.61	
Uniform Delay, d1	34.2		34.1	40.0	38.5	34.1	7.6	15.9			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		0.0	11.3	3.3	0.0	0.0	13.5			0.4	
Delay (s)	34.3		34.1	51.3	41.9	34.2	7.7	29.4			11.8	
Level of Service	C		C	D	D	C	A	C			B	
Approach Delay (s)		34.1			46.0			29.4			11.8	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	104.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2151	2249	39
Future Volume (vph)	0	0	0	2151	2249	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2338	2445	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2338	2445	42
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

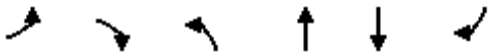
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2151	157	0	2249
Future Volume (vph)	0	0	2151	157	0	2249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2338	171	0	2445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2338	171	0	2445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	290	0	2571	2244	0
Future Volume (vph)	39	290	0	2571	2244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1750	1377	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1750	1377	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		9				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	42	312	0	2765	2413	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	312	0	2765	2413	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

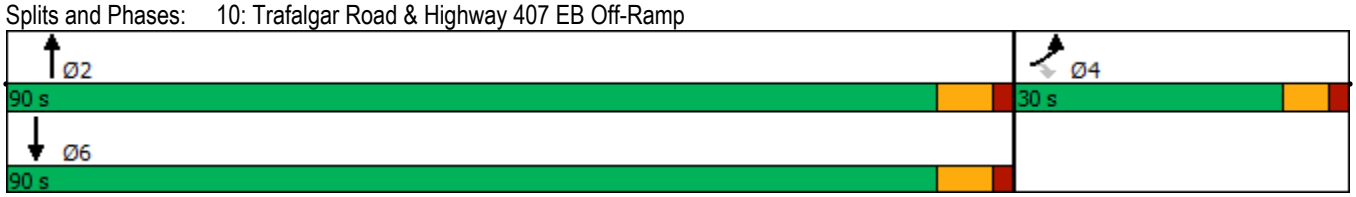
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	30.0	30.0		90.0	90.0	
Total Split (%)	25.0%	25.0%		75.0%	75.0%	
Maximum Green (s)	24.0	24.0		83.0	83.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	24.0	24.0		83.0	83.0	
Actuated g/C Ratio	0.20	0.20		0.69	0.69	
v/c Ratio	0.12	1.11		1.14	1.00	
Control Delay	40.5	128.6		90.4	36.5	
Queue Delay	0.0	0.0		0.1	0.0	
Total Delay	40.5	128.6		90.5	36.5	
LOS	D	F		F	D	
Approach Delay	118.2			90.5	36.5	
Approach LOS	F			F	D	
Queue Length 50th (m)	8.2	~82.1		~400.8	268.2	
Queue Length 95th (m)	18.0	#137.9		#439.5	#350.6	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	350	282		2420	2420	
Starvation Cap Reductn	0	0		98	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.12	1.11		1.19	1.00	

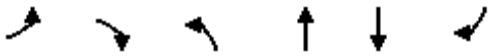
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 68.7		Intersection LOS: E	
Intersection Capacity Utilization 90.8%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

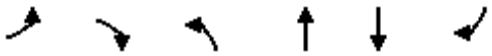
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	290	0	2571	2244	0
Future Volume (vph)	39	290	0	2571	2244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1750	1377		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1750	1377		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	312	0	2765	2413	0
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	42	305	0	2765	2413	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.0	24.0		83.0	83.0	
Effective Green, g (s)	24.0	24.0		83.0	83.0	
Actuated g/C Ratio	0.20	0.20		0.69	0.69	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	350	275		2420	2420	
v/s Ratio Prot	0.02			c0.79	0.69	
v/s Ratio Perm		c0.22				
v/c Ratio	0.12	1.11		1.14	1.00	
Uniform Delay, d1	39.3	48.0		18.5	18.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	86.5		69.6	17.6	
Delay (s)	39.5	134.5		88.1	36.0	
Level of Service	D	F		F	D	
Approach Delay (s)	123.2			88.1	36.0	
Approach LOS	F			F	D	

Intersection Summary			
HCM 2000 Control Delay	67.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2296	2244	15
Future Volume (vph)	0	0	0	2296	2244	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2469	2413	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2469	2413	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.8%		ICU Level of Service E	
Analysis Period (min) 15			

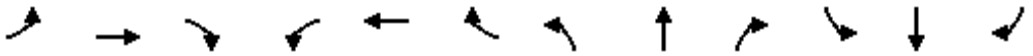
Intersection Sign configuration not allowed in HCM analysis.



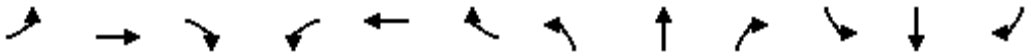
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2571	211	0	2532
Future Volume (vph)	0	0	2571	211	0	2532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2765	227	0	2723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2765	227	0	2723
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

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

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Future Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1565	1487	1750	3500	0	0	5029	0
Flt Permitted	0.357			0.950	0.953		0.066					
Satd. Flow (perm)	335	0	1566	1630	1565	1487	122	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		73	73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	486	0	24	1	2337	0	0	1955	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	243	245	22	1	2337	0	0	1955	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



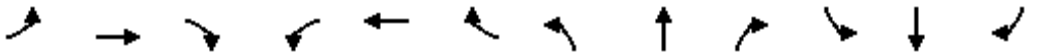
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	52.0		52.0	52.0	52.0	52.0	10.0	68.0			58.0	
Total Split (%)	43.3%		43.3%	43.3%	43.3%	43.3%	8.3%	56.7%			48.3%	
Maximum Green (s)	46.0		46.0	46.0	46.0	46.0	6.0	61.0			51.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.1		19.1	19.1	19.1	19.1	64.2	61.2			59.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.69	0.66			0.64	
v/c Ratio	0.01		0.01	0.73	0.65	0.06	0.01	1.02			0.61	
Control Delay	29.0		0.0	47.8	31.7	0.3	6.0	41.8			12.6	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	29.0		0.0	47.8	31.7	0.3	6.0	41.8			12.6	
LOS	C		A	D	C	A	A	D			B	
Approach Delay		7.3			38.0			41.7			12.6	
Approach LOS		A			D			D			B	
Queue Length 50th (m)	0.2		0.0	43.1	30.9	0.0	0.1	~213.1			64.0	
Queue Length 95th (m)	1.5		0.0	68.8	56.9	0.0	0.7	#320.4			128.0	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	165		811	805	810	772	189	2294			3202	
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	0.01		0.00	0.30	0.30	0.03	0.01	1.02			0.61	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 93.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 29.5 Intersection LOS: C
Intersection Capacity Utilization 89.5% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

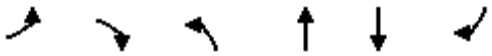
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Future Volume (vph)	1	0	3	447	0	22	1	2150	0	0	1799	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1565	1487	1750	3500			5029	
Flt Permitted	0.36		1.00	0.95	0.95	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	335		1566	1630	1565	1487	121	3500			5029	
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)	1	0	3	486	0	24	1	2337	0	0	1955	0
RTOR Reduction (vph)	0	0	2	0	59	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	243	186	4	1	2337	0	0	1955	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.1		19.1	19.1	19.1	19.1	64.4	64.4			59.4	
Effective Green, g (s)	19.1		19.1	19.1	19.1	19.1	64.4	64.4			59.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.67	0.67			0.62	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	66		309	322	309	294	97	2335			3095	
v/s Ratio Prot							0.00	c0.67			0.39	
v/s Ratio Perm	0.00		0.00	c0.15	0.12	0.00	0.01					
v/c Ratio	0.02		0.00	0.75	0.60	0.01	0.01	1.00			0.63	
Uniform Delay, d1	31.1		31.1	36.5	35.3	31.1	7.8	16.0			11.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	9.6	3.3	0.0	0.0	18.8			0.4	
Delay (s)	31.2		31.1	46.1	38.6	31.2	7.8	34.9			12.1	
Level of Service	C		C	D	D	C	A	C			B	
Approach Delay (s)		31.1			41.8			34.9			12.1	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2151	2249	39
Future Volume (vph)	0	0	0	2151	2249	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2338	2445	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2338	2445	42
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

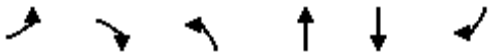
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2151	157	0	2249
Future Volume (vph)	0	0	2151	157	0	2249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2338	171	0	2445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2338	171	0	2445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



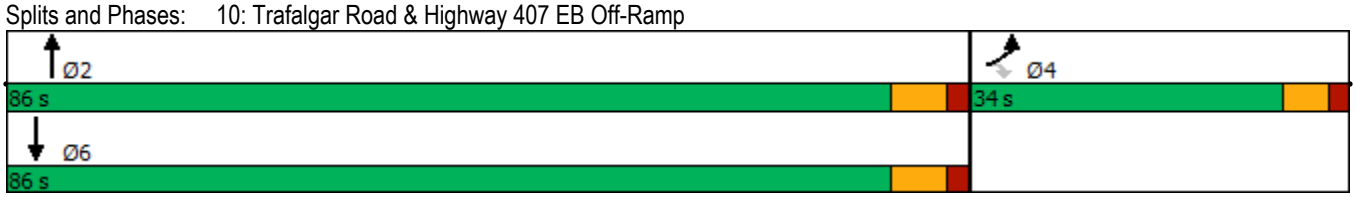
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	290	0	2571	2244	0
Future Volume (vph)	39	290	0	2571	2244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.885	0.850				
Flt Protected	0.988					
Satd. Flow (prot)	1458	1308	0	3500	3500	0
Flt Permitted	0.988					
Satd. Flow (perm)	1458	1308	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	7				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	42	312	0	2765	2413	0
Shared Lane Traffic (%)		44%				
Lane Group Flow (vph)	179	175	0	2765	2413	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

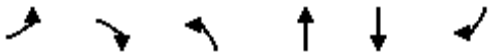
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	34.0	34.0		86.0	86.0	
Total Split (%)	28.3%	28.3%		71.7%	71.7%	
Maximum Green (s)	28.0	28.0		79.0	79.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.3	19.3		79.2	79.2	
Actuated g/C Ratio	0.17	0.17		0.71	0.71	
v/c Ratio	0.69	0.75		1.11	0.97	
Control Delay	55.8	62.2		75.9	29.3	
Queue Delay	0.0	0.0		0.1	0.0	
Total Delay	55.8	62.2		76.0	29.3	
LOS	E	E		E	C	
Approach Delay	58.9			76.0	29.3	
Approach LOS	E			E	C	
Queue Length 50th (m)	35.5	36.9		~364.5	229.3	
Queue Length 95th (m)	58.5	61.6		#454.6	#365.6	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	372	334		2485	2485	
Starvation Cap Reductn	0	0		83	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.48	0.52		1.15	0.97	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.6			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 54.5		Intersection LOS: D	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	
Analysis Period (min) 15			

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

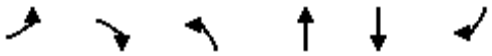
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	290	0	2571	2244	0
Future Volume (vph)	39	290	0	2571	2244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.89	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1458	1308		3500	3500	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1458	1308		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	312	0	2765	2413	0
RTOR Reduction (vph)	6	6	0	0	0	0
Lane Group Flow (vph)	173	169	0	2765	2413	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	19.3		79.2	79.2	
Effective Green, g (s)	19.3	19.3		79.2	79.2	
Actuated g/C Ratio	0.17	0.17		0.71	0.71	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	226		2486	2486	
v/s Ratio Prot	0.12			c0.79	0.69	
v/s Ratio Perm		c0.13				
v/c Ratio	0.69	0.75		1.11	0.97	
Uniform Delay, d1	43.3	43.8		16.1	15.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.6	12.7		56.9	12.4	
Delay (s)	50.8	56.5		73.0	27.4	
Level of Service	D	E		E	C	
Approach Delay (s)	53.6			73.0	27.4	
Approach LOS	D			E	C	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2296	2244	15
Future Volume (vph)	0	0	0	2296	2244	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2469	2413	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2469	2413	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.0%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



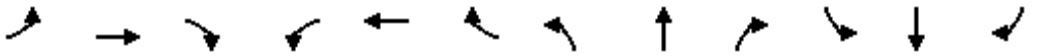
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2571	211	0	2532
Future Volume (vph)	0	0	2571	211	0	2532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2765	227	0	2723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2765	227	0	2723
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

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

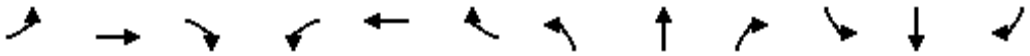
Intersection Sign configuration not allowed in HCM analysis.

Appendix N

2036 Future Total Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	1095	252	271	587	160	392	2192	52	317	1567	261
Future Volume (vph)	442	1095	252	271	587	160	392	2192	52	317	1567	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155			174			120			178
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	480	1190	274	295	638	174	426	2383	57	345	1703	284
Shared Lane Traffic (%)												
Lane Group Flow (vph)	480	1190	274	295	638	174	426	2383	57	345	1703	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)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

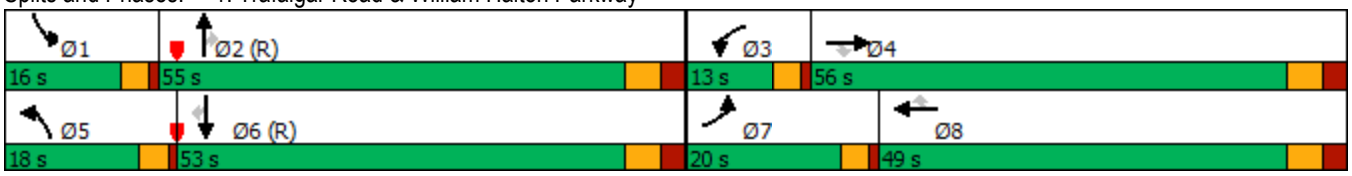


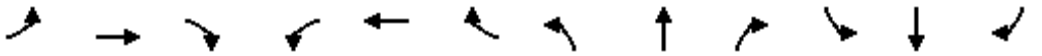
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.24	0.96	0.42	1.35	0.60	0.31	1.26	1.55	0.10	1.20	1.17	0.44
Control Delay	176.7	61.8	16.3	233.1	44.3	6.4	186.8	285.0	0.3	170.3	125.3	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.7	61.8	16.3	233.1	44.3	6.4	186.8	285.0	0.3	170.3	125.3	15.5
LOS	F	E	B	F	D	A	F	F	A	F	F	B
Approach Delay		83.8			88.6			264.7			118.6	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~84.6	169.0	23.4	~55.0	79.3	0.0	~75.8	~386.7	0.0	~59.4	~233.2	21.2
Queue Length 95th (m)	#119.3	#214.6	47.9	#84.3	99.2	16.8	#109.0	#417.3	0.0	#90.5	#266.5	47.1
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	388	1240	654	218	1065	562	339	1534	596	288	1457	640
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	1.24	0.96	0.42	1.35	0.60	0.31	1.26	1.55	0.10	1.20	1.17	0.44

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.55			
Intersection Signal Delay: 157.1		Intersection LOS: F	
Intersection Capacity Utilization 106.7%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

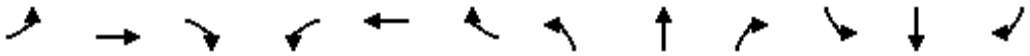




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	1095	252	271	587	160	392	2192	52	317	1567	261
Future Volume (vph)	442	1095	252	271	587	160	392	2192	52	317	1567	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	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)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	4421	1493	3362	4378	1566
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)	480	1190	274	295	638	174	426	2383	57	345	1703	284
RTOR Reduction (vph)	0	0	100	0	0	121	0	0	37	0	0	119
Lane Group Flow (vph)	480	1190	174	295	638	53	426	2383	20	345	1703	165
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Effective Green, g (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1240	554	218	1065	441	339	1534	518	288	1457	521
v/s Ratio Prot	c0.14	c0.34		0.09	0.18		c0.13	c0.54		0.10	0.39	
v/s Ratio Perm			0.11			0.04			0.01			0.11
v/c Ratio	1.24	0.96	0.31	1.35	0.60	0.12	1.26	1.55	0.04	1.20	1.17	0.32
Uniform Delay, d1	62.0	44.2	32.8	65.5	41.4	35.2	63.0	45.7	30.2	64.0	46.7	34.8
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	127.0	17.0	0.7	186.0	1.4	0.3	137.3	252.3	0.1	117.7	83.7	1.6
Delay (s)	189.0	61.2	33.5	251.5	42.8	35.4	200.3	298.0	30.4	181.7	130.4	36.4
Level of Service	F	E	C	F	D	D	F	F	C	F	F	D
Approach Delay (s)		88.9			97.3			278.2			126.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	166.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	363	134	247	275	162	224	2126	254	133	1698	90
Future Volume (vph)	218	363	134	247	275	162	224	2126	254	133	1698	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor			0.99	1.00								
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3368	1566	1700	4415	1559	1750	4372	1559
Flt Permitted	0.477			0.321			0.090			0.100		
Satd. Flow (perm)	879	3500	1545	591	3368	1566	161	4415	1559	184	4372	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			180			104			104
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	242	403	149	274	306	180	249	2362	282	148	1887	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	403	149	274	306	180	249	2362	282	148	1887	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	19.0	42.0	42.0	19.0	42.0	42.0	13.0	48.0	48.0	11.0	46.0	46.0
Total Split (%)	15.8%	35.0%	35.0%	15.8%	35.0%	35.0%	10.8%	40.0%	40.0%	9.2%	38.3%	38.3%
Maximum Green (s)	15.0	35.6	35.6	15.0	35.6	35.6	9.0	41.7	41.7	7.0	39.7	39.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	36.3	19.4	19.4	37.0	19.8	19.8	71.2	52.3	52.3	55.3	40.3	40.3
Actuated g/C Ratio	0.30	0.16	0.16	0.31	0.16	0.16	0.59	0.44	0.44	0.46	0.34	0.34
v/c Ratio	0.65	0.71	0.40	0.84	0.55	0.44	0.60	1.23	0.38	0.59	1.29	0.17
Control Delay	39.2	54.7	9.9	54.8	49.5	9.5	31.7	138.4	17.1	30.7	168.8	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	54.7	9.9	54.8	49.5	9.5	31.7	138.4	17.1	30.7	168.8	5.7
LOS	D	D	A	D	D	A	C	F	B	C	F	A
Approach Delay		41.6			41.9			117.4			151.6	
Approach LOS		D			D			F			F	
Queue Length 50th (m)	43.6	48.0	0.2	50.4	35.4	0.0	36.6	~285.4	26.7	15.9	~231.6	0.0
Queue Length 95th (m)	61.3	61.2	16.9	#77.9	47.2	18.2	#73.9	#353.0	55.4	36.3	#270.8	11.0
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	378	1038	562	327	999	591	413	1925	738	251	1466	592
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	0.64	0.39	0.27	0.84	0.31	0.30	0.60	1.23	0.38	0.59	1.29	0.17

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: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.29

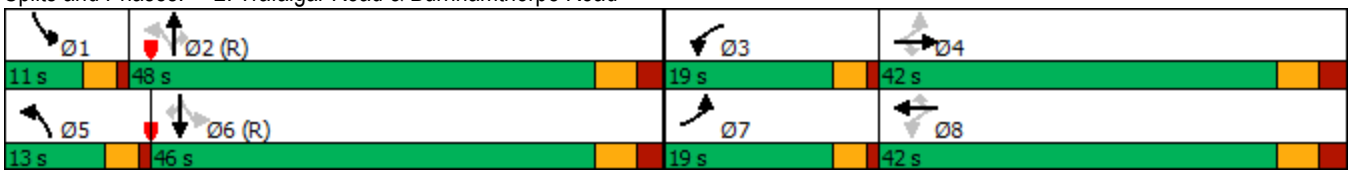
Intersection Signal Delay: 110.6	Intersection LOS: F
Intersection Capacity Utilization 90.0%	ICU Level of Service E
Analysis Period (min) 15	

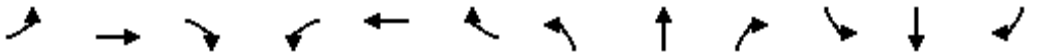
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	363	134	247	275	162	224	2126	254	133	1698	90
Future Volume (vph)	218	363	134	247	275	162	224	2126	254	133	1698	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3500	1545	1750	3368	1566	1700	4415	1559	1750	4372	1559
Flt Permitted	0.48	1.00	1.00	0.32	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	878	3500	1545	592	3368	1566	162	4415	1559	183	4372	1559
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	242	403	149	274	306	180	249	2362	282	148	1887	100
RTOR Reduction (vph)	0	0	124	0	0	150	0	0	59	0	0	67
Lane Group Flow (vph)	242	403	25	274	306	30	249	2362	223	148	1887	34
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
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)	33.9	19.4	19.4	34.7	19.8	19.8	69.0	52.3	52.3	52.9	40.2	40.2
Effective Green, g (s)	33.9	19.4	19.4	34.7	19.8	19.8	69.0	52.3	52.3	52.9	40.2	40.2
Actuated g/C Ratio	0.28	0.16	0.16	0.29	0.17	0.17	0.58	0.44	0.44	0.44	0.34	0.34
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	353	565	249	314	555	258	411	1924	679	246	1464	522
v/s Ratio Prot	0.08	0.12		c0.11	0.09		c0.13	c0.53		0.06	0.43	
v/s Ratio Perm	0.11		0.02	c0.14		0.02	0.22		0.14	0.20		0.02
v/c Ratio	0.69	0.71	0.10	0.87	0.55	0.12	0.61	1.23	0.33	0.60	1.29	0.06
Uniform Delay, d1	35.9	47.7	42.9	36.7	46.0	42.6	28.2	33.9	22.3	26.4	39.9	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	5.4	4.3	0.2	22.4	1.2	0.2	2.5	107.3	1.3	4.1	135.3	0.2
Delay (s)	41.3	51.9	43.0	59.1	47.2	42.8	30.7	141.1	23.6	30.5	175.2	27.4
Level of Service	D	D	D	E	D	D	C	F	C	C	F	C
Approach Delay (s)		47.0			50.5			120.2			158.2	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	115.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1498	1	676	750	0	1149
Future Volume (vph)	1498	1	676	750	0	1149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	2		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	0.97	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	3330	3466	1842	1566
Flt Permitted			0.950			
Satd. Flow (perm)	3500	0	3330	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						440
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1628	1	735	815	0	1249
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1629	0	735	815	0	1249
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			7.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.0	28.4	31.0	31.0
Total Split (s)	48.0		32.0	80.0	40.0	40.0
Total Split (%)	40.0%		26.7%	66.7%	33.3%	33.3%
Maximum Green (s)	41.6		28.0	73.6	36.0	36.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	41.6		27.8	73.4		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
v/c Ratio	1.34		0.95	0.38		1.61
Control Delay	192.1		68.1	12.4		299.9
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	192.1		68.1	12.4		299.9
LOS	F		E	B		F
Approach Delay	192.1			38.8	299.9	
Approach LOS	F			D	F	
Queue Length 50th (m)	~263.6		88.2	47.8		~347.3
Queue Length 95th (m)	#306.2		#124.3	60.1		#427.6
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1215		778	2129		778
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	1.34		0.94	0.38		1.61

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.61			
Intersection Signal Delay: 168.8		Intersection LOS: F	
Intersection Capacity Utilization 121.3%		ICU Level of Service H	
Analysis Period (min) 15			

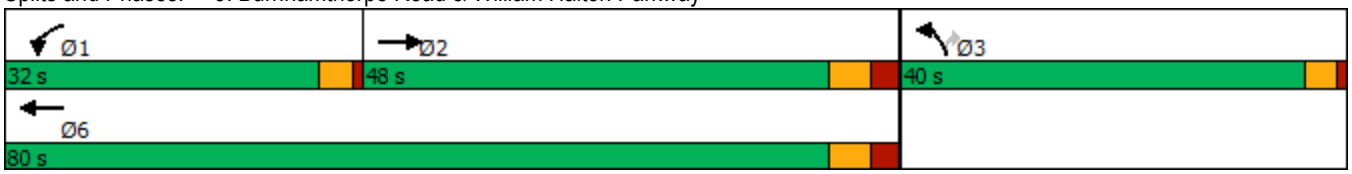
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

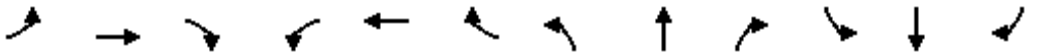
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



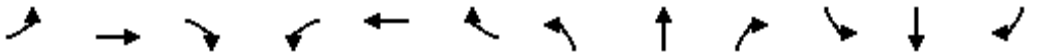


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1498	1	676	750	0	1149
Future Volume (vph)	1498	1	676	750	0	1149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		0.97	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		3330	3466		1566
Flt Permitted	1.00		0.95	1.00		1.00
Satd. Flow (perm)	3500		3330	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1628	1	735	815	0	1249
RTOR Reduction (vph)	0	0	0	0	0	308
Lane Group Flow (vph)	1629	0	735	815	0	941
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases						3
Actuated Green, G (s)	41.6		27.8	73.4		36.0
Effective Green, g (s)	41.6		27.8	73.4		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1215		772	2123		470
v/s Ratio Prot	c0.47		c0.22	0.24		
v/s Ratio Perm						c0.60
v/c Ratio	1.34		0.95	0.38		2.00
Uniform Delay, d1	39.1		45.3	11.7		41.9
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	159.0		21.4	0.1		458.7
Delay (s)	198.1		66.7	11.9		500.6
Level of Service	F		E	B		F
Approach Delay (s)	198.1			37.9	500.6	
Approach LOS	F			D	F	

Intersection Summary			
HCM 2000 Control Delay	227.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	14.4
Intersection Capacity Utilization	121.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	631	2183	245	266	1249	642	197	1455	125	880	2054	464
Future Volume (vph)	631	2183	245	266	1249	642	197	1455	125	880	2054	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4421	1551	3298	4214	1536	3330	4378	1566	3330	4378	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	4421	1529	3298	4214	1512	3328	4378	1543	3328	4378	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			150			96			143
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			1233.0	
Travel Time (s)		28.8			31.0			36.1			74.0	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	657	2274	255	277	1301	669	205	1516	130	917	2140	483
Shared Lane Traffic (%)												
Lane Group Flow (vph)	657	2274	255	277	1301	669	205	1516	130	917	2140	483
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
v/c Ratio	2.52	1.32	0.37	1.37	0.83	1.02	1.00	1.06	0.23	4.50	1.49	0.81
Control Delay	717.8	182.9	13.0	239.4	42.3	70.5	124.5	82.6	11.1	1597.5	258.2	39.9
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	717.8	182.9	13.0	239.4	42.3	70.5	124.5	82.6	11.1	1597.5	258.2	39.9
LOS	F	F	B	F	D	E	F	F	B	F	F	D
Approach Delay		279.6			75.0			82.2			575.3	
Approach LOS		F			E			F			F	
Queue Length 50th (m)	~144.4	~313.5	17.7	~48.1	124.7	~149.7	~27.5	~177.1	6.0	~223.4	~315.5	82.9
Queue Length 95th (m)	#181.1	#345.4	38.9	#76.1	146.9	#227.9	#53.0	#210.8	20.4	#262.9	#347.8	#137.8
Internal Link Dist (m)		536.5			579.0			577.7			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1720	686	202	1575	659	204	1434	570	204	1434	595
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	2.52	1.32	0.37	1.37	0.83	1.02	1.00	1.06	0.23	4.50	1.49	0.81

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 4.50	
Intersection Signal Delay: 300.1	Intersection LOS: F

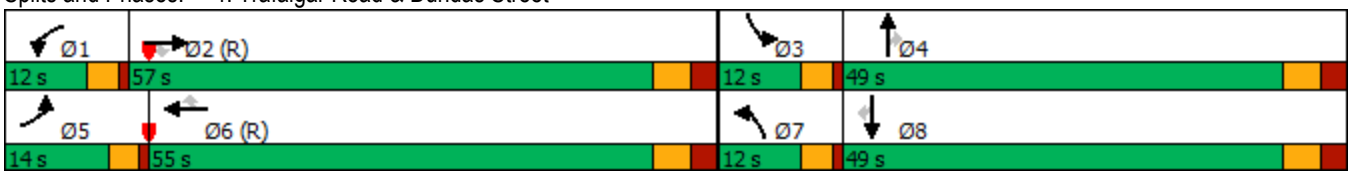
Intersection Capacity Utilization 125.9%	ICU Level of Service H
Analysis Period (min) 15	

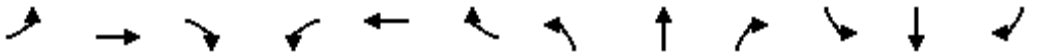
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

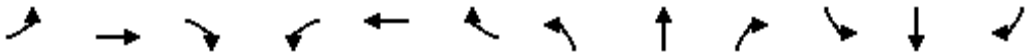




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	631	2183	245	266	1249	642	197	1455	125	880	2054	464
Future Volume (vph)	631	2183	245	266	1249	642	197	1455	125	880	2054	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Flt Permitted	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 (perm)	3395	4421	1529	3298	4214	1512	3330	4378	1543	3330	4378	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	657	2274	255	277	1301	669	205	1516	130	917	2140	483
RTOR Reduction (vph)	0	0	91	0	0	94	0	0	65	0	0	96
Lane Group Flow (vph)	657	2274	164	277	1301	575	205	1516	65	917	2140	387
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Effective Green, g (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	261	1720	595	202	1575	565	204	1434	505	204	1434	499
v/s Ratio Prot	c0.19	c0.51		0.08	0.31		0.06	0.35		c0.28	c0.49	
v/s Ratio Perm			0.11			0.38			0.04			0.25
v/c Ratio	2.52	1.32	0.28	1.37	0.83	1.02	1.00	1.06	0.13	4.50	1.49	0.78
Uniform Delay, d1	60.0	39.7	27.2	61.0	36.9	40.7	61.0	43.7	30.7	61.0	43.7	39.4
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	694.0	149.1	1.1	195.2	5.1	42.4	64.3	40.5	0.1	1584.1	225.3	7.6
Delay (s)	754.0	188.8	28.3	256.2	42.0	83.1	125.3	84.2	30.8	1645.1	269.0	47.0
Level of Service	F	F	C	F	D	F	F	F	C	F	F	D
Approach Delay (s)		292.5			80.6			85.0			595.2	
Approach LOS		F			F			F			F	

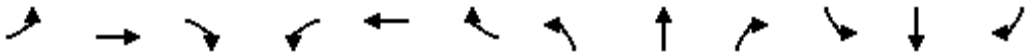
Intersection Summary			
HCM 2000 Control Delay	312.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



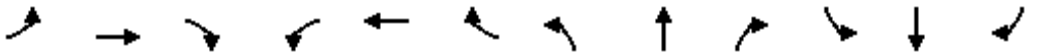
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	624	95	84	483	187	43	349	211	881	286	331
Future Volume (vph)	270	624	95	84	483	187	43	349	211	881	286	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.986			0.964			0.948			0.965	
Flt Protected		0.987			0.995			0.996			0.972	
Satd. Flow (prot)	0	3406	0	0	3357	0	0	3305	0	0	3283	0
Flt Permitted		0.987			0.995			0.996			0.972	
Satd. Flow (perm)	0	3406	0	0	3357	0	0	3305	0	0	3283	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			830.2			671.5			229.3	
Travel Time (s)		28.9			49.8			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	300	693	106	88	537	195	48	364	220	918	298	368
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1099	0	0	820	0	0	632	0	0	1584	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 129.7%		ICU Level of Service H	
Analysis Period (min) 15			

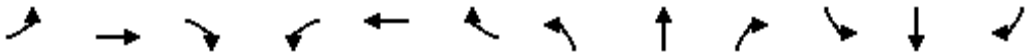


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	270	624	95	84	483	187	43	349	211	881	286	331
Future Volume (veh/h)	270	624	95	84	483	187	43	349	211	881	286	331
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	300	693	106	88	537	195	48	364	220	918	298	368
Approach Volume (veh/h)		1099			820			632			1584	
Crossing Volume (veh/h)		1304#			712			1911#			673	
High Capacity (veh/h)		484			787			290			812	
High v/c (veh/h)		2.27			1.04			2.18			1.95	
Low Capacity (veh/h)		365			625			206			648	
Low v/c (veh/h)		3.01			1.31			3.07			2.45	

Intersection Summary					
Maximum v/c High	2.27				
Maximum v/c Low	3.07				
Intersection Capacity Utilization	129.7%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	149	49	130	221	40	184	706	170	83	565	11
Future Volume (vph)	58	149	49	130	221	40	184	706	170	83	565	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.977			0.971			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3370	0	1684	3319	0	1750	3373	0	1700	3456	0
Flt Permitted	0.573			0.613			0.403			0.259		
Satd. Flow (perm)	1055	3370	0	1087	3319	0	742	3373	0	463	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			25			50			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	167	55	146	248	45	207	793	191	93	635	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	222	0	146	293	0	207	984	0	93	647	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	15.9	15.9		15.9	15.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.62	0.62		0.62	0.62	
v/c Ratio	0.30	0.30		0.65	0.41		0.45	0.46		0.32	0.30	
Control Delay	28.7	19.8		41.5	25.3		12.9	8.8		12.4	7.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.7	19.8		41.5	25.3		12.9	8.8		12.4	7.8	
LOS	C	B		D	C		B	A		B	A	
Approach Delay		21.8			30.7			9.5			8.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	8.0	10.7		19.4	17.6		13.4	31.9		5.4	19.4	
Queue Length 95th (m)	17.7	18.9		36.4	27.5		37.8	60.0		18.6	37.5	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	407	1335		420	1298		462	2122		288	2157	
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	0.16	0.17		0.35	0.23		0.45	0.46		0.32	0.30	

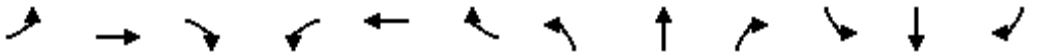
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Sixth Line & Burnhamthorpe Road

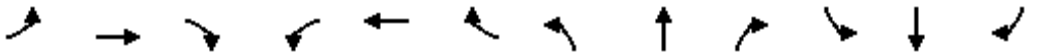


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	149	49	130	221	40	184	706	170	83	565	11
Future Volume (vph)	58	149	49	130	221	40	184	706	170	83	565	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3370		1684	3319		1750	3372		1700	3457	
Flt Permitted	0.57	1.00		0.61	1.00		0.40	1.00		0.26	1.00	
Satd. Flow (perm)	1055	3370		1087	3319		743	3372		464	3457	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	167	55	146	248	45	207	793	191	93	635	12
RTOR Reduction (vph)	0	42	0	0	20	0	0	19	0	0	1	0
Lane Group Flow (vph)	65	180	0	146	273	0	207	965	0	93	646	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.9	15.9		15.9	15.9		47.8	47.8		47.8	47.8	
Effective Green, g (s)	15.9	15.9		15.9	15.9		47.8	47.8		47.8	47.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.62	0.62		0.62	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	218	699		225	688		463	2104		289	2157	
v/s Ratio Prot		0.05			0.08			c0.29			0.19	
v/s Ratio Perm	0.06			c0.13			0.28			0.20		
v/c Ratio	0.30	0.26		0.65	0.40		0.45	0.46		0.32	0.30	
Uniform Delay, d1	25.6	25.4		27.8	26.2		7.5	7.6		6.8	6.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		6.3	0.4		3.1	0.7		2.9	0.4	
Delay (s)	26.4	25.6		34.1	26.6		10.6	8.3		9.7	7.0	
Level of Service	C	C		C	C		B	A		A	A	
Approach Delay (s)		25.8			29.1			8.7			7.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	12.9
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	410	0	3	2	2071	0	0	2042	0
Future Volume (vph)	3	0	2	410	0	3	2	2071	0	0	2042	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.449			0.950	0.950		0.078					
Satd. Flow (perm)	505	0	1566	1449	1388	1487	98	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	461	0	3	2	2327	0	0	2294	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	230	231	3	2	2327	0	0	2294	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



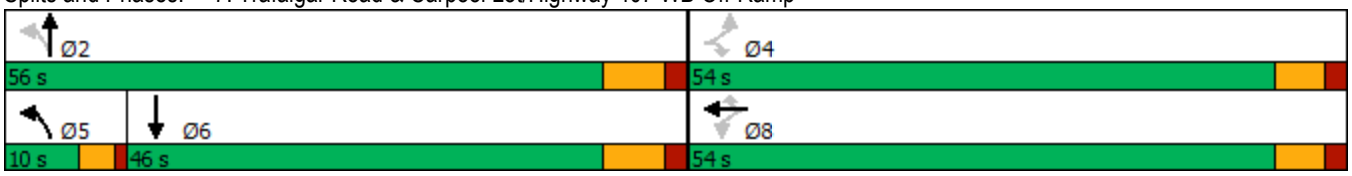
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	54.0		54.0	54.0	54.0	54.0	10.0	56.0			46.0	
Total Split (%)	49.1%		49.1%	49.1%	49.1%	49.1%	9.1%	50.9%			41.8%	
Maximum Green (s)	48.0		48.0	48.0	48.0	48.0	6.0	49.0			39.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	18.6		18.6	18.6	18.6	18.6	52.3	49.2			47.5	
Actuated g/C Ratio	0.23		0.23	0.23	0.23	0.23	0.65	0.61			0.59	
v/c Ratio	0.03		0.00	0.69	0.72	0.01	0.01	1.16			0.82	
Control Delay	23.3		0.0	39.6	42.1	0.0	7.0	96.1			19.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	23.3		0.0	39.6	42.1	0.0	7.0	96.1			19.0	
LOS	C		A	D	D	A	A	F			B	
Approach Delay		14.0			40.6			96.0			19.0	
Approach LOS		B			D			F			B	
Queue Length 50th (m)	0.4		0.0	34.0	35.9	0.0	0.1	~223.7			86.8	
Queue Length 95th (m)	2.3		0.0	56.3	60.1	0.0	1.0	#306.8			#191.4	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	301		965	864	827	918	144	2011			2786	
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	0.01		0.00	0.27	0.28	0.00	0.01	1.16			0.82	

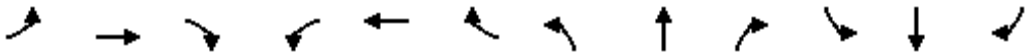
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 80.9			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 56.2		Intersection LOS: E	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

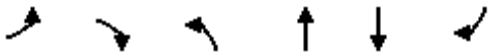
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	410	0	3	2	2071	0	0	2042	0
Future Volume (vph)	3	0	2	410	0	3	2	2071	0	0	2042	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.45		1.00	0.95	0.95	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	505		1566	1449	1388	1487	97	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	461	0	3	2	2327	0	0	2294	0
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	230	231	1	2	2327	0	0	2294	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	18.6		18.6	18.6	18.6	18.6	52.4	52.4			47.4	
Effective Green, g (s)	18.6		18.6	18.6	18.6	18.6	52.4	52.4			47.4	
Actuated g/C Ratio	0.22		0.22	0.22	0.22	0.22	0.62	0.62			0.56	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	111		346	320	307	329	73	2061			2679	
v/s Ratio Prot							0.00	c0.70			0.48	
v/s Ratio Perm	0.01		0.00	0.16	0.17	0.00	0.02					
v/c Ratio	0.03		0.00	0.72	0.75	0.00	0.03	1.13			0.86	
Uniform Delay, d1	25.6		25.5	30.3	30.5	25.5	11.0	15.8			15.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	7.5	10.0	0.0	0.2	64.9			2.9	
Delay (s)	25.7		25.5	37.8	40.5	25.5	11.2	80.7			18.3	
Level of Service	C		C	D	D	C	B	F			B	
Approach Delay (s)		25.6			39.1			80.7			18.3	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2073	2456	32
Future Volume (vph)	0	0	0	2073	2456	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	2329	2760	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2329	2760	36
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

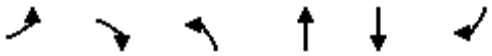
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2073	195	0	2456
Future Volume (vph)	0	0	2073	195	0	2456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	2329	219	0	2760
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2329	219	0	2760
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



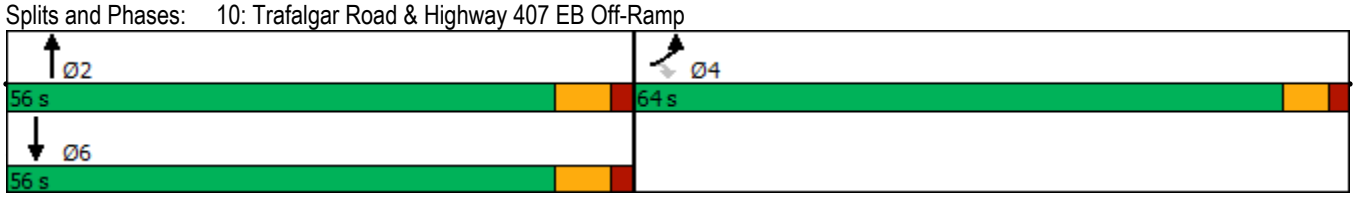
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	392	0	2240	2299	0
Future Volume (vph)	55	392	0	2240	2299	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.886	0.850				
Flt Protected	0.988					
Satd. Flow (prot)	1474	1331	0	3275	3305	0
Flt Permitted	0.988					
Satd. Flow (perm)	1474	1331	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	60	431	0	2462	2526	0
Shared Lane Traffic (%)		44%				
Lane Group Flow (vph)	250	241	0	2462	2526	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

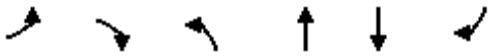
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	64.0	64.0		56.0	56.0	
Total Split (%)	53.3%	53.3%		46.7%	46.7%	
Maximum Green (s)	58.0	58.0		49.0	49.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.8	19.8		49.2	49.2	
Actuated g/C Ratio	0.24	0.24		0.60	0.60	
v/c Ratio	0.70	0.75		1.25	1.28	
Control Delay	39.4	43.8		139.0	148.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.4	43.8		139.0	148.2	
LOS	D	D		F	F	
Approach Delay	41.5			139.0	148.2	
Approach LOS	D			F	F	
Queue Length 50th (m)	35.6	36.6		~255.6	~265.2	
Queue Length 95th (m)	59.1	61.8		#344.7	#355.3	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	1045	944		1963	1981	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.24	0.26		1.25	1.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 82.1			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 134.5		Intersection LOS: F	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

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

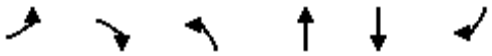
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	392	0	2240	2299	0
Future Volume (vph)	55	392	0	2240	2299	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.89	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1474	1331		3275	3305	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1474	1331		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	431	0	2462	2526	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	250	241	0	2462	2526	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.8	19.8		49.2	49.2	
Effective Green, g (s)	19.8	19.8		49.2	49.2	
Actuated g/C Ratio	0.24	0.24		0.60	0.60	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	355	321		1965	1983	
v/s Ratio Prot	0.17			0.75	c0.76	
v/s Ratio Perm		c0.18				
v/c Ratio	0.70	0.75		1.25	1.27	
Uniform Delay, d1	28.4	28.8		16.4	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.2	9.5		118.2	127.3	
Delay (s)	34.7	38.3		134.6	143.7	
Level of Service	C	D		F	F	
Approach Delay (s)	36.4			134.6	143.7	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	130.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2265	2299	27
Future Volume (vph)	0	0	0	2265	2299	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	2489	2526	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2489	2526	30
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

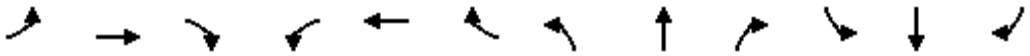
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2240	397	0	2691
Future Volume (vph)	0	0	2240	397	0	2691
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	2462	436	0	2957
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2462	436	0	2957
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

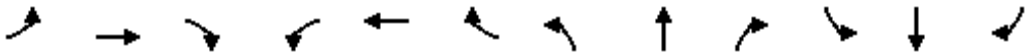
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



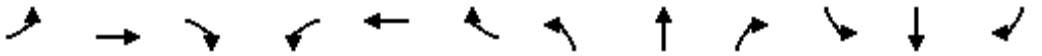
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1921	495	111	1117	100	269	367	104	209	660	100
Future Volume (vph)	105	1921	495	111	1117	100	269	367	104	209	660	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.971			0.989			0.979			0.985	
Flt Protected		0.998			0.996			0.982			0.989	
Satd. Flow (prot)	0	3325	0	0	3414	0	0	3126	0	0	3409	0
Flt Permitted		0.998			0.996			0.982			0.989	
Satd. Flow (perm)	0	3325	0	0	3414	0	0	3126	0	0	3409	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	118	2158	556	125	1255	112	302	412	117	235	742	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2832	0	0	1492	0	0	831	0	0	1089	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 171.4%		ICU Level of Service H	
Analysis Period (min) 15			

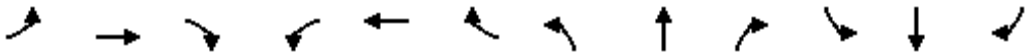


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	105	1921	495	111	1117	100	269	367	104	209	660	100
Future Volume (veh/h)	105	1921	495	111	1117	100	269	367	104	209	660	100
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	118	2158	556	125	1255	112	302	412	117	235	742	112
Approach Volume (veh/h)		2832			1492			831			1089	
Crossing Volume (veh/h)		1102			832			2511#			1682#	
High Capacity (veh/h)		572			714			172			352	
High v/c (veh/h)		4.95			2.09			4.84			3.09	
Low Capacity (veh/h)		440			562			115			256	
Low v/c (veh/h)		6.44			2.66			7.25			4.25	

Intersection Summary					
Maximum v/c High	4.95				
Maximum v/c Low	7.25				
Intersection Capacity Utilization	171.4%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2330	364	531	2036	232
Future Volume (vph)	124	22	83	0	0	262	39	2330	364	531	2036	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.541						0.950			0.950		
Satd. Flow (perm)	612	1487	0	1842	1842	1566	1653	4885	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				350			183			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	291	42	2533	404	590	2213	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	291	42	2533	404	590	2213	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	60.0		49.0	49.0	49.0	11.0	39.0	39.0	21.0	49.0	49.0
Total Split (%)	9.2%	50.0%		40.8%	40.8%	40.8%	9.2%	32.5%	32.5%	17.5%	40.8%	40.8%
Maximum Green (s)	7.0	53.5		42.5	42.5	42.5	7.0	32.5	32.5	17.0	42.5	42.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	23.5	21.0				10.0	7.0	32.5	32.5	17.0	46.9	46.9
Actuated g/C Ratio	0.27	0.24				0.11	0.08	0.37	0.37	0.19	0.54	0.54
v/c Ratio	0.67	0.27				0.60	0.32	1.40	0.58	0.90	0.83	0.28
Control Delay	46.1	10.8				7.3	44.9	208.1	15.4	52.7	21.7	8.2
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	10.8				7.3	44.9	208.1	15.4	52.7	21.7	8.2
LOS	D	B				A	D	F	B	D	C	A
Approach Delay		29.9			7.3			179.7			26.6	
Approach LOS		C			A			F			C	
Queue Length 50th (m)	18.9	3.1				0.0	6.8	~210.0	27.7	50.2	120.2	13.4
Queue Length 95th (m)	#42.8	15.8				11.7	16.6	#239.1	55.8	#78.4	#146.4	27.7
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	201	944				940	132	1814	696	659	2668	888
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	0.67	0.12				0.31	0.32	1.40	0.58	0.90	0.83	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 87.5			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 95.2		Intersection LOS: F	
Intersection Capacity Utilization 82.7%		ICU Level of Service E	
Analysis Period (min) 15			

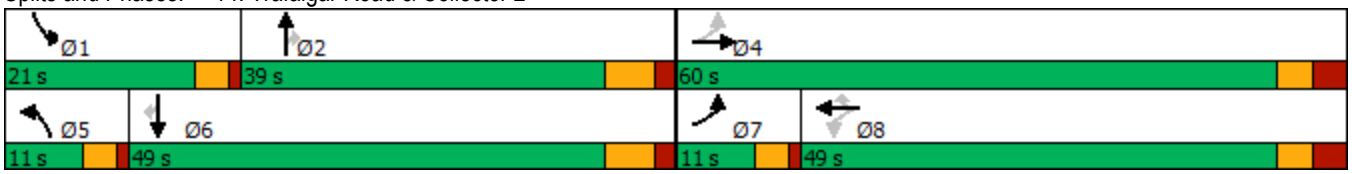
~ Volume exceeds capacity, queue is theoretically infinite.

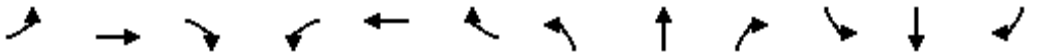
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

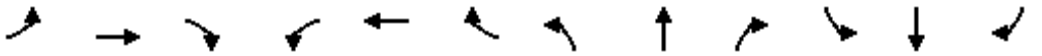
Splits and Phases: 14: Trafalgar Road & Collector 2



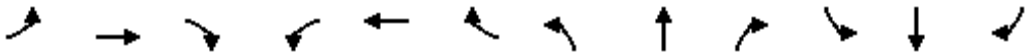


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	262	39	2330	364	531	2036	232
Future Volume (vph)	124	22	83	0	0	262	39	2330	364	531	2036	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	4885	1566	3395	4980	1566
Flt Permitted	0.54	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	612	1486				1566	1653	4885	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	291	42	2533	404	590	2213	252
RTOR Reduction (vph)	0	69	0	0	0	258	0	0	113	0	0	50
Lane Group Flow (vph)	135	45	0	0	0	33	42	2533	291	590	2213	202
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	21.0	21.0				10.0	4.2	34.1	34.1	17.0	46.9	46.9
Effective Green, g (s)	21.0	21.0				10.0	4.2	34.1	34.1	17.0	46.9	46.9
Actuated g/C Ratio	0.24	0.24				0.11	0.05	0.38	0.38	0.19	0.53	0.53
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	180	350				175	77	1869	599	647	2621	824
v/s Ratio Prot	c0.06	0.03					0.03	c0.52		c0.17	0.44	
v/s Ratio Perm	c0.12					0.02			0.19			0.13
v/c Ratio	0.75	0.13				0.19	0.55	1.36	0.49	0.91	0.84	0.25
Uniform Delay, d1	31.0	26.8				35.9	41.5	27.5	20.9	35.3	18.0	11.5
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.0	0.2				0.5	7.7	163.5	2.8	17.2	3.5	0.7
Delay (s)	47.0	27.0				36.4	49.2	191.0	23.7	52.5	21.5	12.2
Level of Service	D	C				D	D	F	C	D	C	B
Approach Delay (s)		37.9			36.4			166.3			26.7	
Approach LOS		D			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	90.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1714	22	231	718	155	18	31	14	21	5	2
Future Volume (vph)	14	1714	22	231	718	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				0.97	0.99	0.99		0.99	0.99	
Frt		0.998				0.850		0.952			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1741	0	1750	1762	0
Flt Permitted	0.350			0.058			0.752			0.724		
Satd. Flow (perm)	642	3491	0	107	3500	1513	1377	1741	0	1326	1762	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				172		16			2	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		830.2			198.4			579.5			190.6	
Travel Time (s)		49.8			11.9			41.7			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1904	24	257	798	172	20	34	16	23	6	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1928	0	257	798	172	20	50	0	23	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		1	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		11.5	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	68.0	68.0		17.0	85.0	85.0	35.0	35.0		35.0	35.0	
Total Split (%)	56.7%	56.7%		14.2%	70.8%	70.8%	29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	62.9	62.9		13.0	79.9	79.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.0	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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	3.0	
Recall Mode	Max	Max		None	Max	Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5			5	5	5	5		5	5	
Act Effct Green (s)	64.7	64.7		83.0	83.0	83.0	13.3	13.3		13.3	13.3	
Actuated g/C Ratio	0.63	0.63		0.81	0.81	0.81	0.13	0.13		0.13	0.13	
v/c Ratio	0.04	0.87		0.87	0.28	0.14	0.11	0.21		0.13	0.03	
Control Delay	10.9	23.3		55.9	4.2	1.1	40.0	31.1		40.5	33.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.9	23.3		55.9	4.2	1.1	40.0	31.1		40.5	33.6	
LOS	B	C		E	A	A	D	C		D	C	
Approach Delay		23.2			14.6			33.6			38.7	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	1.1	150.8		33.8	16.7	0.0	3.6	6.2		4.2	1.1	
Queue Length 95th (m)	5.4	#301.9		#100.7	48.4	6.7	10.0	16.3		11.0	5.3	
Internal Link Dist (m)		806.2			174.4			555.5			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	406	2209		297	2839	1260	401	518		386	514	
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	0.04	0.87		0.87	0.28	0.14	0.05	0.10		0.06	0.02	

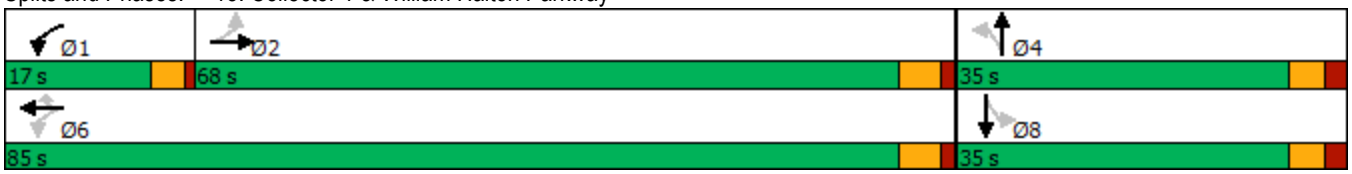
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.3			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	

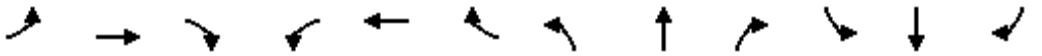
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 15: Collector 1 & William Halton Parkway

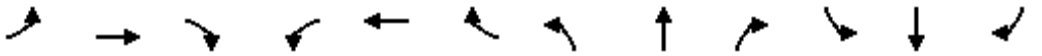




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1714	22	231	718	155	18	31	14	21	5	2
Future Volume (vph)	14	1714	22	231	718	155	18	31	14	21	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	3492		1750	3500	1516	1741	1738		1741	1761	
Flt Permitted	0.35	1.00		0.06	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	643	3492		107	3500	1516	1379	1738		1328	1761	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	1904	24	257	798	172	20	34	16	23	6	2
RTOR Reduction (vph)	0	1	0	0	0	36	0	14	0	0	2	0
Lane Group Flow (vph)	16	1927	0	257	798	136	20	36	0	23	6	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	64.8	64.8		81.9	81.9	81.9	11.1	11.1		11.1	11.1	
Effective Green, g (s)	64.8	64.8		81.9	81.9	81.9	11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.63	0.63		0.79	0.79	0.79	0.11	0.11		0.11	0.11	
Clearance Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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)	402	2186		292	2769	1199	147	186		142	188	
v/s Ratio Prot		0.55		c0.11	0.23			c0.02			0.00	
v/s Ratio Perm	0.02			c0.58		0.09	0.01			0.02		
v/c Ratio	0.04	0.88		0.88	0.29	0.11	0.14	0.19		0.16	0.03	
Uniform Delay, d1	7.4	16.1		33.9	2.9	2.5	41.9	42.1		42.0	41.4	
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	5.6		25.0	0.3	0.2	0.4	0.5		0.5	0.1	
Delay (s)	7.6	21.7		58.9	3.2	2.7	42.3	42.6		42.5	41.5	
Level of Service	A	C		E	A	A	D	D		D	D	
Approach Delay (s)		21.6			14.8			42.5			42.2	
Approach LOS		C			B			D			D	

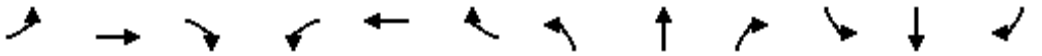
Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	14.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1716	33	0	1095	146	0	0	121	0	0	9
Future Volume (vph)	0	1716	33	0	1095	146	0	0	121	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			355.4	
Travel Time (s)		11.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1907	37	0	1217	162	0	0	134	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1944	0	0	1217	162	0	0	134	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

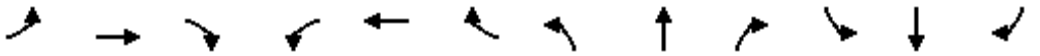
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			



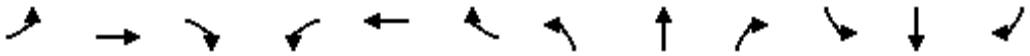
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1716	33	0	1095	146	0	0	121	0	0	9
Future Volume (Veh/h)	0	1716	33	0	1095	146	0	0	121	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1907	37	0	1217	162	0	0	134	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.86			0.47			0.54	0.54	0.47	0.54	0.54	0.86
vC, conflicting volume	1384			1949			2554	3314	982	2314	3171	618
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1116			778			1004	2401	0	564	2138	223
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	74	100	100	98
cM capacity (veh/h)	531			393			103	18	508	161	26	662

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1271	673	608	608	162	134	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	162	134	10
cSH	1700	1700	1700	1700	1700	508	662
Volume to Capacity	0.75	0.40	0.36	0.36	0.10	0.26	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	8.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.6	10.5
Lane LOS						B	B
Approach Delay (s)	0.0		0.0			14.6	10.5
Approach LOS						B	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	64.0%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	609	9	76	385	129	19	91	89	18	47	2
Future Volume (vph)	15	609	9	76	385	129	19	91	89	18	47	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Frt		0.998			0.962			0.926			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3340	0	1750	1689	0	1750	1830	0
Flt Permitted	0.437			0.387			0.722			0.574		
Satd. Flow (perm)	802	3491	0	711	3340	0	1324	1689	0	1053	1830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			69			64			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			579.5	
Travel Time (s)		9.8			17.7			34.4			41.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	677	10	84	428	143	21	101	99	20	52	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	687	0	84	571	0	21	200	0	20	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

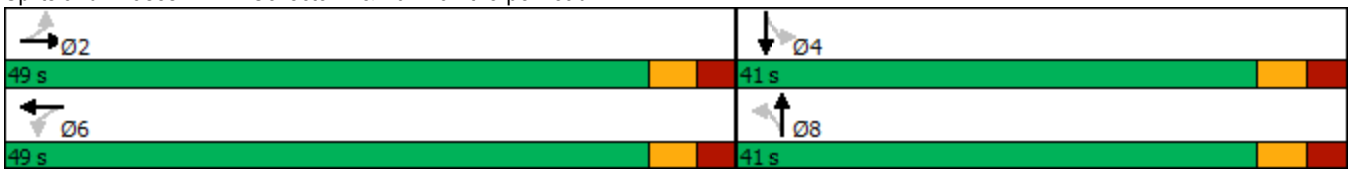


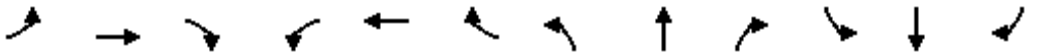
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65		0.18	0.18		0.18	0.18	
v/c Ratio	0.03	0.30		0.18	0.26		0.09	0.56		0.10	0.16	
Control Delay	7.3	7.0		8.4	6.0		22.1	22.4		22.6	22.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.3	7.0		8.4	6.0		22.1	22.4		22.6	22.3	
LOS	A	A		A	A		C	C		C	C	
Approach Delay		7.0			6.3			22.4			22.4	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.6	15.8		3.4	11.0		2.2	15.4		2.1	5.6	
Queue Length 95th (m)	4.2	42.7		15.1	31.5		7.0	31.6		6.8	13.2	
Internal Link Dist (m)		112.3			221.2			453.1			555.5	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	520	2264		461	2190		653	866		519	904	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.30		0.18	0.26		0.03	0.23		0.04	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	609	9	76	385	129	19	91	89	18	47	2
Future Volume (vph)	15	609	9	76	385	129	19	91	89	18	47	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.93		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3491		1745	3343		1744	1687		1745	1830	
Flt Permitted	0.44	1.00		0.39	1.00		0.72	1.00		0.57	1.00	
Satd. Flow (perm)	803	3491		711	3343		1325	1687		1055	1830	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	677	10	84	428	143	21	101	99	20	52	2
RTOR Reduction (vph)	0	1	0	0	24	0	0	52	0	0	2	0
Lane Group Flow (vph)	17	686	0	84	547	0	21	148	0	20	52	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Effective Green, g (s)	46.3	46.3		46.3	46.3		13.0	13.0		13.0	13.0	
Actuated g/C Ratio	0.65	0.65		0.65	0.65		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	521	2266		461	2170		241	307		192	333	
v/s Ratio Prot		c0.20			0.16			c0.09			0.03	
v/s Ratio Perm	0.02			0.12			0.02			0.02		
v/c Ratio	0.03	0.30		0.18	0.25		0.09	0.48		0.10	0.16	
Uniform Delay, d1	4.5	5.5		5.0	5.2		24.2	26.1		24.3	24.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.9	0.3		0.2	1.2		0.2	0.2	
Delay (s)	4.6	5.8		5.8	5.5		24.4	27.3		24.5	24.8	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		5.8			5.6			27.0			24.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	575	1	11	382	3	30
Future Volume (vph)	575	1	11	382	3	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3500	0	0	3496	1750	1566
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3500	0	0	3496	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	639	1	12	424	3	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	640	0	0	436	3	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	575	1	11	382	3	30
Future Volume (Veh/h)	575	1	11	382	3	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	639	1	12	424	3	33
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				268		
pX, platoon unblocked						
vC, conflicting volume			645		886	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			645		886	330
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	95
cM capacity (veh/h)			932		278	659

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	426	214	153	283	3	33
Volume Left	0	0	12	0	3	0
Volume Right	0	1	0	0	0	33
cSH	1700	1700	932	1700	278	659
Volume to Capacity	0.25	0.13	0.01	0.17	0.01	0.05
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.2	1.2
Control Delay (s)	0.0	0.0	0.8	0.0	18.1	10.7
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.3		11.4	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	605	0	13	380	0	28
Future Volume (vph)	605	0	13	380	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	30.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.998		
Satd. Flow (prot)	3500	0	0	3493	1842	1566
Flt Permitted				0.998		
Satd. Flow (perm)	3500	0	0	3493	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	672	0	14	422	0	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	436	0	31
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

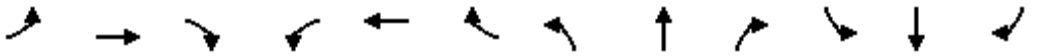
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	605	0	13	380	0	28
Future Volume (Veh/h)	605	0	13	380	0	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	672	0	14	422	0	31
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				136		
pX, platoon unblocked						
vC, conflicting volume			677		921	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			677		921	346
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	95
cM capacity (veh/h)			906		263	644

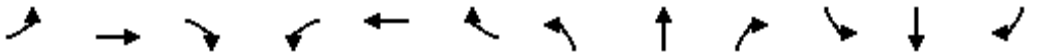
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	448	224	155	281	0	31
Volume Left	0	0	14	0	0	0
Volume Right	0	0	0	0	0	31
cSH	1700	1700	906	1700	1700	644
Volume to Capacity	0.26	0.13	0.02	0.17	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	1.0	0.0	0.0	10.9
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.3		10.9	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1445	10	0	828	45	0	0	25	0	0	180
Future Volume (vph)	0	1445	10	0	828	45	0	0	25	0	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5						5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1606	11	0	920	50	0	0	28	0	0	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1617	0	0	920	50	0	0	28	0	0	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)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

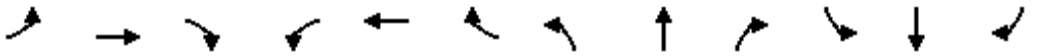
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1445	10	0	828	45	0	0	25	0	0	180
Future Volume (Veh/h)	0	1445	10	0	828	45	0	0	25	0	0	180
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1606	11	0	920	50	0	0	28	0	0	200
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.92			0.66			0.70	0.70	0.66	0.70	0.70	0.92
vC, conflicting volume	975			1622			2282	2592	818	1761	2547	470
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	799			925			1468	1908	0	728	1845	250
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	96	100	100	71
cM capacity (veh/h)	750			485			44	47	713	207	52	683

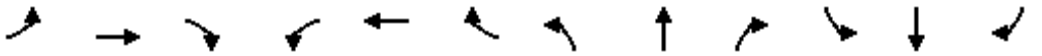
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1071	546	460	460	50	28	200
Volume Left	0	0	0	0	0	0	0
Volume Right	0	11	0	0	50	28	200
cSH	1700	1700	1700	1700	1700	713	683
Volume to Capacity	0.63	0.32	0.27	0.27	0.03	0.04	0.29
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.9	9.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.3	12.4
Lane LOS						B	B
Approach Delay (s)	0.0		0.0			10.3	12.4
Approach LOS						B	B

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	51.8%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	739	12	0	656	4	0	0	135	0	0	25
Future Volume (vph)	0	739	12	0	656	4	0	0	135	0	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	821	13	0	729	4	0	0	150	0	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	834	0	0	733	0	0	0	150	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

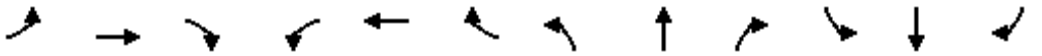
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	739	12	0	656	4	0	0	135	0	0	25
Future Volume (Veh/h)	0	739	12	0	656	4	0	0	135	0	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	821	13	0	729	4	0	0	150	0	0	28
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123			223							
pX, platoon unblocked	0.94			0.90			0.93	0.93	0.90	0.93	0.93	0.94
vC, conflicting volume	738			839			1230	1570	427	1302	1575	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585			587			783	1150	127	860	1155	199
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	81	100	100	96
cM capacity (veh/h)	919			877			249	181	798	185	180	750

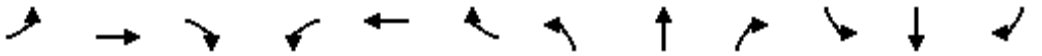
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	547	287	486	247	150	28
Volume Left	0	0	0	0	0	0
Volume Right	0	13	0	4	150	28
cSH	1700	1700	1700	1700	798	750
Volume to Capacity	0.32	0.17	0.29	0.15	0.19	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.2	0.9
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	10.0
Lane LOS					B	A
Approach Delay (s)	0.0		0.0		10.6	10.0
Approach LOS					B	A

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	37.1%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	41	0	0	109	0	2517	38	0	1857	184
Future Volume (vph)	0	0	41	0	0	109	0	2517	38	0	1857	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	46	0	0	121	0	2797	42	0	2063	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	46	0	0	121	0	2797	42	0	2063	204
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

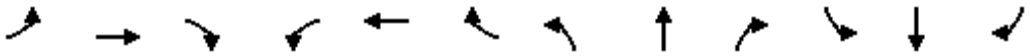
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	41	0	0	109	0	2517	38	0	1857	184
Future Volume (Veh/h)	0	0	41	0	0	109	0	2517	38	0	1857	184
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	46	0	0	121	0	2797	42	0	2063	204
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.75	0.75	0.69	0.75	0.75	0.59	0.69			0.59		
vC, conflicting volume	3126	4912	698	3541	5074	942	2272			2844		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2225	0	401	2441	0	1250			1714		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	100	100	81	100			100		
cM capacity (veh/h)	612	32	736	370	23	638	377			216		

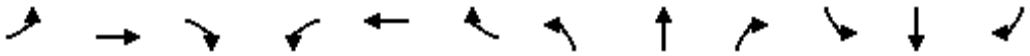
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	46	121	932	932	932	42	688	688	688	204
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	46	121	0	0	0	42	0	0	0	204
cSH	736	638	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.19	0.55	0.55	0.55	0.02	0.40	0.40	0.40	0.12
Queue Length 95th (m)	1.5	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.2	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	10.2	12.0	0.0				0.0			
Approach LOS	B	B								

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	63.5%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
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
Ped Bike Factor												
Frt		0.977			0.958			0.996			0.952	
Flt Protected		0.965			0.992			0.978			0.996	
Satd. Flow (prot)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Flt Permitted		0.965			0.992			0.978			0.996	
Satd. Flow (perm)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			274.1			250.4			181.9	
Travel Time (s)		24.8			19.7			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	17	28	2	7	4	82	96	6	11	82	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	13	0	0	184	0	0	144	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	119	17	28	2	7	4	82	96	6	11	82	51

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	164	13	184	144
Volume Left (vph)	119	2	82	11
Volume Right (vph)	28	4	6	51
Hadj (s)	0.08	-0.12	0.10	-0.16
Departure Headway (s)	4.8	4.8	4.6	4.4
Degree Utilization, x	0.22	0.02	0.24	0.18
Capacity (veh/h)	706	682	746	772
Control Delay (s)	9.1	7.9	9.0	8.3
Approach Delay (s)	9.1	7.9	9.0	8.3
Approach LOS	A	A	A	A

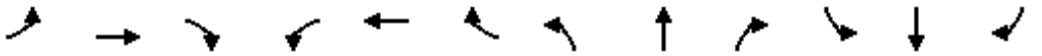
Intersection Summary				
Delay		8.8		
Level of Service		A		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

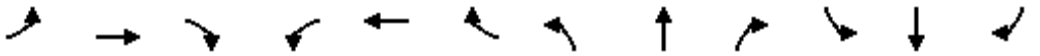
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Future Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	119	17	28	2	7	4	82	96	6	11	82	51
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	7.9	9	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	73%	17%	8%
Vol Thru, %	52%	10%	50%	57%
Vol Right, %	3%	17%	33%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	147	12	130
LT Vol	74	107	2	10
Through Vol	86	15	6	74
RT Vol	5	25	4	46
Lane Flow Rate	183	163	13	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.234	0.215	0.018	0.176
Departure Headway (Hd)	4.598	4.74	4.725	4.381
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	781	756	755	819
Service Time	2.625	2.772	2.767	2.41
HCM Lane V/C Ratio	0.234	0.216	0.017	0.176
HCM Control Delay	9	9.1	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.8	0.1	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1354	45	29	678	4	170	27	60	80	37	25
Future Volume (vph)	10	1354	45	29	678	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.97		1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.896			0.939	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1628	0	1750	1716	0
Flt Permitted	0.347			0.116			0.712			0.694		
Satd. Flow (perm)	637	3500	1514	214	3496	0	1306	1628	0	1273	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38		1			26			28	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1504	50	32	753	4	189	30	67	89	41	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1504	50	32	757	0	189	97	0	89	69	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	

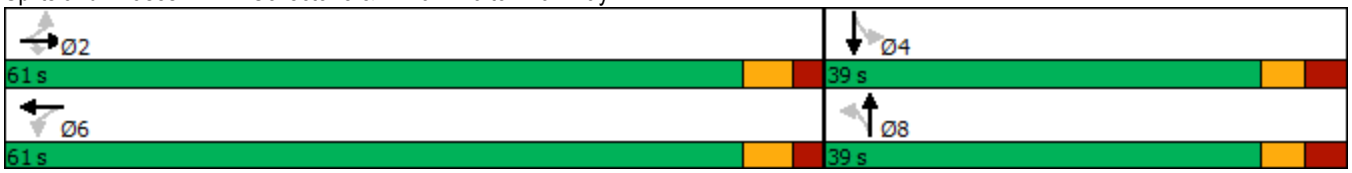


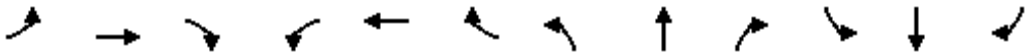
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.9	38.9	38.9	38.9	38.9		38.5	38.5		38.5	38.5	
Total Split (s)	61.0	61.0	61.0	61.0	61.0		39.0	39.0		39.0	39.0	
Total Split (%)	61.0%	61.0%	61.0%	61.0%	61.0%		39.0%	39.0%		39.0%	39.0%	
Maximum Green (s)	54.9	54.9	54.9	54.9	54.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	55.8	55.8	55.8	55.8	55.8		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
v/c Ratio	0.03	0.67	0.05	0.23	0.34		0.68	0.27		0.33	0.18	
Control Delay	8.6	13.1	4.0	14.8	8.7		43.7	22.0		31.1	18.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.6	13.1	4.0	14.8	8.7		43.7	22.0		31.1	18.4	
LOS	A	B	A	B	A		D	C		C	B	
Approach Delay		12.8			8.9			36.3			25.5	
Approach LOS		B			A			D			C	
Queue Length 50th (m)	0.6	70.1	0.6	1.9	25.6		28.7	9.7		12.4	5.5	
Queue Length 95th (m)	3.5	141.6	6.0	10.2	54.0		49.1	21.3		24.4	15.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	408	2246	985	137	2244		490	627		477	661	
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	0.03	0.67	0.05	0.23	0.34		0.39	0.15		0.19	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 24: Collector 5 & William Halton Parkway

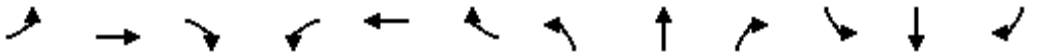




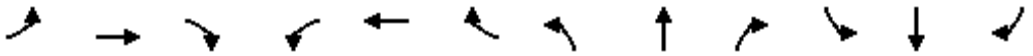
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1354	45	29	678	4	170	27	60	80	37	25
Future Volume (vph)	10	1354	45	29	678	4	170	27	60	80	37	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3500	1517	1749	3497		1743	1627		1744	1715	
Flt Permitted	0.35	1.00	1.00	0.12	1.00		0.71	1.00		0.69	1.00	
Satd. Flow (perm)	637	3500	1517	214	3497		1307	1627		1274	1715	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1504	50	32	753	4	189	30	67	89	41	28
RTOR Reduction (vph)	0	0	14	0	0	0	0	20	0	0	22	0
Lane Group Flow (vph)	11	1504	36	32	757	0	189	77	0	89	47	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Effective Green, g (s)	55.9	55.9	55.9	55.9	55.9		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	409	2248	974	137	2246		277	345		270	364	
v/s Ratio Prot		c0.43			0.22			0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.15			c0.14			0.07		
v/c Ratio	0.03	0.67	0.04	0.23	0.34		0.68	0.22		0.33	0.13	
Uniform Delay, d1	5.7	9.7	5.7	6.5	7.1		31.5	28.3		29.0	27.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.8	0.0	4.0	0.4		6.8	0.3		0.7	0.2	
Delay (s)	5.7	10.5	5.7	10.5	7.5		38.3	28.6		29.7	27.9	
Level of Service	A	B	A	B	A		D	C		C	C	
Approach Delay (s)		10.3			7.6			35.0			28.9	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	831	8	79	591	4	29	120	187	20	99	40
Future Volume (vph)	35	831	8	79	591	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.999			0.999			0.909			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3495	0	1750	3496	0	1750	1654	0	1750	1753	0
Flt Permitted	0.391			0.272			0.659			0.326		
Satd. Flow (perm)	718	3495	0	500	3496	0	1209	1654	0	599	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1			87			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	923	9	88	657	4	32	133	208	22	110	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	932	0	88	661	0	32	341	0	22	154	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

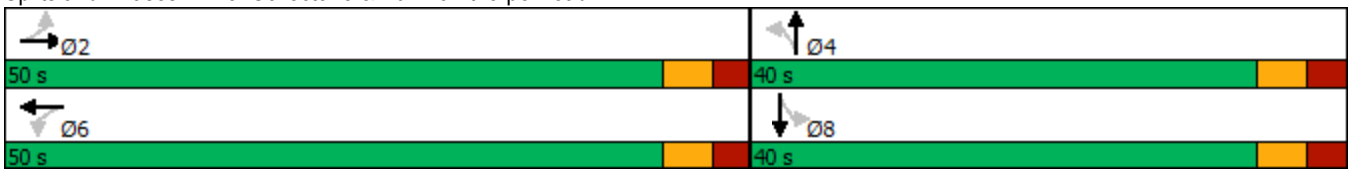


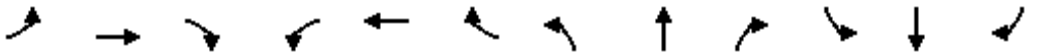
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		33.1	33.1		33.1	33.1	
Total Split (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	44.1	44.1		44.1	44.1		33.9	33.9		33.9	33.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	44.4	44.4		44.4	44.4		17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.23	0.23		0.23	0.23	
v/c Ratio	0.09	0.44		0.29	0.31		0.11	0.76		0.16	0.36	
Control Delay	8.7	9.7		12.4	8.5		22.0	30.3		24.1	21.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.7	9.7		12.4	8.5		22.0	30.3		24.1	21.2	
LOS	A	A		B	A		C	C		C	C	
Approach Delay		9.6			9.0			29.6			21.5	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	2.0	32.1		5.2	20.6		3.5	32.5		2.4	14.6	
Queue Length 95th (m)	7.7	61.6		18.1	40.8		9.6	58.4		7.9	28.6	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	433	2109		301	2109		560	813		277	827	
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	0.44		0.29	0.31		0.06	0.42		0.08	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 68.1%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

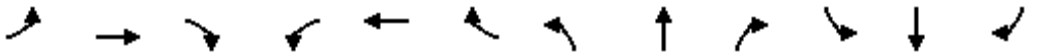




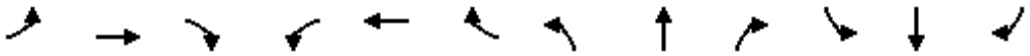
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	831	8	79	591	4	29	120	187	20	99	40
Future Volume (vph)	35	831	8	79	591	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3494		1747	3496		1744	1652		1746	1753	
Flt Permitted	0.39	1.00		0.27	1.00		0.66	1.00		0.33	1.00	
Satd. Flow (perm)	718	3494		500	3496		1210	1652		598	1753	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	923	9	88	657	4	32	133	208	22	110	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	67	0	0	20	0
Lane Group Flow (vph)	39	932	0	88	661	0	32	274	0	22	134	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	44.4	44.4		44.4	44.4		17.1	17.1		17.1	17.1	
Effective Green, g (s)	44.4	44.4		44.4	44.4		17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.23	0.23		0.23	0.23	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	433	2110		302	2111		281	384		139	407	
v/s Ratio Prot		c0.27			0.19			c0.17			0.08	
v/s Ratio Perm	0.05			0.18			0.03			0.04		
v/c Ratio	0.09	0.44		0.29	0.31		0.11	0.71		0.16	0.33	
Uniform Delay, d1	6.1	7.9		7.0	7.1		22.2	26.0		22.5	23.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		2.4	0.4		0.2	6.2		0.5	0.5	
Delay (s)	6.5	8.5		9.4	7.5		22.4	32.1		23.0	23.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		8.4			7.7			31.3			23.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2428	20	61	1985	30
Future Volume (vph)	79	7	22	97	3	97	23	2428	20	61	1985	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor	1.00	0.98		0.99	0.98			1.00			1.00	
Frt		0.887			0.854			0.999			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1607	0	1750	1540	0	1750	4415	0	1750	4410	0
Flt Permitted	0.685			0.736			0.052			0.052		
Satd. Flow (perm)	1256	1607	0	1348	1540	0	96	4415	0	96	4410	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			2			2			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	2698	22	68	2206	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	32	0	108	111	0	26	2720	0	68	2239	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		33.4	33.4		33.4	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%		67.5%	67.5%		67.5%	67.5%	
Maximum Green (s)	32.5	32.5		32.5	32.5		74.6	74.6		74.6	74.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	16.1	16.1		16.1	16.1		77.4	77.4		77.4	77.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.73	0.73		0.73	0.73	
v/c Ratio	0.47	0.13		0.53	0.48		0.38	0.85		0.99	0.70	
Control Delay	47.5	30.2		49.8	45.8		28.5	15.3		128.6	10.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.1	
Total Delay	47.5	30.2		49.8	45.8		28.5	15.4		128.6	11.0	
LOS	D	C		D	D		C	B		F	B	
Approach Delay		42.9			47.8			15.5			14.4	
Approach LOS		D			D			B			B	
Queue Length 50th (m)	16.3	4.2		20.2	20.2		1.5	125.9		10.0	80.7	
Queue Length 95th (m)	30.7	12.0		36.2	35.8		#17.1	#303.9		#34.1	179.7	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	385	498		413	474		69	3211		69	3208	
Starvation Cap Reductn	0	0		0	0		0	18		0	165	
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	0.06		0.26	0.23		0.38	0.85		0.99	0.74	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 106.4			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	

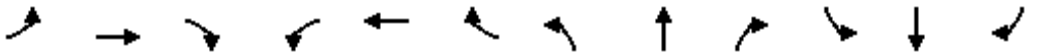
Analysis Period (min) 15

* User Entered Value

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

Splits and Phases: 26: Trafalgar Road & Local 6

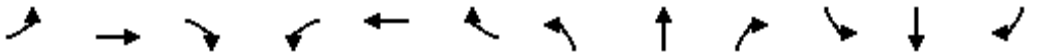




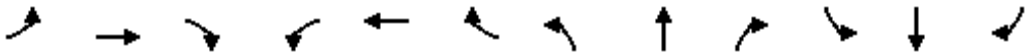
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2428	20	61	1985	30
Future Volume (vph)	79	7	22	97	3	97	23	2428	20	61	1985	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1605		1742	1536		1750	4414		1750	4409	
Flt Permitted	0.69	1.00		0.74	1.00		0.05	1.00		0.05	1.00	
Satd. Flow (perm)	1257	1605		1350	1536		95	4414		95	4409	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	2698	22	68	2206	33
RTOR Reduction (vph)	0	7	0	0	2	0	0	1	0	0	1	0
Lane Group Flow (vph)	88	25	0	108	109	0	26	2719	0	68	2238	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.1	16.1		16.1	16.1		77.4	77.4		77.4	77.4	
Effective Green, g (s)	16.1	16.1		16.1	16.1		77.4	77.4		77.4	77.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	190	242		204	232		69	3210		69	3207	
v/s Ratio Prot		0.02			0.07			0.62			0.51	
v/s Ratio Perm	0.07			c0.08			0.27			c0.71		
v/c Ratio	0.46	0.10		0.53	0.47		0.38	0.85		0.99	0.70	
Uniform Delay, d1	41.2	38.9		41.7	41.3		5.4	10.3		14.0	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.2		2.5	1.5		15.0	3.0		104.3	1.3	
Delay (s)	43.0	39.1		44.1	42.8		20.4	13.3		118.3	9.3	
Level of Service	D	D		D	D		C	B		F	A	
Approach Delay (s)		42.0			43.4			13.3			12.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	106.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2259	223	99	1886	119
Future Volume (vph)	153	113	197	334	133	59	89	2259	223	99	1886	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.663			0.551			0.065			0.065		
Satd. Flow (perm)	1216	1842	1532	1010	1842	1534	120	4421	1511	120	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2510	248	110	2096	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	126	219	371	148	66	99	2510	248	110	2096	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	11.0	59.0	59.0	11.0	59.0	59.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	9.2%	49.2%	49.2%	9.2%	49.2%	49.2%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	7.0	52.6	52.6	7.0	52.6	52.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	22.3	22.3	22.3	35.8	33.3	33.3	71.7	61.5	61.5	72.7	62.0	62.0
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.28	0.28	0.60	0.51	0.51	0.61	0.52	0.52
v/c Ratio	0.76	0.37	0.56	1.08	0.29	0.14	0.56	1.11	0.30	0.59	0.92	0.16
Control Delay	65.8	44.0	22.4	109.3	34.0	6.9	29.4	85.0	11.8	31.5	35.5	5.9
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	65.8	44.0	22.4	109.3	34.0	6.9	29.4	85.0	11.8	31.5	35.5	5.9
LOS	E	D	C	F	C	A	C	F	B	C	D	A
Approach Delay		42.0			78.7			76.7			33.6	
Approach LOS		D			E			E			C	
Queue Length 50th (m)	38.4	26.2	18.1	~86.3	27.5	0.0	8.3	~281.9	17.6	9.3	182.7	3.0
Queue Length 95th (m)	56.7	39.7	38.5	#119.8	39.8	9.0	#29.1	#346.2	39.8	#36.1	#262.9	14.9
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	329	498	510	344	667	598	178	2265	825	185	2283	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.25	0.43	1.08	0.22	0.11	0.56	1.11	0.30	0.59	0.92	0.16

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 58.1	Intersection LOS: E

Intersection Capacity Utilization 96.5%	ICU Level of Service F
Analysis Period (min) 15	

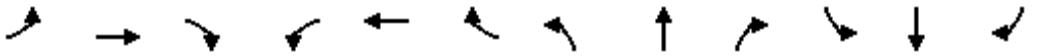
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 27: Trafalgar Road & Settlers Road

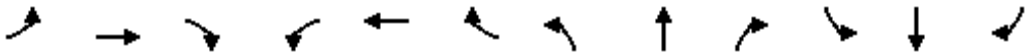




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2259	223	99	1886	119
Future Volume (vph)	153	113	197	334	133	59	89	2259	223	99	1886	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	1842	1529	1746	1842	1532	1750	4421	1512	1750	4421	1512
Flt Permitted	0.66	1.00	1.00	0.55	1.00	1.00	0.07	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1215	1842	1529	1013	1842	1532	120	4421	1512	119	4421	1512
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2510	248	110	2096	132
RTOR Reduction (vph)	0	0	107	0	0	48	0	0	51	0	0	51
Lane Group Flow (vph)	170	126	112	371	148	18	99	2510	197	110	2096	81
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	22.3	22.3	22.3	33.3	33.3	33.3	69.3	61.5	61.5	70.3	62.0	62.0
Effective Green, g (s)	22.3	22.3	22.3	33.3	33.3	33.3	69.3	61.5	61.5	70.3	62.0	62.0
Actuated g/C Ratio	0.19	0.19	0.19	0.28	0.28	0.28	0.58	0.51	0.51	0.59	0.52	0.52
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	342	284	323	511	425	175	2265	774	182	2284	781
v/s Ratio Prot		0.07		c0.07	0.08		0.04	c0.57		c0.04	0.47	
v/s Ratio Perm	0.14		0.07	c0.25		0.01	0.29		0.13	0.31		0.05
v/c Ratio	0.76	0.37	0.40	1.15	0.29	0.04	0.57	1.11	0.25	0.60	0.92	0.10
Uniform Delay, d1	46.3	42.7	42.9	43.2	34.1	31.7	23.0	29.2	16.4	25.9	26.7	14.8
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	13.4	0.7	0.9	96.7	0.3	0.0	4.1	55.8	0.8	5.6	7.3	0.3
Delay (s)	59.7	43.4	43.8	139.9	34.4	31.7	27.2	85.0	17.2	31.5	34.0	15.1
Level of Service	E	D	D	F	C	C	C	F	B	C	C	B
Approach Delay (s)		49.0			101.0			77.1			32.8	
Approach LOS		D			F			E			C	

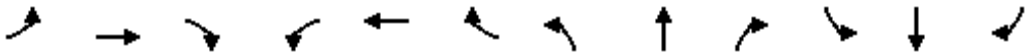
Intersection Summary			
HCM 2000 Control Delay	60.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Future Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
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
Ped Bike Factor												
Frt		0.970			0.987			0.935			0.992	
Flt Protected		0.998			0.976			0.994			0.988	
Satd. Flow (prot)	0	1783	0	0	1774	0	0	1712	0	0	1805	0
Flt Permitted		0.998			0.976			0.994			0.988	
Satd. Flow (perm)	0	1783	0	0	1774	0	0	1712	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	149	44	161	137	32	37	134	159	34	100	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	199	0	0	330	0	0	330	0	0	143	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Future Volume (vph)	5	134	40	145	123	29	33	121	143	31	90	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	149	44	161	137	32	37	134	159	34	100	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	199	330	330	143
Volume Left (vph)	6	161	37	34
Volume Right (vph)	44	32	159	9
Hadj (s)	-0.09	0.07	-0.23	0.04
Departure Headway (s)	5.8	5.7	5.5	6.1
Degree Utilization, x	0.32	0.53	0.50	0.24
Capacity (veh/h)	552	588	605	502
Control Delay (s)	11.6	14.9	14.0	11.1
Approach Delay (s)	11.6	14.9	14.0	11.1
Approach LOS	B	B	B	B

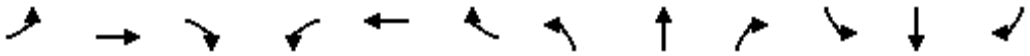
Intersection Summary				
Delay	13.4			
Level of Service	B			
Intersection Capacity Utilization	56.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	134	40	145	123	29	33	121	143	31	90	8
Future Vol, veh/h	5	134	40	145	123	29	33	121	143	31	90	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	149	44	161	137	32	37	134	159	34	100	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

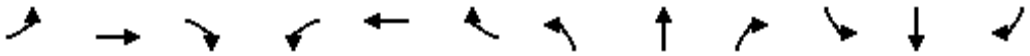
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	14.8	13.9	11.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	3%	49%	24%
Vol Thru, %	41%	75%	41%	70%
Vol Right, %	48%	22%	10%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	297	179	297	129
LT Vol	33	5	145	31
Through Vol	121	134	123	90
RT Vol	143	40	29	8
Lane Flow Rate	330	199	330	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.5	0.318	0.521	0.242
Departure Headway (Hd)	5.452	5.756	5.679	6.068
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	657	621	630	588
Service Time	3.522	3.837	3.75	4.155
HCM Lane V/C Ratio	0.502	0.32	0.524	0.243
HCM Control Delay	13.9	11.5	14.8	11.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.8	1.4	3	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
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
Ped Bike Factor												
Frt		0.984			0.997			0.969			0.932	
Flt Protected		0.993			0.997			0.992			0.997	
Satd. Flow (prot)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Flt Permitted		0.993			0.997			0.992			0.997	
Satd. Flow (perm)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	340	56	23	324	9	39	144	54	21	138	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	464	0	0	356	0	0	237	0	0	321	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	68	340	56	23	324	9	39	144	54	21	138	162

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	464	356	237	321
Volume Left (vph)	68	23	39	21
Volume Right (vph)	56	9	54	162
Hadj (s)	-0.01	0.03	-0.07	-0.26
Departure Headway (s)	7.3	7.6	8.1	7.6
Degree Utilization, x	0.94	0.75	0.54	0.68
Capacity (veh/h)	486	453	409	440
Control Delay (s)	53.3	30.5	20.1	25.3
Approach Delay (s)	53.3	30.5	20.1	25.3
Approach LOS	F	D	C	D

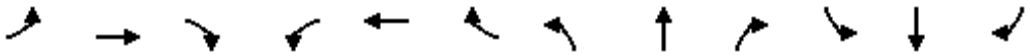
Intersection Summary				
Delay	35.2			
Level of Service	E			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	34.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Future Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	340	56	23	324	9	39	144	54	21	138	162
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

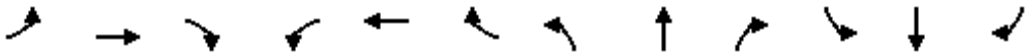
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	52	30.2	20.1	25.1
HCM LOS	F	D	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	15%	7%	7%
Vol Thru, %	61%	73%	91%	43%
Vol Right, %	23%	12%	2%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	417	321	289
LT Vol	35	61	21	19
Through Vol	130	306	292	124
RT Vol	49	50	8	146
Lane Flow Rate	238	463	357	321
Geometry Grp	1	1	1	1
Degree of Util (X)	0.533	0.93	0.75	0.675
Departure Headway (Hd)	8.066	7.225	7.567	7.564
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	445	500	478	475
Service Time	6.145	5.289	5.638	5.637
HCM Lane V/C Ratio	0.535	0.926	0.747	0.676
HCM Control Delay	20.1	52	30.2	25.1
HCM Lane LOS	C	F	D	D
HCM 95th-tile Q	3.1	11.1	6.3	5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
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
Ped Bike Factor												
Frt		0.996			0.971			0.970			0.945	
Flt Protected		0.995			0.998			0.987			0.991	
Satd. Flow (prot)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Flt Permitted		0.995			0.998			0.987			0.991	
Satd. Flow (perm)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	358	13	11	212	60	38	71	31	51	123	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	283	0	0	140	0	0	295	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	358	13	11	212	60	38	71	31	51	123	121

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	415	283	140	295
Volume Left (vph)	44	11	38	51
Volume Right (vph)	13	60	31	121
Hadj (s)	0.04	-0.09	-0.04	-0.18
Departure Headway (s)	5.9	6.1	6.7	6.2
Degree Utilization, x	0.68	0.48	0.26	0.51
Capacity (veh/h)	578	536	437	530
Control Delay (s)	20.8	14.5	12.1	15.3
Approach Delay (s)	20.8	14.5	12.1	15.3
Approach LOS	C	B	B	C

Intersection Summary				
Delay	16.7			
Level of Service	C			
Intersection Capacity Utilization	58.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Future Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	358	13	11	212	60	38	71	31	51	123	121
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.8	14.5	12.1	15.3
HCM LOS	C	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	11%	4%	17%
Vol Thru, %	51%	86%	75%	42%
Vol Right, %	22%	3%	21%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	374	255	266
LT Vol	34	40	10	46
Through Vol	64	322	191	111
RT Vol	28	12	54	109
Lane Flow Rate	140	416	283	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.26	0.683	0.476	0.505
Departure Headway (Hd)	6.674	5.916	6.053	6.147
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	611	595	585
Service Time	4.734	3.961	4.104	4.195
HCM Lane V/C Ratio	0.261	0.681	0.476	0.506
HCM Control Delay	12.1	20.8	14.5	15.3
HCM Lane LOS	B	C	B	C
HCM 95th-tile Q	1	5.3	2.6	2.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	34	2537	36	0	2412
Future Volume (vph)	0	34	2537	36	0	2412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.80	0.91	1.00	*0.80
Ped Bike Factor						
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1593	4412	0	0	4421
Flt Permitted						
Satd. Flow (perm)	0	1593	4412	0	0	4421
Link Speed (k/h)	50		60			60
Link Distance (m)	74.3		148.7			268.7
Travel Time (s)	5.3		8.9			16.1
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	38	2819	40	0	2680
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	2859	0	0	2680
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

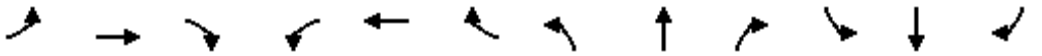
* User Entered Value



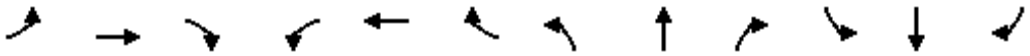
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	34	2537	36	0	2412
Future Volume (Veh/h)	0	34	2537	36	0	2412
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	2819	40	0	2680
Pedestrians	5		5			5
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.0		1.0			1.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.72	0.51			0.51	
vC, conflicting volume	3742	970			2864	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			1294	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			100	
cM capacity (veh/h)	734	548			270	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	1128	1128	604	893	893	893
Volume Left	0	0	0	0	0	0	0
Volume Right	38	0	0	40	0	0	0
cSH	548	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.66	0.66	0.36	0.53	0.53	0.53
Queue Length 95th (m)	1.7	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
Lane LOS	B						
Approach Delay (s)	12.1	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2506	47	103	2298	20
Future Volume (vph)	33	70	267	238	118	54	235	2506	47	103	2298	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.673			0.566			0.079			0.085		
Satd. Flow (perm)	1234	1842	1532	1038	1842	1534	146	4421	1511	157	4421	1510
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188			104			105			141
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2784	52	114	2553	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	78	297	264	131	60	261	2784	52	114	2553	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	17.0	59.0	59.0	11.0	53.0	53.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	14.2%	49.2%	49.2%	9.2%	44.2%	44.2%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	13.0	52.6	52.6	7.0	46.6	46.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	16.0	16.0	16.0	29.6	27.1	27.1	66.4	52.9	52.9	56.3	46.9	46.9
Actuated g/C Ratio	0.15	0.15	0.15	0.28	0.26	0.26	0.64	0.51	0.51	0.54	0.45	0.45
v/c Ratio	0.20	0.28	0.75	0.77	0.27	0.13	0.89	1.24	0.06	0.59	1.28	0.03
Control Delay	39.2	40.0	27.7	47.8	31.3	1.5	57.0	137.0	0.1	29.3	158.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	40.0	27.7	47.8	31.3	1.5	57.0	137.0	0.1	29.3	158.2	0.1
LOS	D	D	C	D	C	A	E	F	A	C	F	A
Approach Delay		31.1			37.0			128.0			151.5	
Approach LOS		C			D			F			F	
Queue Length 50th (m)	6.6	14.0	20.4	44.6	21.0	0.0	33.7	~277.3	0.0	7.4	~260.4	0.0
Queue Length 95th (m)	15.3	26.5	48.4	67.4	35.4	2.0	#100.9	#398.6	0.0	#35.5	#375.2	0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	387	579	610	343	774	705	294	2248	820	192	1992	757
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.13	0.49	0.77	0.17	0.09	0.89	1.24	0.06	0.59	1.28	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 104			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 125.2		Intersection LOS: F	
Intersection Capacity Utilization 92.4%		ICU Level of Service F	

Analysis Period (min) 15

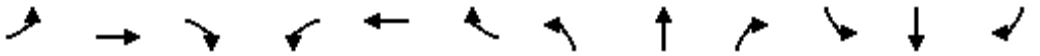
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

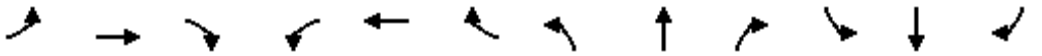




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2506	47	103	2298	20
Future Volume (vph)	33	70	267	238	118	54	235	2506	47	103	2298	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1743	1842	1528	1746	1842	1533	1750	4421	1514	1750	4421	1513
Flt Permitted	0.67	1.00	1.00	0.57	1.00	1.00	0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1235	1842	1528	1040	1842	1533	145	4421	1514	157	4421	1513
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	2784	52	114	2553	22
RTOR Reduction (vph)	0	0	159	0	0	44	0	0	26	0	0	12
Lane Group Flow (vph)	37	78	138	264	131	16	261	2784	27	114	2553	10
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.1	16.1	16.1	27.1	27.1	27.1	64.0	53.0	53.0	53.9	46.9	46.9
Effective Green, g (s)	16.1	16.1	16.1	27.1	27.1	27.1	64.0	53.0	53.0	53.9	46.9	46.9
Actuated g/C Ratio	0.15	0.15	0.15	0.26	0.26	0.26	0.62	0.51	0.51	0.52	0.45	0.45
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	285	236	318	479	399	291	2253	771	188	1993	682
v/s Ratio Prot		0.04		c0.06	0.07		c0.11	c0.63		0.04	0.58	
v/s Ratio Perm	0.03		0.09	c0.16		0.01	0.44		0.02	0.27		0.01
v/c Ratio	0.19	0.27	0.59	0.83	0.27	0.04	0.90	1.24	0.03	0.61	1.28	0.01
Uniform Delay, d1	38.3	38.8	40.8	35.9	30.6	28.7	31.6	25.5	12.7	22.3	28.6	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.5	3.7	16.6	0.3	0.0	27.7	110.1	0.1	5.4	130.4	0.0
Delay (s)	38.8	39.3	44.5	52.5	30.9	28.8	59.4	135.6	12.8	27.8	159.0	15.8
Level of Service	D	D	D	D	C	C	E	F	B	C	F	B
Approach Delay (s)		43.0			43.2			127.1			152.3	
Approach LOS		D			D			F			F	

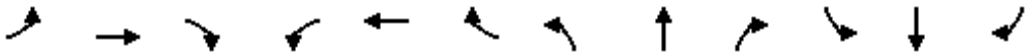
Intersection Summary			
HCM 2000 Control Delay	126.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Future Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
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
Ped Bike Factor												
Frt		0.988			0.935			0.995			0.984	
Flt Protected		0.994			0.999			0.986			0.965	
Satd. Flow (prot)	0	1809	0	0	1721	0	0	1807	0	0	1749	0
Flt Permitted		0.994			0.999			0.986			0.965	
Satd. Flow (perm)	0	1809	0	0	1721	0	0	1807	0	0	1749	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	91	10	9	212	206	22	50	3	228	52	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	427	0	0	75	0	0	317	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Future Volume (vph)	13	82	9	8	191	185	20	45	3	205	47	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	91	10	9	212	206	22	50	3	228	52	37

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	115	427	75	317
Volume Left (vph)	14	9	22	228
Volume Right (vph)	10	206	3	37
Hadj (s)	0.01	-0.25	0.07	0.11
Departure Headway (s)	5.7	5.0	6.0	5.6
Degree Utilization, x	0.18	0.59	0.13	0.49
Capacity (veh/h)	560	686	513	603
Control Delay (s)	10.0	15.0	9.9	13.9
Approach Delay (s)	10.0	15.0	9.9	13.9
Approach LOS	B	C	A	B

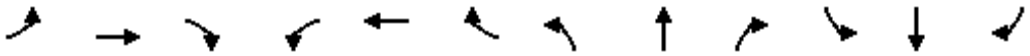
Intersection Summary				
Delay	13.6			
Level of Service	B			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	82	9	8	191	185	20	45	3	205	47	33
Future Vol, veh/h	13	82	9	8	191	185	20	45	3	205	47	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	91	10	9	212	206	22	50	3	228	52	37
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

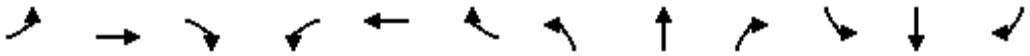
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	15	9.9	13.9
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	12%	2%	72%
Vol Thru, %	66%	79%	50%	16%
Vol Right, %	4%	9%	48%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	104	384	285
LT Vol	20	13	8	205
Through Vol	45	82	191	47
RT Vol	3	9	185	33
Lane Flow Rate	76	116	427	317
Geometry Grp	1	1	1	1
Degree of Util (X)	0.125	0.183	0.591	0.49
Departure Headway (Hd)	5.978	5.702	4.983	5.571
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	598	627	725	646
Service Time	4.034	3.756	3.021	3.612
HCM Lane V/C Ratio	0.127	0.185	0.589	0.491
HCM Control Delay	9.9	10	15	13.9
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.4	0.7	3.9	2.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
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
Ped Bike Factor												
Frt		0.927			0.997			0.963			0.923	
Flt Protected		0.988			0.971			0.988			0.997	
Satd. Flow (prot)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Flt Permitted		0.988			0.971			0.988			0.997	
Satd. Flow (perm)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	49	126	186	117	8	53	104	60	22	163	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	233	0	0	311	0	0	217	0	0	432	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	58	49	126	186	117	8	53	104	60	22	163	247

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	233	311	217	432
Volume Left (vph)	58	186	53	22
Volume Right (vph)	126	8	60	247
Hadj (s)	-0.24	0.14	-0.08	-0.30
Departure Headway (s)	6.5	6.7	6.6	5.9
Degree Utilization, x	0.42	0.57	0.40	0.71
Capacity (veh/h)	481	490	462	567
Control Delay (s)	14.2	18.3	14.0	22.3
Approach Delay (s)	14.2	18.3	14.0	22.3
Approach LOS	B	C	B	C

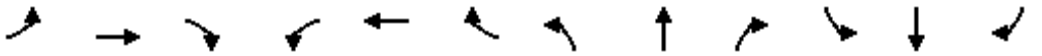
Intersection Summary				
Delay	18.1			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

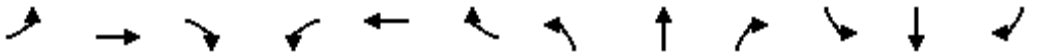
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Future Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	49	126	186	117	8	53	104	60	22	163	247
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	18.1	13.9	22
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	25%	60%	5%
Vol Thru, %	48%	21%	38%	38%
Vol Right, %	28%	54%	3%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	209	279	389
LT Vol	48	52	167	20
Through Vol	94	44	105	147
RT Vol	54	113	7	222
Lane Flow Rate	218	232	310	432
Geometry Grp	1	1	1	1
Degree of Util (X)	0.396	0.416	0.568	0.707
Departure Headway (Hd)	6.554	6.443	6.598	5.888
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	547	555	546	609
Service Time	4.633	4.52	4.669	3.95
HCM Lane V/C Ratio	0.399	0.418	0.568	0.709
HCM Control Delay	13.9	14.1	18.1	22
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	1.9	2	3.5	5.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	523	868	131	520	1020	557	369	2019	59	248	1890	328
Future Volume (vph)	523	868	131	520	1020	557	369	2019	59	248	1890	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			121			89			183
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	562	933	141	559	1097	599	397	2171	63	267	2032	353
Shared Lane Traffic (%)												
Lane Group Flow (vph)	562	933	141	559	1097	599	397	2171	63	267	2032	353
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	

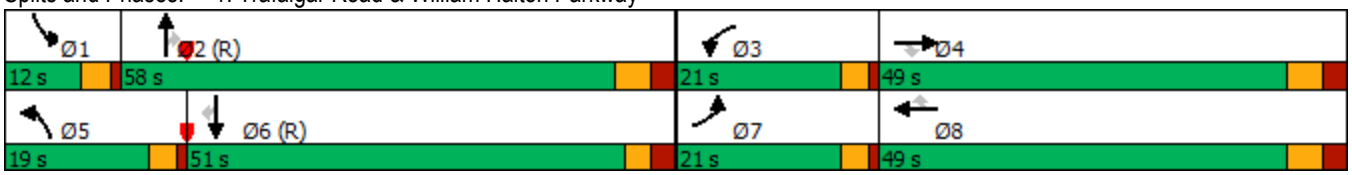


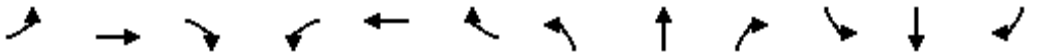
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	1.36	0.88	0.25	1.38	1.03	1.07	1.09	1.33	0.10	1.44	1.41	0.56
Control Delay	223.6	56.6	9.8	231.6	82.9	94.8	131.3	190.1	2.7	268.5	225.7	21.8
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	223.6	56.6	9.8	231.6	82.9	94.8	131.3	190.1	2.7	268.5	225.7	21.8
LOS	F	E	A	F	F	F	F	F	A	F	F	C
Approach Delay		109.9			122.9			176.8			202.9	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~105.3	129.2	4.1	~105.6	~170.6	~158.5	~63.7	~324.6	0.0	~51.4	~314.0	38.2
Queue Length 95th (m)	#141.4	#157.2	19.8	#141.4	#212.6	#230.8	#96.2	#356.4	4.8	#79.8	#346.3	70.0
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	412	1065	559	404	1065	560	363	1629	622	186	1439	626
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	1.36	0.88	0.25	1.38	1.03	1.07	1.09	1.33	0.10	1.44	1.41	0.56

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.44	
Intersection Signal Delay: 159.2	Intersection LOS: F

Intersection Capacity Utilization 106.7%	ICU Level of Service G
Analysis Period (min) 15	
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

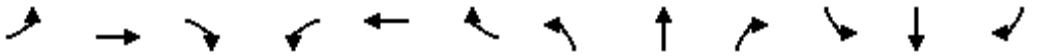




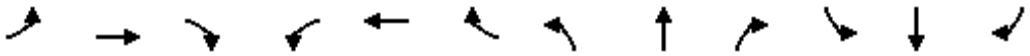
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	523	868	131	520	1020	557	369	2019	59	248	1890	328
Future Volume (vph)	523	868	131	520	1020	557	369	2019	59	248	1890	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	4421	1536	3267	4421	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	562	933	141	559	1097	599	397	2171	63	267	2032	353
RTOR Reduction (vph)	0	0	83	0	0	84	0	0	40	0	0	123
Lane Group Flow (vph)	562	933	58	559	1097	515	397	2171	23	267	2032	230
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1629	566	186	1439	503
v/s Ratio Prot	0.17	0.27		c0.17	0.31		c0.12	0.49		c0.08	c0.46	
v/s Ratio Perm			0.04			c0.33			0.02			0.15
v/c Ratio	1.36	0.88	0.12	1.38	1.03	1.08	1.09	1.33	0.04	1.44	1.41	0.46
Uniform Delay, d1	61.5	46.2	35.2	61.5	48.7	48.7	62.5	44.2	28.3	66.0	47.2	37.4
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	178.8	8.9	0.2	187.4	35.6	65.0	74.8	154.0	0.1	223.9	189.6	3.0
Delay (s)	240.3	55.1	35.4	248.9	84.3	113.7	137.3	198.2	28.5	289.9	236.8	40.4
Level of Service	F	E	D	F	F	F	F	F	C	F	F	D
Approach Delay (s)		117.0			132.9			185.0			216.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	169.0	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)	20.8
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	341	176	341	329	148	135	2122	193	186	1829	271
Future Volume (vph)	180	341	176	341	329	148	135	2122	193	186	1829	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3500	1566	1750	3500	1566	1750	4415	1559	1750	4372	1559
Flt Permitted	0.521			0.304			0.094			0.086		
Satd. Flow (perm)	915	3500	1566	560	3500	1566	173	4415	1559	158	4372	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173			156			104			104
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	189	359	185	359	346	156	142	2234	203	196	1925	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	359	185	359	346	156	142	2234	203	196	1925	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	23.0	42.0	42.0	23.0	42.0	42.0	11.0	44.0	44.0	11.0	44.0	44.0
Total Split (%)	19.2%	35.0%	35.0%	19.2%	35.0%	35.0%	9.2%	36.7%	36.7%	9.2%	36.7%	36.7%
Maximum Green (s)	19.0	35.6	35.6	19.0	35.6	35.6	7.0	37.7	37.7	7.0	37.7	37.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	35.3	17.9	17.9	41.8	21.7	21.7	56.9	42.7	42.7	68.8	50.6	50.6
Actuated g/C Ratio	0.29	0.15	0.15	0.35	0.18	0.18	0.47	0.36	0.36	0.57	0.42	0.42
v/c Ratio	0.52	0.69	0.49	0.94	0.55	0.38	0.59	1.42	0.33	0.56	1.04	0.40
Control Delay	32.8	55.3	12.3	65.8	48.2	9.3	31.0	225.7	15.6	28.2	68.3	18.1
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	32.8	55.3	12.3	65.8	48.2	9.3	31.0	225.7	15.6	28.2	68.3	18.1
LOS	C	E	B	E	D	A	C	F	B	C	E	B
Approach Delay		38.6			48.5			198.4			59.1	
Approach LOS		D			D			F			E	
Queue Length 50th (m)	31.9	42.7	2.5	67.6	39.5	0.0	14.9	~290.0	15.6	25.6	~203.7	28.0
Queue Length 95th (m)	47.0	55.7	21.6	#106.4	53.8	17.5	36.4	#347.1	37.0	51.9	#272.7	57.6
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	418	1038	586	383	1038	574	239	1570	621	353	1843	717
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	0.45	0.35	0.32	0.94	0.33	0.27	0.59	1.42	0.33	0.56	1.04	0.40

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: 135			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.42			
Intersection Signal Delay: 110.0		Intersection LOS: F	
Intersection Capacity Utilization 96.9%		ICU Level of Service F	

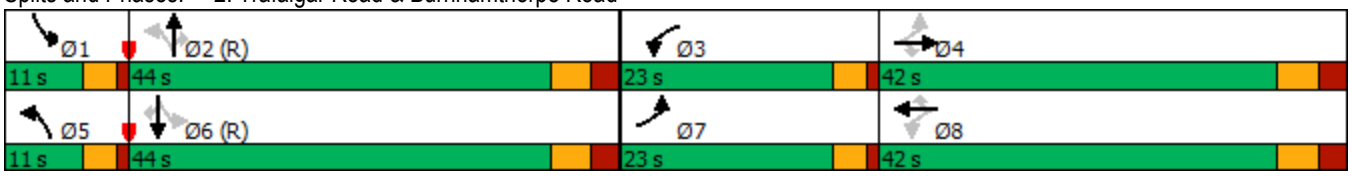
Analysis Period (min) 15

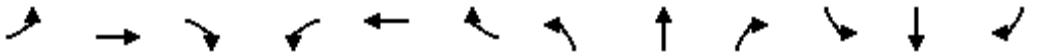
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	341	176	341	329	148	135	2122	193	186	1829	271
Future Volume (vph)	180	341	176	341	329	148	135	2122	193	186	1829	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	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)	1668	3500	1566	1750	3500	1566	1750	4415	1559	1750	4372	1559
Flt Permitted	0.52	1.00	1.00	0.30	1.00	1.00	0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	915	3500	1566	560	3500	1566	173	4415	1559	158	4372	1559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	359	185	359	346	156	142	2234	203	196	1925	285
RTOR Reduction (vph)	0	0	147	0	0	128	0	0	67	0	0	60
Lane Group Flow (vph)	189	359	38	359	346	28	142	2234	136	196	1925	225
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
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)	32.9	17.9	17.9	40.7	21.8	21.8	54.5	42.6	42.6	66.5	50.6	50.6
Effective Green, g (s)	32.9	17.9	17.9	40.7	21.8	21.8	54.5	42.6	42.6	66.5	50.6	50.6
Actuated g/C Ratio	0.27	0.15	0.15	0.34	0.18	0.18	0.45	0.36	0.36	0.55	0.42	0.42
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	344	522	233	377	635	284	234	1567	553	351	1843	657
v/s Ratio Prot	0.07	0.10		c0.15	0.10		0.06	c0.51		c0.09	c0.44	
v/s Ratio Perm	0.08		0.02	c0.17		0.02	0.21		0.09	0.22		0.14
v/c Ratio	0.55	0.69	0.16	0.95	0.54	0.10	0.61	1.43	0.25	0.56	1.04	0.34
Uniform Delay, d1	35.7	48.4	44.5	34.4	44.6	40.9	26.2	38.7	27.3	26.4	34.7	23.5
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	1.8	3.8	0.3	34.0	1.0	0.2	4.4	195.3	1.1	1.9	33.7	1.4
Delay (s)	37.4	52.2	44.8	68.3	45.6	41.1	30.6	234.0	28.4	28.3	68.4	24.9
Level of Service	D	D	D	E	D	D	C	F	C	C	E	C
Approach Delay (s)		46.5			54.2			206.6			59.9	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	115.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1207	1	1011	1713	0	909
Future Volume (vph)	1207	1	1011	1713	0	909
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.096			
Satd. Flow (perm)	3433	0	177	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						564
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1257	1	1053	1784	0	947
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1258	0	1053	1784	0	947
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	44.0		44.0	88.0	32.0	32.0
Total Split (%)	36.7%		36.7%	73.3%	26.7%	26.7%
Maximum Green (s)	37.6		40.0	81.6	28.0	28.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	37.6		84.0	81.6		28.0
Actuated g/C Ratio	0.31		0.70	0.68		0.23
v/c Ratio	1.17		1.62	0.75		1.19
Control Delay	124.3		314.7	15.1		114.7
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	124.3		314.7	15.1		114.7
LOS	F		F	B		F
Approach Delay	124.3			126.3	114.7	
Approach LOS	F			F	F	
Queue Length 50th (m)	~185.7		~344.1	131.1		~160.3
Queue Length 95th (m)	#227.5		#422.8	158.4		#237.5
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1075		648	2380		797
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	1.17		1.63	0.75		1.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 123.6		Intersection LOS: F	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

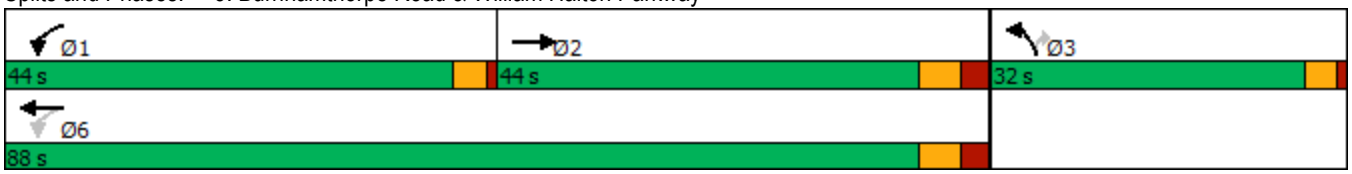
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

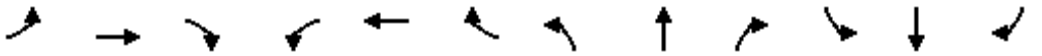
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



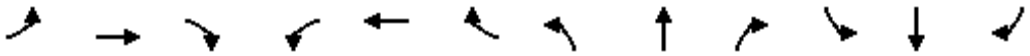


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1207	1	1011	1713	0	909
Future Volume (vph)	1207	1	1011	1713	0	909
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.10	1.00		1.00
Satd. Flow (perm)	3432		177	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1257	1	1053	1784	0	947
RTOR Reduction (vph)	0	0	0	0	0	432
Lane Group Flow (vph)	1258	0	1053	1784	0	515
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	37.6		81.6	81.6		28.0
Effective Green, g (s)	37.6		81.6	81.6		28.0
Actuated g/C Ratio	0.31		0.68	0.68		0.23
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1075		644	2380		365
v/s Ratio Prot	0.37		c0.54	0.51		
v/s Ratio Perm			c0.57			c0.33
v/c Ratio	1.17		1.64	0.75		1.41
Uniform Delay, d1	41.2		34.2	12.5		46.0
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	86.8		292.8	1.3		200.1
Delay (s)	128.0		327.0	13.9		246.1
Level of Service	F		F	B		F
Approach Delay (s)	128.0			130.1	246.1	
Approach LOS	F			F	F	

Intersection Summary			
HCM 2000 Control Delay	151.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	619	1710	198	298	1848	711	324	2093	232	668	1475	473
Future Volume (vph)	619	1710	198	298	1848	711	324	2093	232	668	1475	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	4378	1566	3395	4421	1566	3395	4421	1566	3362	4421	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3394	4378	1527	3391	4421	1540	3393	4421	1541	3361	4421	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			162			96			150
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			1233.0	
Travel Time (s)		30.4			42.0			38.7			74.0	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	638	1763	204	307	1905	733	334	2158	239	689	1521	488
Shared Lane Traffic (%)												
Lane Group Flow (vph)	638	1763	204	307	1905	733	334	2158	239	689	1521	488
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	2.44	1.08	0.31	1.31	1.18	1.10	1.42	1.49	0.42	2.97	1.05	0.81
Control Delay	686.0	85.4	9.7	211.2	124.0	96.4	255.0	257.3	22.4	918.2	80.4	39.0
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	686.0	85.4	9.7	211.2	124.0	96.4	255.0	257.3	22.4	918.2	80.4	39.0
LOS	F	F	A	F	F	F	F	F	C	F	F	D
Approach Delay		226.6			126.2			236.4			286.9	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~139.2	~209.5	8.9	~52.0	~242.9	~185.1	~59.3	~317.9	27.6	~157.1	~176.6	82.3
Queue Length 95th (m)	#175.7	#242.7	26.3	#81.0	#276.2	#259.2	#89.2	#350.2	51.2	#194.1	#210.3	#131.2
Internal Link Dist (m)		568.0			792.3			620.9			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1636	664	235	1618	666	235	1448	569	232	1448	604
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	2.44	1.08	0.31	1.31	1.18	1.10	1.42	1.49	0.42	2.97	1.05	0.81

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.97	
Intersection Signal Delay: 216.9	Intersection LOS: F

Intersection Capacity Utilization 131.2%	ICU Level of Service H
Analysis Period (min) 15	

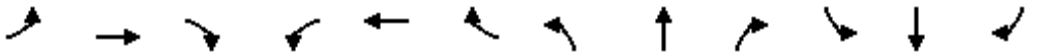
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

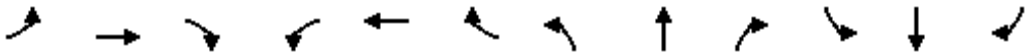




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	619	1710	198	298	1848	711	324	2093	232	668	1475	473
Future Volume (vph)	619	1710	198	298	1848	711	324	2093	232	668	1475	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Flt Permitted	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 (perm)	3395	4378	1527	3395	4421	1540	3395	4421	1541	3362	4421	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	638	1763	204	307	1905	733	334	2158	239	689	1521	488
RTOR Reduction (vph)	0	0	94	0	0	103	0	0	65	0	0	101
Lane Group Flow (vph)	638	1763	110	307	1905	630	334	2158	174	689	1521	387
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1636	570	235	1618	563	235	1448	504	232	1448	503
v/s Ratio Prot	c0.19	0.40		0.09	c0.43		0.10	c0.49		c0.20	0.34	
v/s Ratio Perm			0.07			0.41			0.11			0.25
v/c Ratio	2.44	1.08	0.19	1.31	1.18	1.12	1.42	1.49	0.35	2.97	1.05	0.77
Uniform Delay, d1	60.0	40.7	27.5	60.5	41.2	41.2	60.5	43.7	33.1	60.5	43.7	39.3
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	661.5	46.4	0.8	165.1	86.6	75.2	212.6	224.4	0.9	898.0	38.1	8.2
Delay (s)	721.5	87.1	28.2	225.6	127.8	116.4	273.1	268.1	34.0	958.5	81.8	47.5
Level of Service	F	F	C	F	F	F	F	F	C	F	F	D
Approach Delay (s)		237.9			135.2			248.2			299.5	
Approach LOS		F			F			F			F	

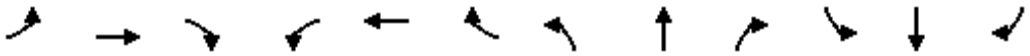
Intersection Summary			
HCM 2000 Control Delay	228.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	131.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



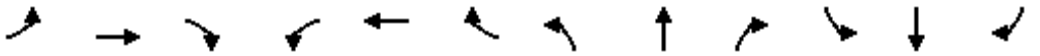
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	580	65	232	702	579	11	305	149	302	375	282
Future Volume (vph)	238	580	65	232	702	579	11	305	149	302	375	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.989			0.943			0.952			0.956	
Flt Protected		0.987			0.992			0.999			0.985	
Satd. Flow (prot)	0	3416	0	0	3274	0	0	3329	0	0	3296	0
Flt Permitted		0.987			0.992			0.999			0.985	
Satd. Flow (perm)	0	3416	0	0	3274	0	0	3329	0	0	3296	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			825.2			671.6			229.3	
Travel Time (s)		28.6			49.5			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	243	592	66	237	716	591	11	311	152	308	383	288
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	901	0	0	1544	0	0	474	0	0	979	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 124.8%		ICU Level of Service H	
Analysis Period (min) 15			

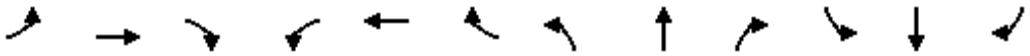


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	238	580	65	232	702	579	11	305	149	302	375	282
Future Volume (veh/h)	238	580	65	232	702	579	11	305	149	302	375	282
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	243	592	66	237	716	591	11	311	152	308	383	288
Approach Volume (veh/h)		901			1544			474			979	
Crossing Volume (veh/h)		928			565			1143			964	
High Capacity (veh/h)		660			886			553			641	
High v/c (veh/h)		1.36			1.74			0.86			1.53	
Low Capacity (veh/h)		515			712			424			499	
Low v/c (veh/h)		1.75			2.17			1.12			1.96	

Intersection Summary					
Maximum v/c High	1.74				
Maximum v/c Low	2.17				
Intersection Capacity Utilization	124.8%	ICU Level of Service		H	



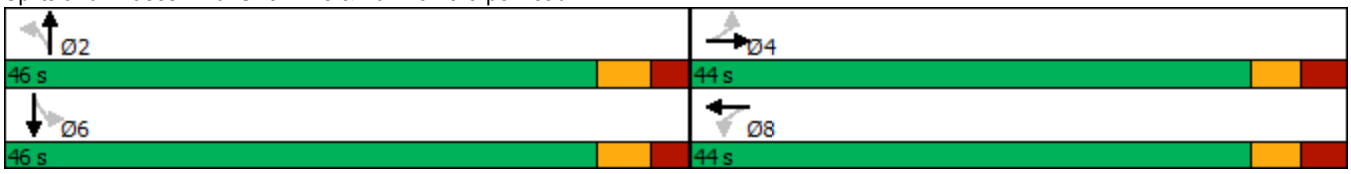
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	129	48	193	258	51	95	450	207	78	710	33
Future Volume (vph)	34	129	48	193	258	51	95	450	207	78	710	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.959			0.975			0.953			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3356	0	1750	3364	0	1750	3325	0	1750	3475	0
Flt Permitted	0.554			0.633			0.329			0.372		
Satd. Flow (perm)	1020	3356	0	1166	3364	0	606	3325	0	685	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			31			106			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	36	137	51	205	274	54	101	479	220	83	755	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	188	0	205	328	0	101	699	0	83	790	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

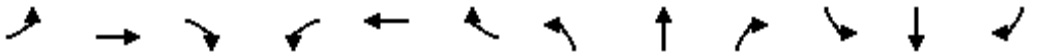


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	17.5	17.5		17.5	17.5		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.57	0.57		0.57	0.57	
v/c Ratio	0.14	0.22		0.71	0.38		0.29	0.36		0.21	0.40	
Control Delay	20.8	14.9		37.7	20.5		13.0	8.4		11.3	10.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.8	14.9		37.7	20.5		13.0	8.4		11.3	10.2	
LOS	C	B		D	C		B	A		B	B	
Approach Delay		15.8			27.1			9.0			10.3	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	3.7	7.3		24.4	16.8		6.2	19.3		4.8	27.1	
Queue Length 95th (m)	9.9	14.2		44.6	26.4		20.2	39.8		15.8	52.2	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	547	1825		625	1820		343	1930		388	1973	
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	0.07	0.10		0.33	0.18		0.29	0.36		0.21	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.3			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

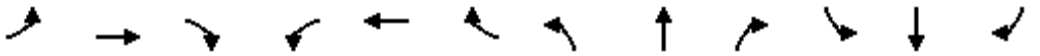
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



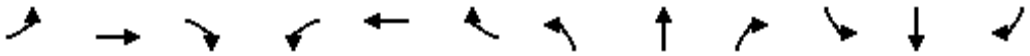


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	129	48	193	258	51	95	450	207	78	710	33
Future Volume (vph)	34	129	48	193	258	51	95	450	207	78	710	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3357		1750	3365		1750	3324		1750	3477	
Flt Permitted	0.55	1.00		0.63	1.00		0.33	1.00		0.37	1.00	
Satd. Flow (perm)	1020	3357		1167	3365		605	3324		686	3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	36	137	51	205	274	54	101	479	220	83	755	35
RTOR Reduction (vph)	0	38	0	0	23	0	0	46	0	0	3	0
Lane Group Flow (vph)	36	150	0	205	305	0	101	653	0	83	787	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.5	17.5		17.5	17.5		39.9	39.9		39.9	39.9	
Effective Green, g (s)	17.5	17.5		17.5	17.5		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	835		290	837		343	1886		389	1973	
v/s Ratio Prot		0.04			0.09			0.20			c0.23	
v/s Ratio Perm	0.04			c0.18			0.17			0.12		
v/c Ratio	0.14	0.18		0.71	0.36		0.29	0.35		0.21	0.40	
Uniform Delay, d1	20.6	20.8		24.1	21.8		7.9	8.2		7.5	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		7.6	0.3		2.2	0.5		1.3	0.6	
Delay (s)	20.8	20.9		31.7	22.1		10.1	8.7		8.7	9.1	
Level of Service	C	C		C	C		B	A		A	A	
Approach Delay (s)		20.9			25.8			8.9			9.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	12.9
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	567	2	19	7	2965	0	0	2144	0
Future Volume (vph)	7	0	6	567	2	19	7	2965	0	0	2144	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1541	1431	1750	3500	0	0	4980	0
Flt Permitted	0.364			0.950	0.953		0.092					
Satd. Flow (perm)	585	0	1331	1615	1541	1431	169	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	591	2	20	7	3089	0	0	2233	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	295	300	18	7	3089	0	0	2233	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



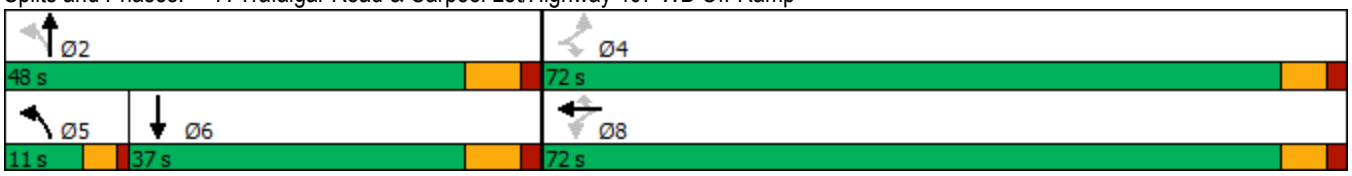
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	72.0		72.0	72.0	72.0	72.0	11.0	48.0			37.0	
Total Split (%)	60.0%		60.0%	60.0%	60.0%	60.0%	9.2%	40.0%			30.8%	
Maximum Green (s)	66.0		66.0	66.0	66.0	66.0	7.0	41.0			30.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.6		19.6	19.6	19.6	19.6	44.2	41.2			39.4	
Actuated g/C Ratio	0.27		0.27	0.27	0.27	0.27	0.60	0.56			0.53	
v/c Ratio	0.05		0.01	0.69	0.74	0.04	0.03	1.58			0.84	
Control Delay	19.7		0.0	33.1	35.9	0.2	8.3	284.7			21.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	19.7		0.0	33.1	35.9	0.2	8.3	284.7			21.0	
LOS	B		A	C	D	A	A	F			C	
Approach Delay		10.6			33.5			284.0			21.0	
Approach LOS		B			C			F			C	
Queue Length 50th (m)	0.7		0.0	38.5	41.5	0.0	0.3	~323.8			81.7	
Queue Length 95th (m)	3.5		0.0	63.3	68.5	0.0	2.2	#423.6			#184.2	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	525		1202	1450	1384	1292	251	1953			2657	
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	0.01		0.00	0.20	0.22	0.01	0.03	1.58			0.84	

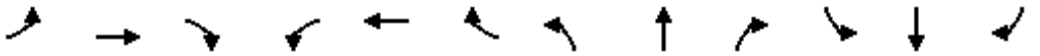
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 73.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.58			
Intersection Signal Delay: 159.0		Intersection LOS: F	
Intersection Capacity Utilization 115.4%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

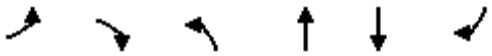
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	567	2	19	7	2965	0	0	2144	0
Future Volume (vph)	7	0	6	567	2	19	7	2965	0	0	2144	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1541	1431	1750	3500			4980	
Flt Permitted	0.36		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	585		1331	1615	1541	1431	170	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	591	2	20	7	3089	0	0	2233	0
RTOR Reduction (vph)	0	0	4	0	0	13	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	2	295	300	5	7	3089	0	0	2233	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.6		19.6	19.6	19.6	19.6	44.5	44.5			39.4	
Effective Green, g (s)	19.6		19.6	19.6	19.6	19.6	44.5	44.5			39.4	
Actuated g/C Ratio	0.25		0.25	0.25	0.25	0.25	0.58	0.58			0.51	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	148		338	410	391	363	120	2020			2544	
v/s Ratio Prot							0.00	c0.88			0.45	
v/s Ratio Perm	0.01		0.00	0.18	0.19	0.00	0.03					
v/c Ratio	0.05		0.00	0.72	0.77	0.01	0.06	1.53			0.88	
Uniform Delay, d1	21.7		21.5	26.2	26.6	21.5	12.2	16.3			16.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	6.0	8.7	0.0	0.2	240.7			3.8	
Delay (s)	21.8		21.5	32.2	35.4	21.5	12.4	257.0			20.5	
Level of Service	C		C	C	D	C	B	F			C	
Approach Delay (s)		21.7			33.4			256.4			20.5	
Approach LOS		C			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	144.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2973	2767	47
Future Volume (vph)	0	0	0	2973	2767	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	3097	2882	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3097	2882	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

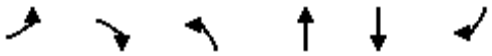
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2973	275	0	2767
Future Volume (vph)	0	0	2973	275	0	2767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	3097	286	0	2882
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3097	286	0	2882
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	337	0	3516	2555	0
Future Volume (vph)	40	337	0	3516	2555	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.881	0.850				
Flt Protected	0.990					
Satd. Flow (prot)	1364	1214	0	3500	3466	0
Flt Permitted	0.990					
Satd. Flow (perm)	1364	1214	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1	1				
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	43	359	0	3740	2718	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	205	197	0	3740	2718	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

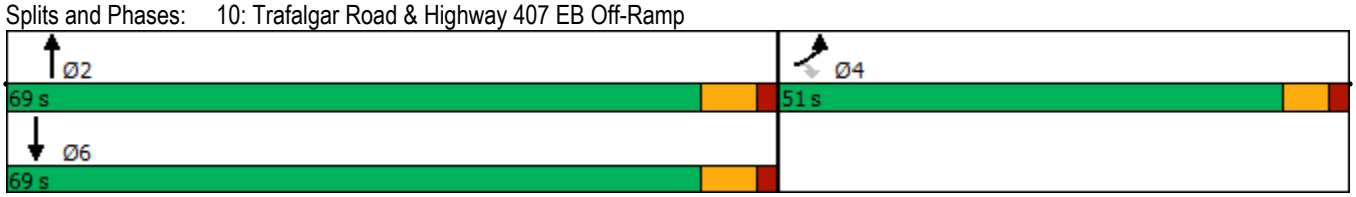
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	20.5	20.5		62.2	62.2	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
v/c Ratio	0.70	0.76		1.64	1.21	
Control Delay	47.6	53.5		312.7	117.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.6	53.5		312.7	117.8	
LOS	D	D		F	F	
Approach Delay	50.5			312.7	117.8	
Approach LOS	D			F	F	
Queue Length 50th (m)	35.0	35.8		~528.9	~323.4	
Queue Length 95th (m)	58.0	60.6		#646.0	#423.3	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	643	572		2274	2252	
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		1.64	1.21	

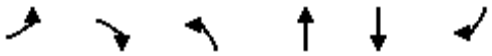
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 95.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.64			
Intersection Signal Delay: 220.1		Intersection LOS: F	
Intersection Capacity Utilization 117.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

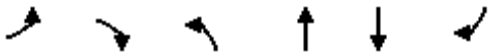
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





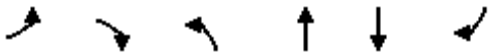
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	337	0	3516	2555	0
Future Volume (vph)	40	337	0	3516	2555	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1364	1214		3500	3466	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1364	1214		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	359	0	3740	2718	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	204	196	0	3740	2718	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.5	20.5		62.3	62.3	
Effective Green, g (s)	20.5	20.5		62.3	62.3	
Actuated g/C Ratio	0.21	0.21		0.65	0.65	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	259		2276	2253	
v/s Ratio Prot	0.15			c1.07	0.78	
v/s Ratio Perm		c0.16				
v/c Ratio	0.70	0.76		1.64	1.21	
Uniform Delay, d1	34.8	35.3		16.8	16.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	11.9		291.5	97.3	
Delay (s)	42.3	47.3		308.2	114.1	
Level of Service	D	D		F	F	
Approach Delay (s)	44.7			308.2	114.1	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	215.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	117.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3242	2555	22
Future Volume (vph)	0	0	0	3242	2555	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	3449	2718	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3449	2718	23
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	117.2%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	3242	2555	22
Future Volume (Veh/h)	0	0	0	3242	2555	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	3449	2718	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.60	0.51	0.51			
vC, conflicting volume	4442	1359	2741			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1716	0	2490			
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)	49	551	92			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	1724	1724	1359	1359	23
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	23
cSH	1700	1700	1700	1700	1700
Volume to Capacity	1.01	1.01	0.80	0.80	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

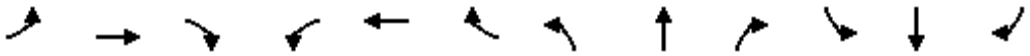
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	117.2%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3516	332	0	2890
Future Volume (vph)	0	0	3516	332	0	2890
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	3740	353	0	3074
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3740	353	0	3074
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

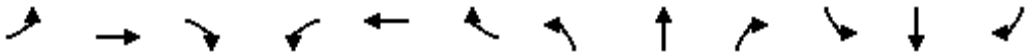
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



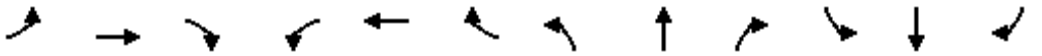
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1771	362	154	1999	144	557	707	252	123	365	122
Future Volume (vph)	44	1771	362	154	1999	144	557	707	252	123	365	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.975			0.991			0.975			0.970	
Flt Protected		0.999			0.997			0.982			0.990	
Satd. Flow (prot)	0	3364	0	0	3458	0	0	3339	0	0	3361	0
Flt Permitted		0.999			0.997			0.982			0.990	
Satd. Flow (perm)	0	3364	0	0	3458	0	0	3339	0	0	3361	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	46	1845	377	160	2082	150	580	736	263	128	380	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2268	0	0	2392	0	0	1579	0	0	635	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 200.8%		ICU Level of Service H	
Analysis Period (min) 15			

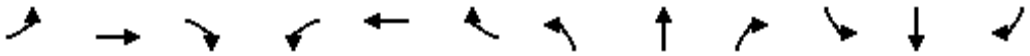


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	44	1771	362	154	1999	144	557	707	252	123	365	122
Future Volume (veh/h)	44	1771	362	154	1999	144	557	707	252	123	365	122
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	46	1845	377	160	2082	150	580	736	262	128	380	127
Approach Volume (veh/h)		2268			2392			1578			635	
Crossing Volume (veh/h)		668			1362#			2019#			2822#	
High Capacity (veh/h)		816			461			264			130	
High v/c (veh/h)		2.78			5.19			5.98			4.87	
Low Capacity (veh/h)		650			346			186			84	
Low v/c (veh/h)		3.49			6.91			8.50			7.55	

Intersection Summary				
Maximum v/c High	5.98			
Maximum v/c Low	8.50			
Intersection Capacity Utilization	200.8%	ICU Level of Service	H	
# Crossing flow exceeds 1200, method is not applicable				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2808	300	433	2387	175
Future Volume (vph)	363	44	192	0	0	783	37	2808	300	433	2387	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	5029	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			131			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	3120	333	481	2652	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	870	41	3120	333	481	2652	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



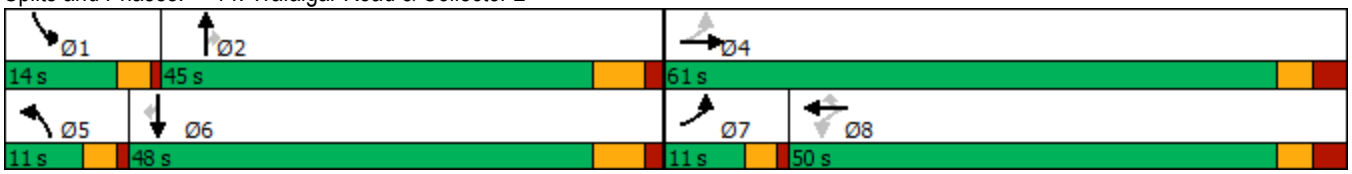
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.28	0.40	1.93	0.56	1.71	1.45	0.30
Control Delay	28.2	8.5				162.7	66.5	448.6	24.1	365.7	235.7	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				162.7	66.5	448.6	24.1	365.7	235.7	14.5
LOS	C	A				F	E	F	C	F	F	B
Approach Delay		20.4			162.7			403.7			241.6	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~231.6	9.5	~415.2	38.8	~85.7	~319.9	14.5
Queue Length 95th (m)	90.6	29.7				#307.4	21.2	#440.5	68.2	#118.6	#347.1	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	634	826				682	102	1613	591	282	1831	637
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	0.64	0.32				1.28	0.40	1.93	0.56	1.71	1.45	0.30

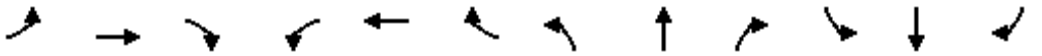
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.93			
Intersection Signal Delay: 283.6		Intersection LOS: F	
Intersection Capacity Utilization 137.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

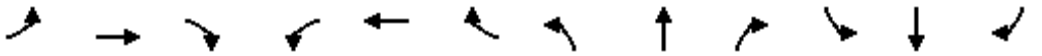




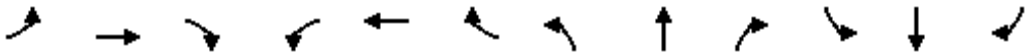
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	783	37	2808	300	433	2387	175
Future Volume (vph)	363	44	192	0	0	783	37	2808	300	433	2387	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	5029	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	5029	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	870	41	3120	333	481	2652	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	88	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	755	41	3120	245	481	2652	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1636	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c0.62		c0.14	0.53	
v/s Ratio Perm	0.26					c0.48			0.16			0.08
v/c Ratio	0.67	0.23				1.34	0.51	1.91	0.48	1.71	1.46	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	32.6	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				165.0	4.9	410.5	3.2	335.0	209.2	0.9
Delay (s)	29.4	20.5				203.7	61.2	451.2	35.8	390.4	247.7	27.7
Level of Service	C	C				F	E	F	D	F	F	C
Approach Delay (s)		25.9			203.7			407.1			255.5	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	295.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1016	14	133	1442	28	49	6	73	137	33	13
Future Volume (vph)	3	1016	14	133	1442	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.97	1.00	0.98		1.00	0.99	
Frt		0.998				0.850		0.862			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3500	1566	1750	1559	0	1750	1757	0
Flt Permitted	0.102			0.209			0.724			0.700		
Satd. Flow (perm)	188	3491	0	385	3500	1516	1328	1559	0	1284	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				29		70			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		825.2			198.4			580.4			190.6	
Travel Time (s)		49.5			11.9			41.8			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1129	16	148	1602	31	54	7	81	152	37	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1145	0	148	1602	31	54	88	0	152	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



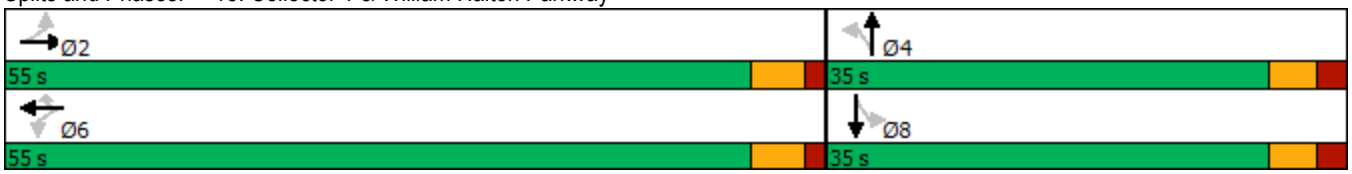
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%	61.1%	38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	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)	20.0	20.0		20.0	20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)	53.1	53.1		53.1	53.1	53.1	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
v/c Ratio	0.02	0.49		0.58	0.69	0.03	0.20	0.24		0.59	0.14	
Control Delay	8.0	8.6		22.2	11.6	3.2	25.9	10.2		37.1	19.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	8.6		22.2	11.6	3.2	25.9	10.2		37.1	19.1	
LOS	A	A		C	B	A	C	B		D	B	
Approach Delay		8.6			12.3			16.1			32.6	
Approach LOS		A			B			B			C	
Queue Length 50th (m)	0.1	34.7		9.4	60.4	0.1	6.5	2.1		19.8	4.3	
Queue Length 95th (m)	1.5	81.7		#50.7	140.6	3.7	14.9	11.9		36.3	12.1	
Internal Link Dist (m)		801.2			174.4			556.4			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	125	2327		256	2332	1020	497	627		481	667	
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	0.02	0.49		0.58	0.69	0.03	0.11	0.14		0.32	0.08	

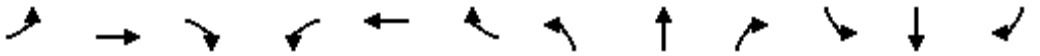
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	

Analysis Period (min) 15

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

Splits and Phases: 15: Collector 1 & William Halton Parkway

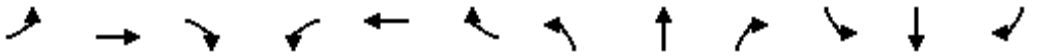




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1016	14	133	1442	28	49	6	73	137	33	13
Future Volume (vph)	3	1016	14	133	1442	28	49	6	73	137	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3491		1748	3500	1519	1743	1556		1744	1756	
Flt Permitted	0.10	1.00		0.21	1.00	1.00	0.72	1.00		0.70	1.00	
Satd. Flow (perm)	189	3491		385	3500	1519	1328	1556		1285	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1129	16	148	1602	31	54	7	81	152	37	14
RTOR Reduction (vph)	0	1	0	0	0	10	0	56	0	0	11	0
Lane Group Flow (vph)	3	1144	0	148	1602	21	54	32	0	152	40	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Effective Green, g (s)	53.0	53.0		53.0	53.0	53.0	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67	0.67	0.20	0.20		0.20	0.20	
Clearance Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
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)	126	2327		256	2333	1012	267	313		258	353	
v/s Ratio Prot		0.33			c0.46			0.02			0.02	
v/s Ratio Perm	0.02			0.38		0.01	0.04			c0.12		
v/c Ratio	0.02	0.49		0.58	0.69	0.02	0.20	0.10		0.59	0.11	
Uniform Delay, d1	4.5	6.6		7.2	8.1	4.5	26.4	25.9		28.8	25.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7		9.2	1.7	0.0	0.4	0.1		3.4	0.1	
Delay (s)	4.8	7.3		16.4	9.8	4.5	26.8	26.0		32.2	26.1	
Level of Service	A	A		B	A	A	C	C		C	C	
Approach Delay (s)		7.3			10.3			26.3			30.7	
Approach LOS		A			B			C			C	

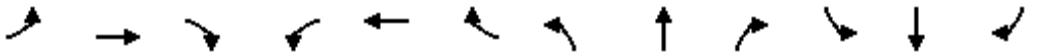
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1215	11	0	1564	152	0	0	293	0	0	39
Future Volume (vph)	0	1215	11	0	1564	152	0	0	293	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			359.5	
Travel Time (s)		11.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1350	12	0	1738	169	0	0	326	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1362	0	0	1738	169	0	0	326	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

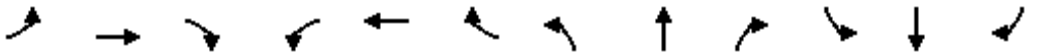
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.3%		ICU Level of Service B	
Analysis Period (min) 15			



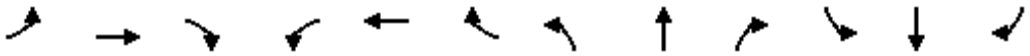
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1215	11	0	1564	152	0	0	293	0	0	39
Future Volume (Veh/h)	0	1215	11	0	1564	152	0	0	293	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1350	12	0	1738	169	0	0	326	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.71			0.83			0.79	0.79	0.83	0.79	0.79	0.71
vC, conflicting volume	1912			1367			2278	3273	691	2749	3110	879
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1462			1043			1143	2402	233	1739	2196	2
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	94
cM capacity (veh/h)	322			550			114	26	636	21	35	758

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	900	462	869	869	169	326	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	12	0	0	169	326	43
cSH	1700	1700	1700	1700	1700	636	758
Volume to Capacity	0.53	0.27	0.51	0.51	0.10	0.51	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	22.3	1.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	16.5	10.0
Lane LOS						C	B
Approach Delay (s)	0.0		0.0			16.5	10.0
Approach LOS						C	B

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	59.3%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	509	18	92	618	24	13	43	75	114	82	13
Future Volume (vph)	3	509	18	92	618	24	13	43	75	114	82	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Frt		0.995			0.994			0.905			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3479	0	1750	3475	0	1750	1646	0	1750	1800	0
Flt Permitted	0.372			0.431			0.689			0.673		
Satd. Flow (perm)	683	3479	0	791	3475	0	1264	1646	0	1235	1800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6			83			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			580.4	
Travel Time (s)		9.8			17.7			34.4			41.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	566	20	102	687	27	14	48	83	127	91	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	586	0	102	714	0	14	131	0	127	105	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

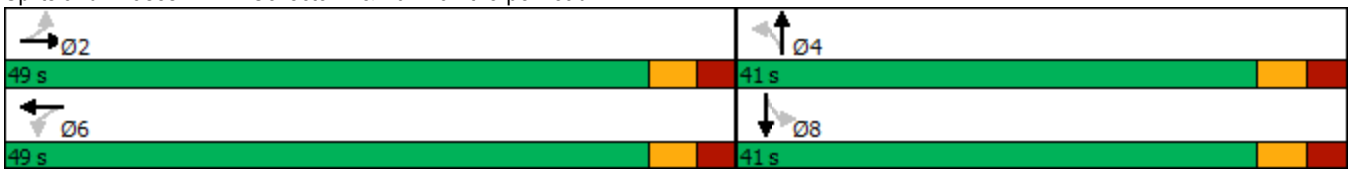


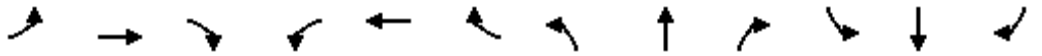
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	45.7	45.7		45.7	45.7		13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.19	0.19		0.19	0.19	
v/c Ratio	0.01	0.26		0.20	0.32		0.06	0.34		0.53	0.29	
Control Delay	7.7	7.0		8.7	7.4		21.2	12.0		32.7	22.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.7	7.0		8.7	7.4		21.2	12.0		32.7	22.5	
LOS	A	A		A	A		C	B		C	C	
Approach Delay		7.1			7.6			12.9			28.1	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.1	14.0		4.5	17.8		1.5	5.1		14.7	10.4	
Queue Length 95th (m)	1.4	35.6		17.6	44.5		5.4	16.7		28.5	21.4	
Internal Link Dist (m)		112.3			221.2			453.1			556.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	435	2220		504	2218		619	848		605	886	
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	0.01	0.26		0.20	0.32		0.02	0.15		0.21	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	509	18	92	618	24	13	43	75	114	82	13
Future Volume (vph)	3	509	18	92	618	24	13	43	75	114	82	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3478		1745	3476		1744	1644		1744	1800	
Flt Permitted	0.37	1.00		0.43	1.00		0.69	1.00		0.67	1.00	
Satd. Flow (perm)	684	3478		791	3476		1265	1644		1236	1800	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	566	20	102	687	27	14	48	83	127	91	14
RTOR Reduction (vph)	0	2	0	0	2	0	0	67	0	0	8	0
Lane Group Flow (vph)	3	584	0	102	712	0	14	64	0	127	97	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.8	45.8		45.8	45.8		13.9	13.9		13.9	13.9	
Effective Green, g (s)	45.8	45.8		45.8	45.8		13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.19	0.19		0.19	0.19	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	436	2221		505	2220		245	318		239	348	
v/s Ratio Prot		0.17			c0.20			0.04			0.05	
v/s Ratio Perm	0.00			0.13			0.01			c0.10		
v/c Ratio	0.01	0.26		0.20	0.32		0.06	0.20		0.53	0.28	
Uniform Delay, d1	4.7	5.6		5.4	5.9		23.6	24.2		26.0	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3		0.9	0.4		0.1	0.3		2.3	0.4	
Delay (s)	4.7	5.9		6.3	6.3		23.7	24.6		28.2	25.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		5.9			6.3			24.5			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	490	3	28	587	2	20
Future Volume (vph)	490	3	28	587	2	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.850
Flt Protected				0.998	0.950	
Satd. Flow (prot)	3496	0	0	3493	1750	1566
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	3496	0	0	3493	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	544	3	31	652	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	547	0	0	683	2	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	490	3	28	587	2	20
Future Volume (Veh/h)	490	3	28	587	2	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	544	3	31	652	2	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				268		
pX, platoon unblocked					0.97	
vC, conflicting volume			552		944	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			552		883	284
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	97
cM capacity (veh/h)			1009		266	707

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	363	184	248	435	2	22
Volume Left	0	0	31	0	2	0
Volume Right	0	3	0	0	0	22
cSH	1700	1700	1009	1700	266	707
Volume to Capacity	0.21	0.11	0.03	0.26	0.01	0.03
Queue Length 95th (m)	0.0	0.0	0.7	0.0	0.2	0.7
Control Delay (s)	0.0	0.0	1.4	0.0	18.6	10.3
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.5		11.0	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	510	0	29	608	0	20
Future Volume (vph)	510	0	29	608	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.998		
Satd. Flow (prot)	3500	0	0	3493	1842	1566
Flt Permitted				0.998		
Satd. Flow (perm)	3500	0	0	3493	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	567	0	32	676	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	567	0	0	708	0	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

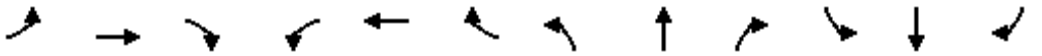
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	510	0	29	608	0	20
Future Volume (Veh/h)	510	0	29	608	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	567	0	32	676	0	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				136		
pX, platoon unblocked					0.92	
vC, conflicting volume			572		979	294
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			572		810	294
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	97
cM capacity (veh/h)			992		281	696

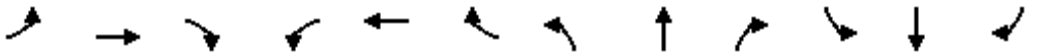
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	378	189	257	451	0	22
Volume Left	0	0	32	0	0	0
Volume Right	0	0	0	0	0	22
cSH	1700	1700	992	1700	1700	696
Volume to Capacity	0.22	0.11	0.03	0.27	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.0	0.7
Control Delay (s)	0.0	0.0	1.4	0.0	0.0	10.3
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.5		10.3	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1148	27	0	1631	100	0	0	18	0	0	466
Future Volume (vph)	0	1148	27	0	1631	100	0	0	18	0	0	466
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1276	30	0	1812	111	0	0	20	0	0	518
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1306	0	0	1812	111	0	0	20	0	0	518
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

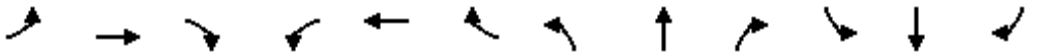
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1148	27	0	1631	100	0	0	18	0	0	466
Future Volume (Veh/h)	0	1148	27	0	1631	100	0	0	18	0	0	466
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1276	30	0	1812	111	0	0	20	0	0	518
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.56			0.75			0.69	0.69	0.75	0.69	0.69	0.56
vC, conflicting volume	1928			1311			2725	3224	663	2480	3128	916
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1100			738			951	1674	0	597	1535	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	98	100	100	14
cM capacity (veh/h)	354			642			21	65	802	256	79	606

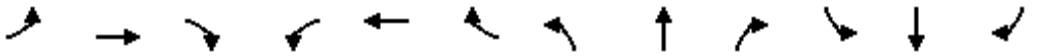
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	851	455	906	906	111	20	518
Volume Left	0	0	0	0	0	0	0
Volume Right	0	30	0	0	111	20	518
cSH	1700	1700	1700	1700	1700	802	606
Volume to Capacity	0.50	0.27	0.53	0.53	0.07	0.02	0.86
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.6	72.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6	36.2
Lane LOS						A	E
Approach Delay (s)	0.0		0.0			9.6	36.2
Approach LOS						A	E

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	81.1%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	692	26	0	791	11	0	0	105	0	0	18
Future Volume (vph)	0	692	26	0	791	11	0	0	105	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.998				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3482	0	0	3493	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3482	0	0	3493	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	769	29	0	879	12	0	0	117	0	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	798	0	0	891	0	0	0	117	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

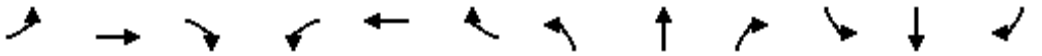
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	692	26	0	791	11	0	0	105	0	0	18
Future Volume (Veh/h)	0	692	26	0	791	11	0	0	105	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	769	29	0	879	12	0	0	117	0	0	20
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123			223							
pX, platoon unblocked	0.91			0.91			0.95	0.95	0.91	0.95	0.95	0.91
vC, conflicting volume	896			803			1253	1684	409	1396	1693	456
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			580			737	1189	146	887	1198	200
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	97
cM capacity (veh/h)	818			895			280	176	787	190	174	727

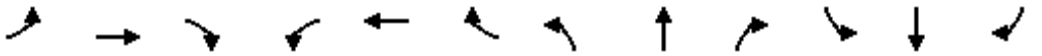
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	513	285	586	305	117	20
Volume Left	0	0	0	0	0	0
Volume Right	0	29	0	12	117	20
cSH	1700	1700	1700	1700	787	727
Volume to Capacity	0.30	0.17	0.34	0.18	0.15	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.0	0.6
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	10.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.4	10.1
Approach LOS					B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	34.6%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	127	0	0	74	0	2337	109	0	2399	131
Future Volume (vph)	0	0	127	0	0	74	0	2337	109	0	2399	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	4421	1566	0	4421	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	141	0	0	82	0	2597	121	0	2666	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	141	0	0	82	0	2597	121	0	2666	146
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

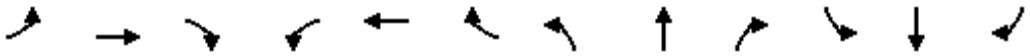
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			
* User Entered Value			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	127	0	0	74	0	2337	109	0	2399	131
Future Volume (Veh/h)	0	0	127	0	0	74	0	2337	109	0	2399	131
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	141	0	0	82	0	2597	121	0	2666	146
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.83	0.83	0.69	0.83	0.83	0.68	0.69			0.68		
vC, conflicting volume	3624	5394	899	3637	5419	876	2817			2723		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	937	3071	0	952	3102	0	2068			1869		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	81	100	100	89	100			100		
cM capacity (veh/h)	159	10	743	141	9	725	183			214		

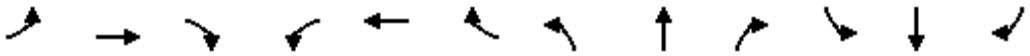
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	141	82	866	866	866	121	889	889	889	146
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	141	82	0	0	0	121	0	0	0	146
cSH	743	725	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.11	0.51	0.51	0.51	0.07	0.52	0.52	0.52	0.09
Queue Length 95th (m)	5.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.0	10.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	11.0	10.6	0.0				0.0			
Approach LOS	B	B								

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
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
Ped Bike Factor												
Frt		0.979			0.955			0.998			0.935	
Flt Protected		0.964			0.992			0.977			0.998	
Satd. Flow (prot)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Flt Permitted		0.964			0.992			0.977			0.998	
Satd. Flow (perm)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			275.5			250.4			181.9	
Travel Time (s)		24.8			19.8			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	12	20	6	18	12	113	120	4	8	110	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	129	0	0	36	0	0	237	0	0	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	12	20	6	18	12	113	120	4	8	110	110

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	129	36	237	228
Volume Left (vph)	97	6	113	8
Volume Right (vph)	20	12	4	110
Hadj (s)	0.09	-0.13	0.12	-0.25
Departure Headway (s)	5.1	5.1	4.7	4.4
Degree Utilization, x	0.18	0.05	0.31	0.28
Capacity (veh/h)	641	631	731	779
Control Delay (s)	9.3	8.3	9.8	9.1
Approach Delay (s)	9.3	8.3	9.8	9.1
Approach LOS	A	A	A	A

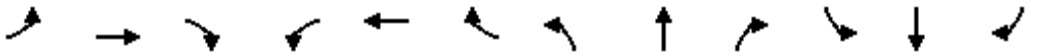
Intersection Summary				
Delay	9.4			
Level of Service	A			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

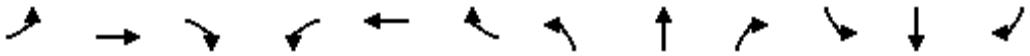
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Future Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	12	20	6	18	12	113	120	4	8	110	110
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.3	9.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	75%	16%	3%
Vol Thru, %	50%	9%	50%	48%
Vol Right, %	2%	16%	34%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	116	32	205
LT Vol	102	87	5	7
Through Vol	108	11	16	99
RT Vol	4	18	11	99
Lane Flow Rate	238	129	36	228
Geometry Grp	1	1	1	1
Degree of Util (X)	0.309	0.182	0.049	0.275
Departure Headway (Hd)	4.685	5.083	4.994	4.348
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	702	713	825
Service Time	2.725	3.135	3.056	2.387
HCM Lane V/C Ratio	0.311	0.184	0.05	0.276
HCM Control Delay	9.8	9.3	8.3	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.7	0.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	992	127	82	1596	11	117	16	43	154	47	18
Future Volume (vph)	27	992	127	82	1596	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.999			0.891			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3496	0	1750	1618	0	1750	1755	0
Flt Permitted	0.086			0.216			0.710			0.714		
Satd. Flow (perm)	158	3500	1515	397	3496	0	1303	1618	0	1310	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			96		1			48			8	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1102	141	91	1773	12	130	18	48	171	52	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1102	141	91	1785	0	130	66	0	171	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.1	38.1	38.1	38.1	38.1		38.5	38.5		38.5	38.5	
Total Split (s)	51.0	51.0	51.0	51.0	51.0		39.0	39.0		39.0	39.0	
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%		43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	44.9	44.9	44.9	44.9	44.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	None	None		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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	46.7	46.7	46.7	46.7	46.7		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
v/c Ratio	0.31	0.51	0.15	0.37	0.83		0.46	0.17		0.60	0.18	
Control Delay	21.9	10.7	4.0	16.1	18.3		29.7	10.5		34.5	21.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.9	10.7	4.0	16.1	18.3		29.7	10.5		34.5	21.2	
LOS	C	B	A	B	B		C	B		C	C	
Approach Delay		10.2			18.1			23.2			30.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	1.7	37.7	2.1	5.3	85.5		15.7	2.0		21.4	7.2	
Queue Length 95th (m)	12.6	89.1	12.9	24.8	#215.0		29.4	10.1		38.0	16.2	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	96	2148	966	243	2146		561	724		564	761	
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	0.31	0.51	0.15	0.37	0.83		0.23	0.09		0.30	0.09	

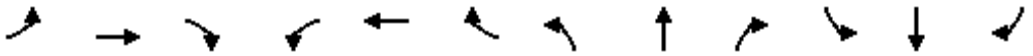
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 85.3%		ICU Level of Service E	

Analysis Period (min) 15

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

Splits and Phases: 24: Collector 5 & William Halton Parkway

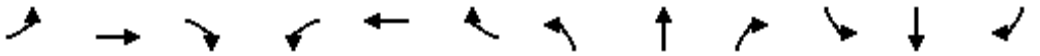




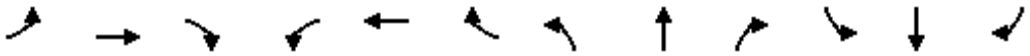
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	992	127	82	1596	11	117	16	43	154	47	18
Future Volume (vph)	27	992	127	82	1596	11	117	16	43	154	47	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3500	1519	1748	3496		1744	1617		1744	1755	
Flt Permitted	0.09	1.00	1.00	0.22	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	158	3500	1519	397	3496		1304	1617		1311	1755	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	1102	141	91	1773	12	130	18	48	171	52	20
RTOR Reduction (vph)	0	0	37	0	0	0	0	37	0	0	6	0
Lane Group Flow (vph)	30	1102	104	91	1785	0	130	29	0	171	66	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Effective Green, g (s)	46.6	46.6	46.6	46.6	46.6		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	97	2151	933	244	2149		285	354		287	384	
v/s Ratio Prot		0.31			c0.51			0.02			0.04	
v/s Ratio Perm	0.19		0.07	0.23			0.10			c0.13		
v/c Ratio	0.31	0.51	0.11	0.37	0.83		0.46	0.08		0.60	0.17	
Uniform Delay, d1	6.9	8.2	6.0	7.3	11.5		25.7	23.5		26.6	24.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	0.9	0.2	1.0	2.9		1.2	0.1		3.3	0.2	
Delay (s)	15.0	9.1	6.3	8.3	14.4		26.8	23.6		29.9	24.2	
Level of Service	B	A	A	A	B		C	C		C	C	
Approach Delay (s)		8.9			14.1			25.8			28.2	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	682	17	180	756	11	18	95	118	14	117	28
Future Volume (vph)	98	682	17	180	756	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Frt		0.996			0.998			0.917			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3483	0	1750	3491	0	1750	1670	0	1750	1782	0
Flt Permitted	0.314			0.345			0.653			0.464		
Satd. Flow (perm)	577	3483	0	634	3491	0	1198	1670	0	852	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			2			72			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	758	19	200	840	12	20	106	131	16	130	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	777	0	200	852	0	20	237	0	16	161	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



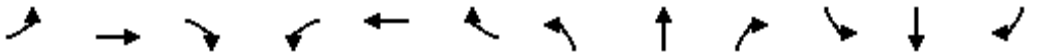
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	
Maximum Green (s)	50.1	50.1		50.1	50.1		27.9	27.9		27.9	27.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
v/c Ratio	0.29	0.34		0.48	0.37		0.09	0.65		0.10	0.47	
Control Delay	10.0	7.2		13.5	7.5		25.1	27.9		25.7	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.0	7.2		13.5	7.5		25.1	27.9		25.7	29.4	
LOS	A	A		B	A		C	C		C	C	
Approach Delay		7.5			8.6			27.7			29.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	5.4	20.8		11.7	23.6		2.4	21.7		1.9	19.0	
Queue Length 95th (m)	20.7	48.4		43.1	54.3		7.5	42.0		6.6	34.7	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	380	2296		417	2300		438	656		311	660	
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	0.34		0.48	0.37		0.05	0.36		0.05	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.8			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 62.7%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

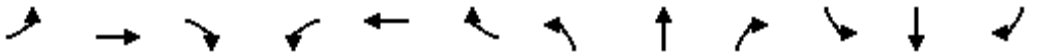




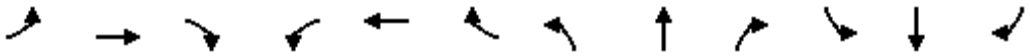
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	682	17	180	756	11	18	95	118	14	117	28
Future Volume (vph)	98	682	17	180	756	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3484		1746	3491		1744	1669		1745	1781	
Flt Permitted	0.31	1.00		0.34	1.00		0.65	1.00		0.46	1.00	
Satd. Flow (perm)	577	3484		634	3491		1198	1669		853	1781	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	758	19	200	840	12	20	106	131	16	130	31
RTOR Reduction (vph)	0	1	0	0	1	0	0	59	0	0	11	0
Lane Group Flow (vph)	109	776	0	200	851	0	20	178	0	16	150	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Effective Green, g (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	380	2298		418	2303		220	306		156	327	
v/s Ratio Prot		0.22			0.24			c0.11			0.08	
v/s Ratio Perm	0.19			c0.32			0.02			0.02		
v/c Ratio	0.29	0.34		0.48	0.37		0.09	0.58		0.10	0.46	
Uniform Delay, d1	5.5	5.7		6.5	5.9		26.0	28.6		26.0	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.4		3.9	0.5		0.2	2.8		0.3	1.0	
Delay (s)	7.4	6.1		10.4	6.3		26.2	31.4		26.3	28.9	
Level of Service	A	A		B	A		C	C		C	C	
Approach Delay (s)		6.3			7.1			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2338	44	131	2129	80
Future Volume (vph)	51	5	26	62	7	62	27	2338	44	131	2129	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Ped Bike Factor	0.99	0.98		0.99	0.98			1.00			1.00	
Frt		0.876			0.866			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1585	0	1750	1564	0	1750	4405	0	1750	4393	0
Flt Permitted	0.707			0.734			0.060			0.056		
Satd. Flow (perm)	1296	1585	0	1345	1564	0	111	4405	0	103	4393	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			69			3			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2598	49	146	2366	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	35	0	69	77	0	30	2647	0	146	2455	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		33.4	33.4		11.0	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		70.0	70.0		11.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%		58.3%	58.3%		9.2%	67.5%	
Maximum Green (s)	32.5	32.5		32.5	32.5		63.6	63.6		7.0	74.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
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	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		20.0	20.0			20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5			5	
Act Effct Green (s)	14.3	14.3		14.3	14.3		67.0	67.0		80.5	79.4	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.66	0.66		0.79	0.78	
v/c Ratio	0.31	0.15		0.37	0.28		0.41	0.91		0.75	0.72	
Control Delay	43.0	34.3		44.3	13.2		36.0	23.6		43.8	10.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.1	
Total Delay	43.0	34.3		44.3	13.2		36.0	23.6		43.8	10.6	
LOS	D	C		D	B		D	C		D	B	
Approach Delay		39.7			27.9			23.7			12.5	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	10.3	5.3		12.5	1.4		2.5	164.6		11.9	83.9	
Queue Length 95th (m)	21.3	13.4		24.8	12.8		#20.2	#332.4		#57.8	219.9	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	416	512		432	549		73	2899		195	3429	
Starvation Cap Reductn	0	0		0	0		0	0		0	145	
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	0.14	0.07		0.16	0.14		0.41	0.91		0.75	0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.8			
Natural Cycle: 135			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	

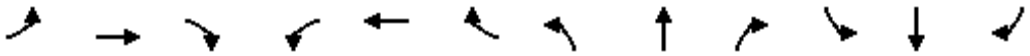
Analysis Period (min) 15

* User Entered Value

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

Splits and Phases: 26: Trafalgar Road & Local 6

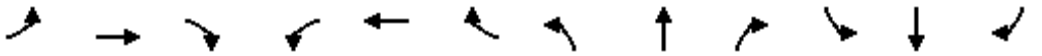




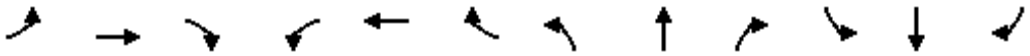
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2338	44	131	2129	80
Future Volume (vph)	51	5	26	62	7	62	27	2338	44	131	2129	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1578		1742	1557		1750	4406		1750	4392	
Flt Permitted	0.71	1.00		0.73	1.00		0.06	1.00		0.06	1.00	
Satd. Flow (perm)	1297	1578		1346	1557		110	4406		104	4392	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2598	49	146	2366	89
RTOR Reduction (vph)	0	4	0	0	61	0	0	1	0	0	2	0
Lane Group Flow (vph)	57	31	0	69	16	0	30	2646	0	146	2453	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		67.1	67.1		78.1	78.1	
Effective Green, g (s)	12.2	12.2		12.2	12.2		67.1	67.1		78.1	78.1	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.65	0.65		0.76	0.76	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	186		159	184		71	2864		190	3323	
v/s Ratio Prot		0.02			0.01			c0.60		0.05	c0.56	
v/s Ratio Perm	0.04			c0.05			0.27			0.53		
v/c Ratio	0.37	0.16		0.43	0.09		0.42	0.92		0.77	0.74	
Uniform Delay, d1	42.0	40.9		42.3	40.5		8.7	15.8		29.5	6.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.4		1.9	0.2		17.4	6.4		16.9	1.5	
Delay (s)	43.5	41.3		44.2	40.7		26.1	22.2		46.4	8.4	
Level of Service	D	D		D	D		C	C		D	A	
Approach Delay (s)		42.7			42.4			22.3			10.6	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.9
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2289	241	145	1958	116
Future Volume (vph)	87	112	140	200	100	32	198	2289	241	145	1958	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor			0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.685			0.513			0.066			0.070		
Satd. Flow (perm)	1262	1842	1532	941	1842	1534	122	4421	1511	129	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2543	268	161	2176	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	124	156	222	111	36	220	2543	268	161	2176	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	13.0	59.0	59.0	11.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	10.8%	49.2%	49.2%	9.2%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	9.0	52.6	52.6	7.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	17.1	17.1	17.1	30.6	28.1	28.1	81.0	62.5	62.5	71.7	56.8	56.8
Actuated g/C Ratio	0.14	0.14	0.14	0.26	0.23	0.23	0.68	0.52	0.52	0.60	0.47	0.47
v/c Ratio	0.54	0.47	0.45	0.77	0.26	0.09	0.67	1.10	0.32	0.66	1.04	0.17
Control Delay	56.8	51.2	10.6	56.7	36.9	1.9	42.4	73.0	14.8	38.3	62.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	51.2	10.6	56.7	36.9	1.9	42.4	73.0	14.8	38.3	62.4	6.2
LOS	E	D	B	E	D	A	D	E	B	D	E	A
Approach Delay		35.8			45.4			65.6			57.9	
Approach LOS		D			D			E			E	
Queue Length 50th (m)	22.1	27.9	0.6	46.1	22.0	0.0	43.1	~276.5	19.2	19.1	~215.5	2.9
Queue Length 95th (m)	33.3	39.3	16.4	56.6	30.8	2.1	m39.5	m#224.1	m22.4	#67.0	#286.6	14.8
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	341	498	526	287	667	598	327	2304	837	244	2094	770
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.30	0.77	0.17	0.06	0.67	1.10	0.32	0.66	1.04	0.17

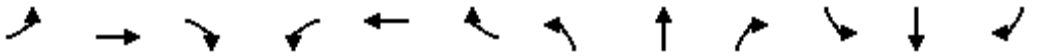
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 14 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 59.6	Intersection LOS: E

Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

* User Entered Value
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: Trafalgar Road & Settlers Road

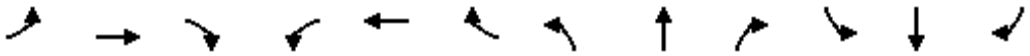




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2289	241	145	1958	116
Future Volume (vph)	87	112	140	200	100	32	198	2289	241	145	1958	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	1842	1526	1746	1842	1531	1750	4421	1512	1750	4421	1511
Flt Permitted	0.69	1.00	1.00	0.51	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1263	1842	1526	943	1842	1531	121	4421	1512	129	4421	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2543	268	161	2176	129
RTOR Reduction (vph)	0	0	131	0	0	28	0	0	50	0	0	55
Lane Group Flow (vph)	97	124	25	222	111	8	220	2543	218	161	2176	74
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	17.1	17.1	17.1	28.1	28.1	28.1	79.0	62.6	62.6	69.3	56.9	56.9
Effective Green, g (s)	17.1	17.1	17.1	28.1	28.1	28.1	79.0	62.6	62.6	69.3	56.9	56.9
Actuated g/C Ratio	0.14	0.14	0.14	0.23	0.23	0.23	0.66	0.52	0.52	0.58	0.47	0.47
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	262	217	267	431	358	325	2306	788	242	2096	716
v/s Ratio Prot		0.07		c0.05	0.06		c0.10	c0.58		0.07	0.49	
v/s Ratio Perm	0.08		0.02	c0.15		0.01	0.34		0.14	0.31		0.05
v/c Ratio	0.54	0.47	0.11	0.83	0.26	0.02	0.68	1.10	0.28	0.67	1.04	0.10
Uniform Delay, d1	47.8	47.3	44.8	43.3	37.4	35.4	34.1	28.7	16.0	29.8	31.6	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.67	0.85	1.33	1.00	1.00	1.00
Incremental Delay, d2	3.3	1.4	0.2	19.3	0.3	0.0	0.5	47.0	0.1	6.7	30.4	0.3
Delay (s)	51.1	48.7	45.1	62.6	37.8	35.4	57.5	71.4	21.4	36.5	61.9	17.7
Level of Service	D	D	D	E	D	D	E	E	C	D	E	B
Approach Delay (s)		47.8			52.5			66.0			58.0	
Approach LOS		D			D			E			E	

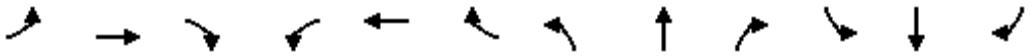
Intersection Summary			
HCM 2000 Control Delay	60.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Future Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
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
Ped Bike Factor												
Frt		0.974			0.983			0.938			0.994	
Flt Protected		0.997			0.981			0.993			0.989	
Satd. Flow (prot)	0	1789	0	0	1776	0	0	1716	0	0	1811	0
Flt Permitted		0.997			0.981			0.993			0.989	
Satd. Flow (perm)	0	1789	0	0	1776	0	0	1716	0	0	1811	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	143	36	116	140	37	32	86	100	39	122	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	293	0	0	218	0	0	169	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Future Volume (vph)	9	129	32	104	126	33	29	77	90	35	110	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	143	36	116	140	37	32	86	100	39	122	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	189	293	218	169
Volume Left (vph)	10	116	32	39
Volume Right (vph)	36	37	100	8
Hadj (s)	-0.07	0.04	-0.21	0.05
Departure Headway (s)	5.4	5.3	5.3	5.7
Degree Utilization, x	0.28	0.43	0.32	0.27
Capacity (veh/h)	605	630	611	572
Control Delay (s)	10.5	12.4	10.8	10.7
Approach Delay (s)	10.5	12.4	10.8	10.7
Approach LOS	B	B	B	B

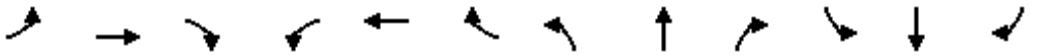
Intersection Summary				
Delay	11.3			
Level of Service	B			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	129	32	104	126	33	29	77	90	35	110	7
Future Vol, veh/h	9	129	32	104	126	33	29	77	90	35	110	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	143	36	116	140	37	32	86	100	39	122	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

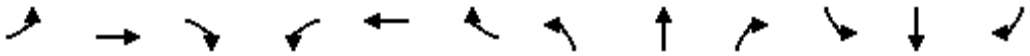
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.5	12.3	10.8	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	5%	40%	23%
Vol Thru, %	39%	76%	48%	72%
Vol Right, %	46%	19%	13%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	170	263	152
LT Vol	29	9	104	35
Through Vol	77	129	126	110
RT Vol	90	32	33	7
Lane Flow Rate	218	189	292	169
Geometry Grp	1	1	1	1
Degree of Util (X)	0.32	0.282	0.431	0.264
Departure Headway (Hd)	5.288	5.376	5.313	5.623
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	679	667	678	637
Service Time	3.331	3.421	3.354	3.67
HCM Lane V/C Ratio	0.321	0.283	0.431	0.265
HCM Control Delay	10.8	10.5	12.3	10.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.2	2.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
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
Ped Bike Factor												
Frt		0.967			0.989			0.990			0.948	
Flt Protected		0.986			0.995			0.994			0.998	
Satd. Flow (prot)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Flt Permitted		0.986			0.995			0.994			0.998	
Satd. Flow (perm)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	146	236	122	22	193	19	27	191	17	13	152	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	504	0	0	234	0	0	235	0	0	267	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	146	236	122	22	193	19	27	191	17	13	152	102

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	504	234	235	267
Volume Left (vph)	146	22	27	13
Volume Right (vph)	122	19	17	102
Hadj (s)	-0.05	0.00	0.01	-0.19
Departure Headway (s)	6.2	6.9	7.1	6.8
Degree Utilization, x	0.87	0.45	0.46	0.50
Capacity (veh/h)	560	472	465	488
Control Delay (s)	36.7	15.3	15.9	16.4
Approach Delay (s)	36.7	15.3	15.9	16.4
Approach LOS	E	C	C	C

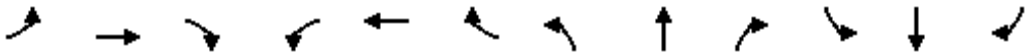
Intersection Summary				
Delay	24.3			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	23.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Future Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	236	122	22	193	19	27	191	17	13	152	102
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

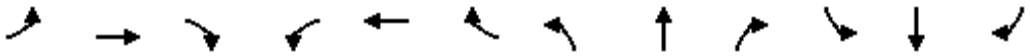
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	35.6	15.2	15.8	16.3
HCM LOS	E	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	29%	9%	5%
Vol Thru, %	82%	47%	82%	57%
Vol Right, %	7%	24%	8%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	453	211	241
LT Vol	24	131	20	12
Through Vol	172	212	174	137
RT Vol	15	110	17	92
Lane Flow Rate	234	503	234	268
Geometry Grp	1	1	1	1
Degree of Util (X)	0.454	0.857	0.441	0.498
Departure Headway (Hd)	6.979	6.127	6.774	6.7
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	513	589	527	533
Service Time	5.075	4.201	4.87	4.792
HCM Lane V/C Ratio	0.456	0.854	0.444	0.503
HCM Control Delay	15.8	35.6	15.2	16.3
HCM Lane LOS	C	E	C	C
HCM 95th-tile Q	2.3	9.4	2.2	2.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
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
Ped Bike Factor												
Frt		0.981			0.967			0.982			0.940	
Flt Protected		0.982			0.993			0.992			0.995	
Satd. Flow (prot)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Flt Permitted		0.982			0.993			0.992			0.995	
Satd. Flow (perm)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	131	38	31	142	57	23	102	19	23	112	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	0	0	230	0	0	144	0	0	242	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	131	38	31	142	57	23	102	19	23	112	107

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	266	230	144	242
Volume Left (vph)	97	31	23	23
Volume Right (vph)	38	57	19	107
Hadj (s)	0.02	-0.09	-0.01	-0.21
Departure Headway (s)	5.4	5.3	5.7	5.3
Degree Utilization, x	0.40	0.34	0.23	0.36
Capacity (veh/h)	621	620	558	620
Control Delay (s)	11.9	11.1	10.3	11.2
Approach Delay (s)	11.9	11.1	10.3	11.2
Approach LOS	B	B	B	B

Intersection Summary				
Delay	11.2			
Level of Service	B			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Future Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	131	38	31	142	57	23	102	19	23	112	107
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	11.1	10.3	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	36%	14%	10%
Vol Thru, %	71%	49%	62%	46%
Vol Right, %	13%	14%	25%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	239	207	218
LT Vol	21	87	28	21
Through Vol	92	118	128	101
RT Vol	17	34	51	96
Lane Flow Rate	144	266	230	242
Geometry Grp	1	1	1	1
Degree of Util (X)	0.226	0.395	0.339	0.355
Departure Headway (Hd)	5.64	5.359	5.313	5.278
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	636	672	676	681
Service Time	3.689	3.399	3.355	3.322
HCM Lane V/C Ratio	0.226	0.396	0.34	0.355
HCM Control Delay	10.3	11.9	11.1	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.9	1.9	1.5	1.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	21	2706	101	0	2270
Future Volume (vph)	0	21	2706	101	0	2270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	*0.80	0.91	1.00	*0.80
Ped Bike Factor						
Frt		0.865	0.995			
Flt Protected						
Satd. Flow (prot)	0	1593	4399	0	0	4421
Flt Permitted						
Satd. Flow (perm)	0	1593	4399	0	0	4421
Link Speed (k/h)	50		60			60
Link Distance (m)	98.5		148.7			268.7
Travel Time (s)	7.1		8.9			16.1
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	23	3007	112	0	2522
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	3119	0	0	2522
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

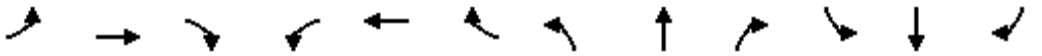
* User Entered Value



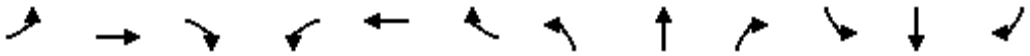
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	21	2706	101	0	2270
Future Volume (Veh/h)	0	21	2706	101	0	2270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	3007	112	0	2522
Pedestrians	5		5			5
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.0		1.0			1.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.67	0.45			0.45	
vC, conflicting volume	3914	1068			3124	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			1424	
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)	678	480			211	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	23	1203	1203	713	841	841	841
Volume Left	0	0	0	0	0	0	0
Volume Right	23	0	0	112	0	0	0
cSH	480	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.71	0.71	0.42	0.49	0.49	0.49
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.9	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2767	135	91	2180	4
Future Volume (vph)	19	99	152	146	92	65	222	2767	135	91	2180	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.96			0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	4421	1566	1750	4421	1566
Flt Permitted	0.691			0.539			0.069			0.074		
Satd. Flow (perm)	1267	1842	1532	988	1842	1534	127	4421	1511	136	4421	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			168			72			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	3074	150	101	2422	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	110	169	162	102	72	247	3074	150	101	2422	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	13.0	59.0	59.0	11.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	10.8%	49.2%	49.2%	9.2%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	9.0	52.6	52.6	7.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	15.9	15.9	15.9	29.4	26.9	26.9	82.2	68.3	68.3	64.4	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.24	0.22	0.22	0.68	0.57	0.57	0.54	0.45	0.45
v/c Ratio	0.13	0.45	0.49	0.57	0.25	0.18	0.64	1.22	0.17	0.57	1.21	0.01
Control Delay	43.2	51.9	10.7	44.6	37.7	7.8	36.2	129.3	6.0	29.8	124.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	51.9	10.7	44.6	37.7	7.8	36.2	129.3	6.0	29.8	124.6	0.0
LOS	D	D	B	D	D	A	D	F	A	C	F	A
Approach Delay		28.1			34.6			117.3			120.6	
Approach LOS		C			C			F			F	
Queue Length 50th (m)	4.6	25.1	0.2	33.2	20.7	0.0	35.8	~357.9	4.2	12.5	~274.1	0.0
Queue Length 95th (m)	10.1	35.4	16.4	42.0	28.8	9.5	#109.8	#458.9	18.3	m16.9	m#286.5	m0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	343	498	537	286	667	601	384	2517	905	178	1997	739
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.22	0.31	0.57	0.15	0.12	0.64	1.22	0.17	0.57	1.21	0.01

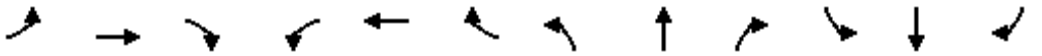
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 110.3	Intersection LOS: F

Intersection Capacity Utilization 90.0%	ICU Level of Service E
Analysis Period (min) 15	

* User Entered Value
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

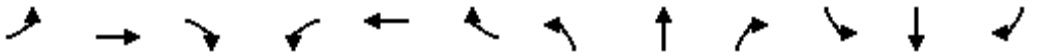




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	2767	135	91	2180	4
Future Volume (vph)	19	99	152	146	92	65	222	2767	135	91	2180	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1741	1842	1525	1746	1842	1531	1750	4421	1512	1750	4421	1511
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1267	1842	1525	990	1842	1531	127	4421	1512	136	4421	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	3074	150	101	2422	4
RTOR Reduction (vph)	0	0	146	0	0	56	0	0	45	0	0	2
Lane Group Flow (vph)	21	110	23	162	102	16	247	3074	105	101	2422	2
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	15.9	15.9	15.9	26.9	26.9	26.9	80.2	68.4	68.4	62.0	54.2	54.2
Effective Green, g (s)	15.9	15.9	15.9	26.9	26.9	26.9	80.2	68.4	68.4	62.0	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.22	0.22	0.22	0.67	0.57	0.57	0.52	0.45	0.45
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	244	202	266	412	343	382	2519	861	175	1996	682
v/s Ratio Prot		0.06		c0.04	0.06		c0.12	c0.70		0.04	0.55	
v/s Ratio Perm	0.02		0.02	c0.10		0.01	0.31		0.07	0.26		0.00
v/c Ratio	0.13	0.45	0.12	0.61	0.25	0.05	0.65	1.22	0.12	0.58	1.21	0.00
Uniform Delay, d1	45.9	48.0	45.9	41.0	38.2	36.5	32.8	25.8	11.9	26.0	32.9	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.47	0.83	1.00
Incremental Delay, d2	0.3	1.3	0.3	3.9	0.3	0.1	3.7	103.0	0.3	1.3	97.5	0.0
Delay (s)	46.3	49.3	46.1	44.9	38.6	36.6	36.5	128.8	12.2	39.5	124.9	18.1
Level of Service	D	D	D	D	D	D	D	F	B	D	F	B
Approach Delay (s)		47.3			41.2			117.2			121.3	
Approach LOS		D			D			F			F	

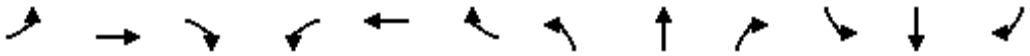
Intersection Summary			
HCM 2000 Control Delay	111.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Future Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
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
Ped Bike Factor												
Frt		0.997			0.908			0.982			0.987	
Flt Protected		0.989			0.999			0.997			0.969	
Satd. Flow (prot)	0	1816	0	0	1671	0	0	1803	0	0	1762	0
Flt Permitted		0.989			0.999			0.997			0.969	
Satd. Flow (perm)	0	1816	0	0	1671	0	0	1803	0	0	1762	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	120	4	6	86	197	4	54	9	149	59	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	289	0	0	67	0	0	231	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Future Volume (vph)	32	108	4	5	77	177	4	49	8	134	53	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	120	4	6	86	197	4	54	9	149	59	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	160	289	67	231
Volume Left (vph)	36	6	4	149
Volume Right (vph)	4	197	9	23
Hadj (s)	0.06	-0.37	-0.03	0.10
Departure Headway (s)	5.2	4.6	5.4	5.2
Degree Utilization, x	0.23	0.37	0.10	0.33
Capacity (veh/h)	643	739	588	640
Control Delay (s)	9.7	10.2	8.9	10.8
Approach Delay (s)	9.7	10.2	8.9	10.8
Approach LOS	A	B	A	B

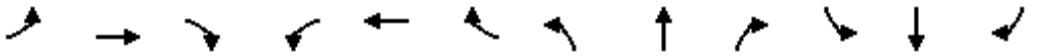
Intersection Summary				
Delay	10.2			
Level of Service	B			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	108	4	5	77	177	4	49	8	134	53	21
Future Vol, veh/h	32	108	4	5	77	177	4	49	8	134	53	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	120	4	6	86	197	4	54	9	149	59	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

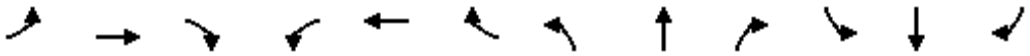
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	10.1	8.9	10.7
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	22%	2%	64%
Vol Thru, %	80%	75%	30%	25%
Vol Right, %	13%	3%	68%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	144	259	208
LT Vol	4	32	5	134
Through Vol	49	108	77	53
RT Vol	8	4	177	21
Lane Flow Rate	68	160	288	231
Geometry Grp	1	1	1	1
Degree of Util (X)	0.101	0.225	0.36	0.329
Departure Headway (Hd)	5.342	5.072	4.506	5.125
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	675	699	791	693
Service Time	3.342	3.161	2.581	3.212
HCM Lane V/C Ratio	0.101	0.229	0.364	0.333
HCM Control Delay	8.9	9.7	10.1	10.7
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.3	0.9	1.6	1.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
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
Ped Bike Factor												
Frt		0.968			0.987			0.949			0.921	
Flt Protected		0.980			0.973			0.991			0.998	
Satd. Flow (prot)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Flt Permitted		0.980			0.973			0.991			0.998	
Satd. Flow (perm)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	118	76	121	78	22	76	177	153	13	99	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	323	0	0	221	0	0	406	0	0	271	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	129	118	76	121	78	22	76	177	153	13	99	159

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	323	221	406	271
Volume Left (vph)	129	121	76	13
Volume Right (vph)	76	22	153	159
Hadj (s)	-0.03	0.08	-0.15	-0.31
Departure Headway (s)	6.7	7.0	6.3	6.5
Degree Utilization, x	0.60	0.43	0.71	0.49
Capacity (veh/h)	491	442	542	492
Control Delay (s)	19.0	15.3	23.0	15.4
Approach Delay (s)	19.0	15.3	23.0	15.4
Approach LOS	C	C	C	C

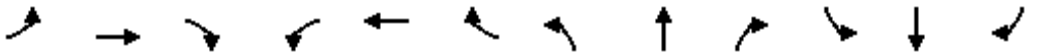
Intersection Summary				
Delay	18.9			
Level of Service	C			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

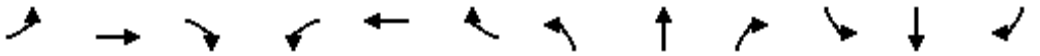
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Future Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	129	118	76	121	78	22	76	177	153	13	99	159
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.8	15.2	22.6	15.3
HCM LOS	C	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	40%	55%	5%
Vol Thru, %	44%	37%	35%	36%
Vol Right, %	38%	23%	10%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	365	290	199	244
LT Vol	68	116	109	12
Through Vol	159	106	70	89
RT Vol	138	68	20	143
Lane Flow Rate	406	322	221	271
Geometry Grp	1	1	1	1
Degree of Util (X)	0.699	0.589	0.427	0.48
Departure Headway (Hd)	6.207	6.577	6.948	6.371
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	580	545	515	561
Service Time	4.287	4.664	5.048	4.462
HCM Lane V/C Ratio	0.7	0.591	0.429	0.483
HCM Control Delay	22.6	18.8	15.2	15.3
HCM Lane LOS	C	C	C	C
HCM 95th-tile Q	5.5	3.8	2.1	2.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	454	0	23	1	2258	0	0	1956	0
Future Volume (vph)	1	0	3	454	0	23	1	2258	0	0	1956	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.998	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1564	1487	1750	3500	0	0	5029	0
Flt Permitted	0.351			0.950	0.953		0.064					
Satd. Flow (perm)	330	0	1566	1630	1564	1487	118	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		73	73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	493	0	25	1	2454	0	0	2126	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	246	250	22	1	2454	0	0	2126	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	53.0		53.0	53.0	53.0	53.0	10.0	67.0			57.0	
Total Split (%)	44.2%		44.2%	44.2%	44.2%	44.2%	8.3%	55.8%			47.5%	
Maximum Green (s)	47.0		47.0	47.0	47.0	47.0	6.0	60.0			50.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	19.1		19.1	19.1	19.1	19.1	63.2	60.2			58.4	
Actuated g/C Ratio	0.21		0.21	0.21	0.21	0.21	0.68	0.65			0.63	
v/c Ratio	0.01		0.01	0.73	0.66	0.06	0.01	1.08			0.67	
Control Delay	28.0		0.0	47.1	31.8	0.3	6.0	61.8			13.7	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	28.0		0.0	47.1	31.8	0.3	6.0	61.8			13.7	
LOS	C		A	D	C	A	A	E			B	
Approach Delay		7.0			37.7			61.7			13.7	
Approach LOS		A			D			E			B	
Queue Length 50th (m)	0.2		0.0	43.1	31.5	0.0	0.1	~256.3			73.8	
Queue Length 95th (m)	1.5		0.0	68.7	57.9	0.0	0.7	#344.0			147.1	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	168		835	832	834	795	187	2281			3181	
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	0.01		0.00	0.30	0.30	0.03	0.01	1.08			0.67	

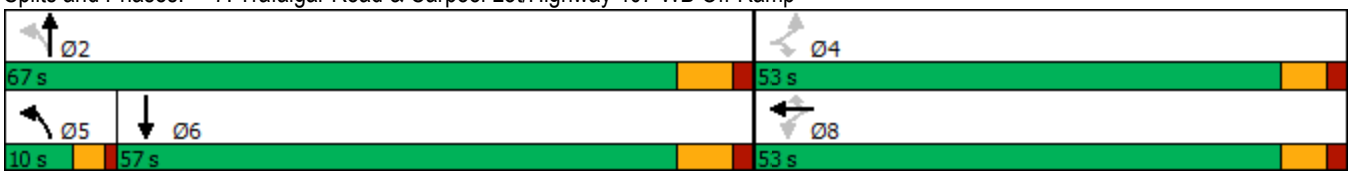
Intersection Summary

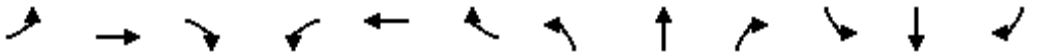
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 92.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 39.3 Intersection LOS: D
Intersection Capacity Utilization 92.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

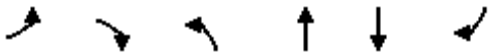
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	454	0	23	1	2258	0	0	1956	0
Future Volume (vph)	1	0	3	454	0	23	1	2258	0	0	1956	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1564	1487	1750	3500			5029	
Flt Permitted	0.35		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	329		1566	1630	1564	1487	118	3500			5029	
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)	1	0	3	493	0	25	1	2454	0	0	2126	0
RTOR Reduction (vph)	0	0	2	0	58	18	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	246	192	4	1	2454	0	0	2126	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	19.1		19.1	19.1	19.1	19.1	63.4	63.4			58.4	
Effective Green, g (s)	19.1		19.1	19.1	19.1	19.1	63.4	63.4			58.4	
Actuated g/C Ratio	0.20		0.20	0.20	0.20	0.20	0.66	0.66			0.61	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	65		313	326	312	297	95	2323			3075	
v/s Ratio Prot							0.00	c0.70			0.42	
v/s Ratio Perm	0.00		0.00	c0.15	0.12	0.00	0.01					
v/c Ratio	0.02		0.00	0.75	0.61	0.01	0.01	1.06			0.69	
Uniform Delay, d1	30.7		30.6	36.0	34.8	30.7	8.8	16.1			12.5	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	9.5	3.6	0.0	0.0	35.7			0.7	
Delay (s)	30.7		30.6	45.5	38.4	30.7	8.8	51.7			13.2	
Level of Service	C		C	D	D	C	A	D			B	
Approach Delay (s)		30.6			41.5			51.7			13.2	
Approach LOS		C			D			D			B	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	95.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2259	2413	41
Future Volume (vph)	0	0	0	2259	2413	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2455	2623	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2455	2623	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

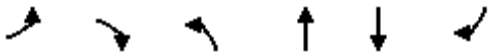
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2259	159	0	2413
Future Volume (vph)	0	0	2259	159	0	2413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	2455	173	0	2623
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2455	173	0	2623
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



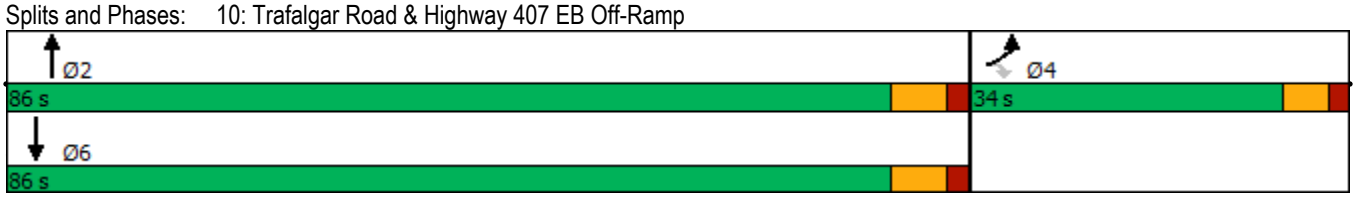
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	292	0	2678	2408	0
Future Volume (vph)	41	292	0	2678	2408	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.886	0.850				
Flt Protected	0.988					
Satd. Flow (prot)	1460	1308	0	3500	3500	0
Flt Permitted	0.988					
Satd. Flow (perm)	1460	1308	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	5				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	44	314	0	2880	2589	0
Shared Lane Traffic (%)		44%				
Lane Group Flow (vph)	182	176	0	2880	2589	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

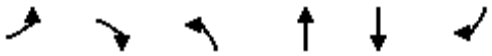
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	34.0	34.0		86.0	86.0	
Total Split (%)	28.3%	28.3%		71.7%	71.7%	
Maximum Green (s)	28.0	28.0		79.0	79.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	19.5	19.5		79.2	79.2	
Actuated g/C Ratio	0.17	0.17		0.71	0.71	
v/c Ratio	0.70	0.76		1.16	1.04	
Control Delay	56.8	62.9		96.9	49.1	
Queue Delay	0.0	0.0		0.1	0.0	
Total Delay	56.8	62.9		97.0	49.1	
LOS	E	E		F	D	
Approach Delay	59.8			97.0	49.1	
Approach LOS	E			F	D	
Queue Length 50th (m)	36.7	37.6		~393.2	~323.5	
Queue Length 95th (m)	60.0	62.5		#483.7	#410.0	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	370	332		2480	2480	
Starvation Cap Reductn	0	0		67	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.49	0.53		1.19	1.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 73.4		Intersection LOS: E	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

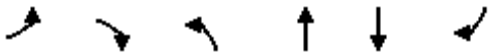
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	292	0	2678	2408	0
Future Volume (vph)	41	292	0	2678	2408	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.89	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1461	1308		3500	3500	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1461	1308		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	314	0	2880	2589	0
RTOR Reduction (vph)	4	4	0	0	0	0
Lane Group Flow (vph)	178	172	0	2880	2589	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.5	19.5		79.2	79.2	
Effective Green, g (s)	19.5	19.5		79.2	79.2	
Actuated g/C Ratio	0.17	0.17		0.71	0.71	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	255	228		2481	2481	
v/s Ratio Prot	0.12			c0.82	0.74	
v/s Ratio Perm		c0.13				
v/c Ratio	0.70	0.75		1.16	1.04	
Uniform Delay, d1	43.3	43.8		16.2	16.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	13.2		77.3	30.7	
Delay (s)	51.4	57.0		93.5	46.9	
Level of Service	D	E		F	D	
Approach Delay (s)	54.1			93.5	46.9	
Approach LOS	D			F	D	

Intersection Summary			
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	111.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2405	2408	16
Future Volume (vph)	0	0	0	2405	2408	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	2586	2589	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2586	2589	17
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

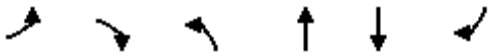
Intersection Sign configuration not allowed in HCM analysis.



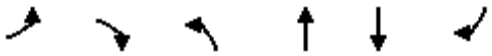
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2678	216	0	2698
Future Volume (vph)	0	0	2678	216	0	2698
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	2880	232	0	2901
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2880	232	0	2901
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	889	1073	150
Future Volume (vph)	320	148	0	889	1073	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	110.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	15.0		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					
Satd. Flow (prot)	1075	1401	1740	4885	4980	1566
Flt Permitted	0.950					
Satd. Flow (perm)	1075	1401	1740	4885	4980	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		161				163
Link Speed (k/h)	25			80	80	
Link Distance (m)	112.4			228.1	145.5	
Travel Time (s)	16.2			10.3	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Adj. Flow (vph)	348	161	0	966	1166	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	161	0	966	1166	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	45.0	45.0	45.0
Minimum Split (s)	45.1	45.1	11.0	51.4	51.4	51.4
Total Split (s)	25.0	25.0	11.0	66.0	55.0	55.0
Total Split (%)	27.5%	27.5%	12.1%	72.5%	60.4%	60.4%
Maximum Green (s)	17.9	17.9	7.0	59.6	48.6	48.6
Yellow Time (s)	3.0	3.0	3.0	4.6	4.6	4.6
All-Red Time (s)	4.1	4.1	1.0	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	6.4	6.4	6.4
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.2	3.2	3.0	4.0	4.0	4.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	31.0	31.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
v/c Ratio	1.65	0.40		0.30	0.36	0.15
Control Delay	340.3	8.6		7.1	7.4	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	340.3	8.6		7.1	7.4	1.3
LOS	F	A		A	A	A
Approach Delay	235.3			7.1	6.7	
Approach LOS	F			A	A	
Queue Length 50th (m)	~89.1	0.0		23.7	29.8	0.0
Queue Length 95th (m)	#140.1	15.6		29.8	37.0	5.9
Internal Link Dist (m)	88.4			204.1	121.5	
Turn Bay Length (m)						40.0
Base Capacity (vph)	211	404		3199	3261	1081
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	1.65	0.40		0.30	0.36	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 91			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.65			
Intersection Signal Delay: 48.3		Intersection LOS: D	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

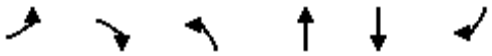
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 14: Trafalgar Road & GO Parking Lot



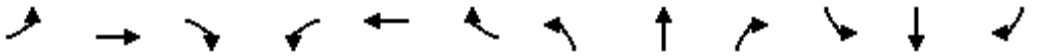


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	148	0	889	1073	150
Future Volume (vph)	320	148	0	889	1073	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		0.91	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00	1.00
Satd. Flow (prot)	1075	1401		4885	4980	1566
Flt Permitted	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1075	1401		4885	4980	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	161	0	966	1166	163
RTOR Reduction (vph)	0	129	0	0	0	56
Lane Group Flow (vph)	348	32	0	966	1166	107
Heavy Vehicles (%)	66%	14%	8%	5%	3%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.9	17.9		59.6	59.6	59.6
Effective Green, g (s)	17.9	17.9		59.6	59.6	59.6
Actuated g/C Ratio	0.20	0.20		0.65	0.65	0.65
Clearance Time (s)	7.1	7.1		6.4	6.4	6.4
Vehicle Extension (s)	3.2	3.2		4.0	4.0	4.0
Lane Grp Cap (vph)	211	275		3199	3261	1025
v/s Ratio Prot	c0.32			0.20	c0.23	
v/s Ratio Perm		0.02				0.07
v/c Ratio	1.65	0.12		0.30	0.36	0.10
Uniform Delay, d1	36.5	30.0		6.8	7.1	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	312.4	0.2		0.2	0.3	0.2
Delay (s)	349.0	30.2		7.0	7.4	6.0
Level of Service	F	C		A	A	A
Approach Delay (s)	248.2			7.0	7.2	
Approach LOS	F			A	A	

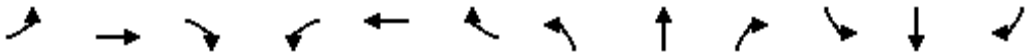
Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Appendix O

2041 Future Total Conditions Synchro and Sidra Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	618	1188	283	345	551	157	662	2241	53	418	1849	426
Future Volume (vph)	618	1188	283	345	551	157	662	2241	53	418	1849	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161			171			120			194
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Adj. Flow (vph)	672	1291	308	375	599	171	720	2436	58	454	2010	463
Shared Lane Traffic (%)												
Lane Group Flow (vph)	672	1291	308	375	599	171	720	2436	58	454	2010	463
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	



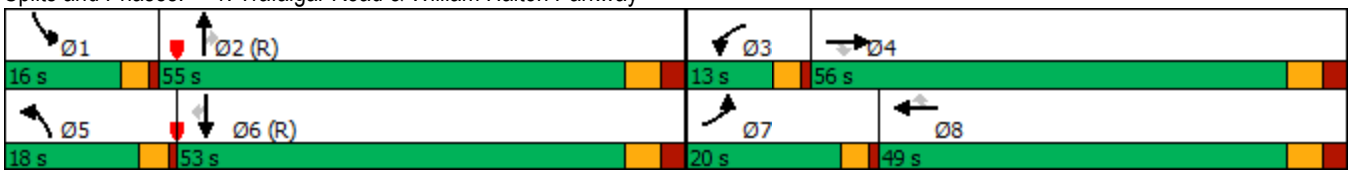
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	45.4	45.4
Total Split (s)	20.0	56.0	56.0	13.0	49.0	49.0	18.0	55.0	55.0	16.0	53.0	53.0
Total Split (%)	14.3%	40.0%	40.0%	9.3%	35.0%	35.0%	12.9%	39.3%	39.3%	11.4%	37.9%	37.9%
Maximum Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
v/c Ratio	1.73	1.04	0.47	1.72	0.56	0.31	2.12	2.00	0.10	1.58	1.74	0.71
Control Delay	375.3	80.7	18.5	379.5	43.4	6.4	544.5	481.5	0.3	315.1	368.1	29.9
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	375.3	80.7	18.5	379.5	43.4	6.4	544.5	481.5	0.3	315.1	368.1	29.9
LOS	F	F	B	F	D	A	F	F	A	F	F	C
Approach Delay		159.5			147.9			487.0			306.4	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~141.5	~202.8	30.1	~78.7	73.4	0.0	~162.9	~552.8	0.0	~91.7	~433.3	67.0
Queue Length 95th (m)	#179.1	#245.4	57.0	#110.7	92.5	16.5	#201.4	#591.2	0.0	#125.8	#474.4	108.5
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	388	1240	658	218	1065	560	339	1215	596	288	1153	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	1.73	1.04	0.47	1.72	0.56	0.31	2.12	2.00	0.10	1.58	1.74	0.71

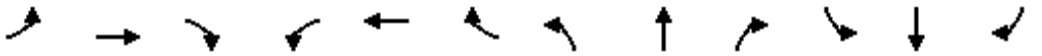
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.12			
Intersection Signal Delay: 313.2		Intersection LOS: F	
Intersection Capacity Utilization 133.9%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway

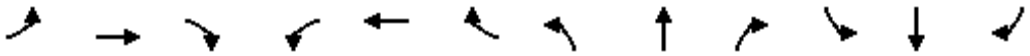




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	618	1188	283	345	551	157	662	2241	53	418	1849	426
Future Volume (vph)	618	1188	283	345	551	157	662	2241	53	418	1849	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	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)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
Flt Permitted	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 (perm)	3395	3500	1566	3395	3500	1452	3395	3500	1493	3362	3466	1566
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)	672	1291	308	375	599	171	720	2436	58	454	2010	463
RTOR Reduction (vph)	0	0	104	0	0	119	0	0	38	0	0	129
Lane Group Flow (vph)	672	1291	204	375	599	52	720	2436	20	454	2010	334
Heavy Vehicles (%)	2%	2%	2%	2%	2%	10%	2%	2%	7%	3%	3%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Effective Green, g (s)	16.0	49.6	49.6	9.0	42.6	42.6	14.0	48.6	48.6	12.0	46.6	46.6
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	0.30	0.10	0.35	0.35	0.09	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	388	1240	554	218	1065	441	339	1215	518	288	1153	521
v/s Ratio Prot	c0.20	c0.37		0.11	0.17		c0.21	c0.70		0.14	0.58	
v/s Ratio Perm			0.13			0.04			0.01			0.21
v/c Ratio	1.73	1.04	0.37	1.72	0.56	0.12	2.12	2.00	0.04	1.58	1.74	0.64
Uniform Delay, d1	62.0	45.2	33.6	65.5	40.9	35.1	63.0	45.7	30.2	64.0	46.7	39.6
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	340.0	36.9	0.9	342.7	1.1	0.3	515.6	455.2	0.1	275.5	338.1	5.9
Delay (s)	402.0	82.1	34.4	408.2	42.0	35.4	578.6	500.9	30.4	339.5	384.8	45.5
Level of Service	F	F	C	F	D	D	F	F	C	F	F	D
Approach Delay (s)		170.3			161.0			509.8			324.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	330.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	133.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	389	139	251	290	224	228	2469	260	167	1869	102
Future Volume (vph)	243	389	139	251	290	224	228	2469	260	167	1869	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00								
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3368	1566	1700	3493	1559	1750	3459	1559
Flt Permitted	0.450			0.306			0.950			0.950		
Satd. Flow (perm)	829	3500	1545	563	3368	1566	1700	3493	1559	1750	3459	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			162			104			104
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	270	432	154	279	322	249	253	2743	289	186	2077	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	432	154	279	322	249	253	2743	289	186	2077	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	11.0	42.0	42.0	11.0	42.0	42.0	13.0	55.0	55.0	12.0	54.0	54.0
Total Split (%)	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%	10.8%	45.8%	45.8%	10.0%	45.0%	45.0%
Maximum Green (s)	7.0	35.6	35.6	7.0	35.6	35.6	9.0	48.7	48.7	8.0	47.7	47.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	29.9	20.5	20.5	29.9	20.5	20.5	24.1	48.7	48.7	23.1	47.7	47.7
Actuated g/C Ratio	0.25	0.17	0.17	0.25	0.17	0.17	0.20	0.41	0.41	0.19	0.40	0.40
v/c Ratio	1.04	0.72	0.40	1.33	0.56	0.62	0.74	1.94	0.42	0.55	1.51	0.17
Control Delay	106.6	53.9	11.2	212.3	48.9	23.0	60.5	448.2	17.9	52.3	263.3	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.6	53.9	11.2	212.3	48.9	23.0	60.5	448.2	17.9	52.3	263.3	5.9
LOS	F	D	B	F	D	C	E	F	B	D	F	A
Approach Delay		62.9			94.9			380.5			234.5	
Approach LOS		E			F			F			F	
Queue Length 50th (m)	~57.5	51.3	2.2	~76.2	37.1	18.3	56.3	~524.5	29.7	39.8	~358.3	1.3
Queue Length 95th (m)	#98.7	64.7	19.0	#123.3	48.9	42.9	#109.9	#563.5	52.7	#73.3	#400.1	12.5
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	260	1038	558	209	999	578	341	1417	694	336	1374	682
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	1.04	0.42	0.28	1.33	0.32	0.43	0.74	1.94	0.42	0.55	1.51	0.17

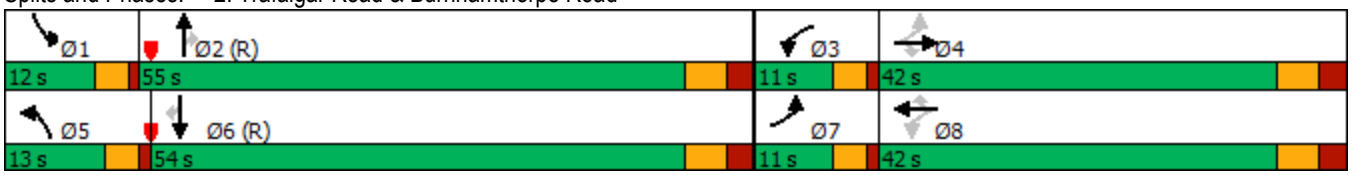
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.94	

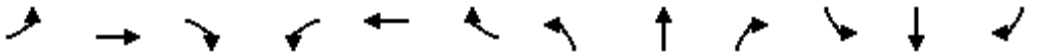
Intersection Signal Delay: 263.6	Intersection LOS: F
Intersection Capacity Utilization 120.0%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	389	139	251	290	224	228	2469	260	167	1869	102
Future Volume (vph)	243	389	139	251	290	224	228	2469	260	167	1869	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3500	1545	1750	3368	1566	1700	3493	1559	1750	3459	1559
Flt Permitted	0.45	1.00	1.00	0.31	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	828	3500	1545	563	3368	1566	1700	3493	1559	1750	3459	1559
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	270	432	154	279	322	249	253	2743	289	186	2077	113
RTOR Reduction (vph)	0	0	119	0	0	134	0	0	62	0	0	63
Lane Group Flow (vph)	270	432	35	279	322	115	253	2743	227	186	2077	50
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	5%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	27.5	20.5	20.5	27.5	20.5	20.5	24.1	48.7	48.7	23.1	47.7	47.7
Effective Green, g (s)	27.5	20.5	20.5	27.5	20.5	20.5	24.1	48.7	48.7	23.1	47.7	47.7
Actuated g/C Ratio	0.23	0.17	0.17	0.23	0.17	0.17	0.20	0.41	0.41	0.19	0.40	0.40
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	243	597	263	198	575	267	341	1417	632	336	1374	619
v/s Ratio Prot	0.06	0.12		c0.08	0.10		c0.15	c0.79		0.11	0.60	
v/s Ratio Perm	0.19		0.02	c0.24		0.07			0.15			0.03
v/c Ratio	1.11	0.72	0.13	1.41	0.56	0.43	0.74	1.94	0.36	0.55	1.51	0.08
Uniform Delay, d1	45.1	47.1	42.2	44.6	45.6	44.5	45.0	35.6	24.8	43.8	36.1	22.5
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	90.8	4.3	0.2	211.4	1.3	1.1	8.4	423.7	1.6	2.0	234.0	0.3
Delay (s)	135.9	51.4	42.5	256.0	46.9	45.6	53.5	459.4	26.4	45.8	270.2	22.8
Level of Service	F	D	D	F	D	D	D	F	C	D	F	C
Approach Delay (s)		76.4			115.1			390.0			240.9	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	273.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	120.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1606	1	744	741	0	1225
Future Volume (vph)	1606	1	744	741	0	1225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	2		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	0.97	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3500	0	3330	3466	1842	1566
Flt Permitted			0.950			
Satd. Flow (perm)	3500	0	3330	3466	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						439
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			396.1	222.0	
Travel Time (s)	39.5			23.8	16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Adj. Flow (vph)	1746	1	809	805	0	1332
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1747	0	809	805	0	1332
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			7.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.0	28.4	31.0	31.0
Total Split (s)	48.0		32.0	80.0	40.0	40.0
Total Split (%)	40.0%		26.7%	66.7%	33.3%	33.3%
Maximum Green (s)	41.6		28.0	73.6	36.0	36.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	41.6		28.0	73.6		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
v/c Ratio	1.44		1.04	0.38		1.71
Control Delay	234.5		88.4	12.3		347.7
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	234.5		88.4	12.3		347.7
LOS	F		F	B		F
Approach Delay	234.5			50.4	347.7	
Approach LOS	F			D	F	
Queue Length 50th (m)	~294.1		~106.1	47.1		~389.1
Queue Length 95th (m)	#336.6		#144.1	59.2		#470.3
Internal Link Dist (m)	633.5			372.1	198.0	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1213		777	2125		777
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	1.44		1.04	0.38		1.71

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.71			
Intersection Signal Delay: 203.3		Intersection LOS: F	
Intersection Capacity Utilization 128.9%		ICU Level of Service H	
Analysis Period (min) 15			

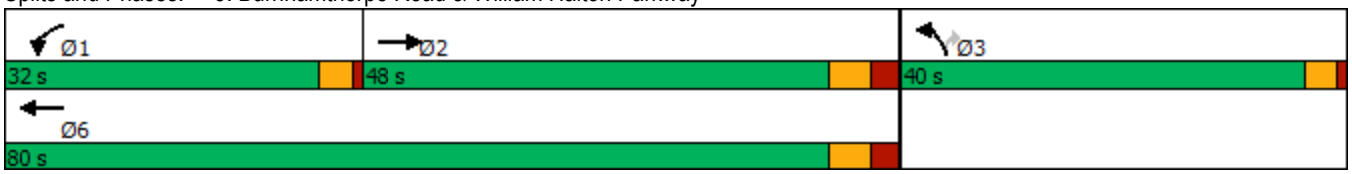
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

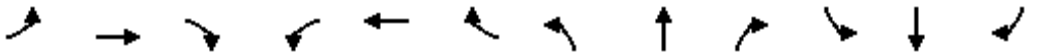
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



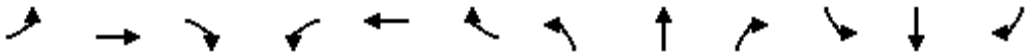


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1606	1	744	741	0	1225
Future Volume (vph)	1606	1	744	741	0	1225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		0.97	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3500		3330	3466		1566
Flt Permitted	1.00		0.95	1.00		1.00
Satd. Flow (perm)	3500		3330	3466		1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1746	1	809	805	0	1332
RTOR Reduction (vph)	0	0	0	0	0	307
Lane Group Flow (vph)	1747	0	809	805	0	1025
Heavy Vehicles (%)	2%	2%	4%	3%	2%	2%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases						3
Actuated Green, G (s)	41.6		28.0	73.6		36.0
Effective Green, g (s)	41.6		28.0	73.6		36.0
Actuated g/C Ratio	0.35		0.23	0.61		0.30
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1213		777	2125		469
v/s Ratio Prot	c0.50		c0.24	0.23		
v/s Ratio Perm						c0.65
v/c Ratio	1.44		1.04	0.38		2.18
Uniform Delay, d1	39.2		46.0	11.7		42.0
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	202.8		43.5	0.1		540.2
Delay (s)	242.0		89.5	11.8		582.2
Level of Service	F		F	B		F
Approach Delay (s)	242.0			50.7	582.2	
Approach LOS	F			D	F	

Intersection Summary			
HCM 2000 Control Delay	272.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	128.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	735	2286	257	276	1294	695	207	1649	131	910	2181	489
Future Volume (vph)	735	2286	257	276	1294	695	207	1649	131	910	2181	489
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1551	3298	3336	1536	3330	3466	1566	3330	3466	1551
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3392	3500	1529	3298	3336	1512	3328	3466	1543	3328	3466	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118			149			96			142
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		560.5			603.0			601.7			1233.0	
Travel Time (s)		28.8			31.0			36.1			74.0	
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Adj. Flow (vph)	766	2381	268	288	1348	724	216	1718	136	948	2272	509
Shared Lane Traffic (%)												
Lane Group Flow (vph)	766	2381	268	288	1348	724	216	1718	136	948	2272	509
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	50.4	50.4	11.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	57.0	57.0	12.0	55.0	55.0	12.0	49.0	49.0	12.0	49.0	49.0
Total Split (%)	10.8%	43.8%	43.8%	9.2%	42.3%	42.3%	9.2%	37.7%	37.7%	9.2%	37.7%	37.7%
Maximum Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		2	2		4	4		3	3		6	6
Act Effct Green (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
v/c Ratio	2.93	1.75	0.40	1.43	1.08	1.10	1.06	1.51	0.24	4.65	2.00	0.86
Control Delay	901.5	367.4	17.5	260.3	89.3	96.8	136.6	268.2	12.0	1665.3	479.8	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	901.5	367.4	17.5	260.3	89.3	96.8	136.6	268.2	12.0	1665.3	479.8	44.5
LOS	F	F	B	F	F	F	F	F	B	F	F	D
Approach Delay		459.7			112.5			237.7			721.8	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~174.3	~476.1	26.4	~51.1	~202.9	~185.0	~31.1	~322.1	7.1	~231.9	~477.3	92.1
Queue Length 95th (m)	#212.4	#515.9	49.3	#79.6	#245.2	#259.1	#56.6	#364.4	21.9	#272.0	#517.9	#153.3
Internal Link Dist (m)		536.5			579.0			577.7			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1362	667	202	1247	658	204	1135	570	204	1135	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.93	1.75	0.40	1.43	1.08	1.10	1.06	1.51	0.24	4.65	2.00	0.86

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 4.65	
Intersection Signal Delay: 433.6	Intersection LOS: F

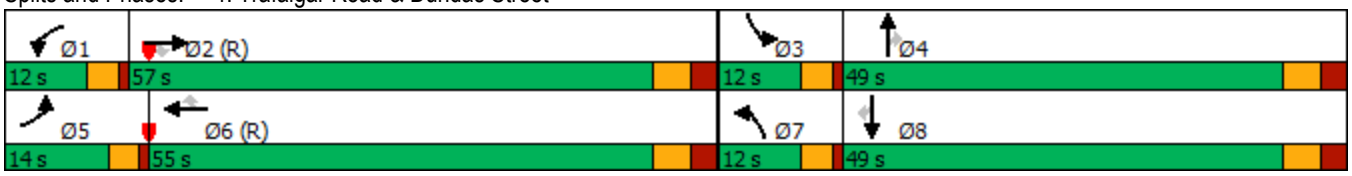
Intersection Capacity Utilization 159.9% ICU Level of Service H

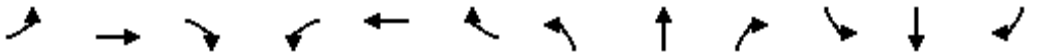
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

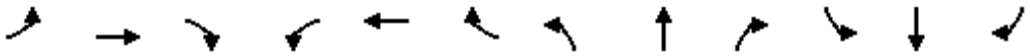




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	735	2286	257	276	1294	695	207	1649	131	910	2181	489
Future Volume (vph)	735	2286	257	276	1294	695	207	1649	131	910	2181	489
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1529	3298	3336	1512	3330	3466	1543	3330	3466	1523
Flt Permitted	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 (perm)	3395	3500	1529	3298	3336	1512	3330	3466	1543	3330	3466	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	766	2381	268	288	1348	724	216	1718	136	948	2272	509
RTOR Reduction (vph)	0	0	72	0	0	93	0	0	65	0	0	95
Lane Group Flow (vph)	766	2381	196	288	1348	631	216	1718	71	948	2272	414
Confl. Peds. (#/hr)	4		2	2		4	6		3	3		6
Heavy Vehicles (%)	2%	2%	3%	5%	7%	4%	4%	3%	2%	4%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Effective Green, g (s)	10.0	50.6	50.6	8.0	48.6	48.6	8.0	42.6	42.6	8.0	42.6	42.6
Actuated g/C Ratio	0.08	0.39	0.39	0.06	0.37	0.37	0.06	0.33	0.33	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	261	1362	595	202	1247	565	204	1135	505	204	1135	499
v/s Ratio Prot	c0.23	c0.68		0.09	0.40		0.06	0.50		c0.28	c0.66	
v/s Ratio Perm			0.13			0.42			0.05			0.27
v/c Ratio	2.93	1.75	0.33	1.43	1.08	1.12	1.06	1.51	0.14	4.65	2.00	0.83
Uniform Delay, d1	60.0	39.7	27.8	61.0	40.7	40.7	61.0	43.7	30.8	61.0	43.7	40.3
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	881.0	339.7	1.5	217.8	50.4	74.0	79.4	235.7	0.2	1652.3	453.9	11.2
Delay (s)	941.0	379.4	29.3	278.8	91.1	114.7	140.4	279.4	31.0	1713.3	497.6	51.5
Level of Service	F	F	C	F	F	F	F	F	C	F	F	D
Approach Delay (s)		477.9			121.2			248.6			745.8	
Approach LOS		F			F			F			F	

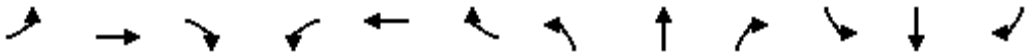
Intersection Summary			
HCM 2000 Control Delay	450.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.18		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	159.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	653	95	85	435	201	43	381	214	965	317	345
Future Volume (vph)	279	653	95	85	435	201	43	381	214	965	317	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.986			0.960			0.950			0.967	
Flt Protected		0.987			0.994			0.996			0.972	
Satd. Flow (prot)	0	3406	0	0	3340	0	0	3312	0	0	3290	0
Flt Permitted		0.987			0.994			0.996			0.972	
Satd. Flow (perm)	0	3406	0	0	3340	0	0	3312	0	0	3290	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		481.1			830.2			671.5			229.3	
Travel Time (s)		28.9			49.8			40.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Adj. Flow (vph)	310	726	106	89	483	209	48	397	223	1005	330	383
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1142	0	0	781	0	0	668	0	0	1718	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

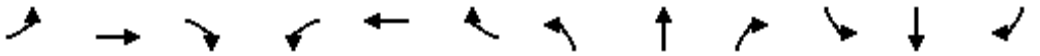
Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 135.5%		ICU Level of Service H	
Analysis Period (min) 15			



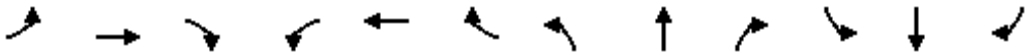
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	279	653	95	85	435	201	43	381	214	965	317	345
Future Volume (veh/h)	279	653	95	85	435	201	43	381	214	965	317	345
Peak Hour Factor	0.90	0.90	0.90	0.96	0.90	0.96	0.90	0.96	0.96	0.96	0.96	0.90
Hourly flow rate (vph)	310	726	106	89	483	209	48	397	223	1005	330	383
Approach Volume (veh/h)		1142			781			668			1718	
Crossing Volume (veh/h)		1424#			755			2041#			620	
High Capacity (veh/h)		438			760			259			848	
High v/c (veh/h)		2.61			1.03			2.58			2.03	
Low Capacity (veh/h)		327			602			182			679	
Low v/c (veh/h)		3.50			1.30			3.68			2.53	

Intersection Summary				
Maximum v/c High	2.61			
Maximum v/c Low	3.68			
Intersection Capacity Utilization	135.5%	ICU Level of Service	H	

Crossing flow exceeds 1200, method is not applicable



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	162	52	145	239	42	187	752	201	88	601	12
Future Volume (vph)	58	162	52	145	239	42	187	752	201	88	601	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.964			0.978			0.968			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3374	0	1684	3324	0	1750	3360	0	1700	3456	0
Flt Permitted	0.560			0.603			0.380			0.226		
Satd. Flow (perm)	1032	3374	0	1069	3324	0	700	3360	0	404	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			24			57			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			328.3			671.5	
Travel Time (s)		17.4			24.9			19.7			40.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Adj. Flow (vph)	65	182	58	163	269	47	210	845	226	99	675	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	240	0	163	316	0	210	1071	0	99	688	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

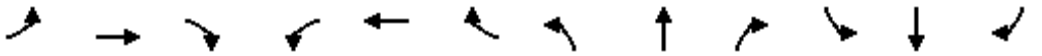


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		50.4	50.4		50.4	50.4	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		47.6	47.6		47.6	47.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	17.3	17.3		17.3	17.3		47.9	47.9		47.9	47.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.61	0.61		0.61	0.61	
v/c Ratio	0.29	0.31		0.69	0.42		0.49	0.51		0.40	0.32	
Control Delay	27.7	20.1		43.2	25.1		15.1	10.0		16.2	8.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.7	20.1		43.2	25.1		15.1	10.0		16.2	8.7	
LOS	C	C		D	C		B	B		B	A	
Approach Delay		21.7			31.3			10.9			9.6	
Approach LOS		C			C			B			A	
Queue Length 50th (m)	8.0	12.1		22.1	19.3		15.1	38.6		6.6	22.4	
Queue Length 95th (m)	17.7	20.5		40.4	29.5		43.5	72.6		24.0	43.3	
Internal Link Dist (m)		217.5			321.8			304.3			647.5	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	391	1313		405	1277		429	2081		247	2119	
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	0.17	0.18		0.40	0.25		0.49	0.51		0.40	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.1			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

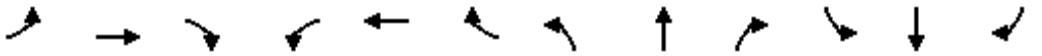
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



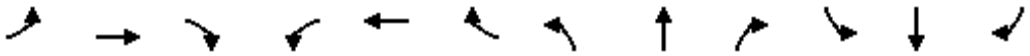


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	162	52	145	239	42	187	752	201	88	601	12
Future Volume (vph)	58	162	52	145	239	42	187	752	201	88	601	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3373		1684	3323		1750	3361		1700	3457	
Flt Permitted	0.56	1.00		0.60	1.00		0.38	1.00		0.23	1.00	
Satd. Flow (perm)	1032	3373		1068	3323		700	3361		404	3457	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	65	182	58	163	269	47	210	845	226	99	675	13
RTOR Reduction (vph)	0	40	0	0	19	0	0	22	0	0	1	0
Lane Group Flow (vph)	65	200	0	163	297	0	210	1049	0	99	687	0
Heavy Vehicles (%)	2%	2%	2%	6%	4%	11%	2%	2%	6%	5%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3		17.3	17.3		47.9	47.9		47.9	47.9	
Effective Green, g (s)	17.3	17.3		17.3	17.3		47.9	47.9		47.9	47.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.61	0.61		0.61	0.61	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	747		236	736		429	2061		247	2120	
v/s Ratio Prot		0.06			0.09			c0.31			0.20	
v/s Ratio Perm	0.06			c0.15			0.30			0.24		
v/c Ratio	0.29	0.27		0.69	0.40		0.49	0.51		0.40	0.32	
Uniform Delay, d1	25.3	25.2		27.9	26.0		8.3	8.5		7.7	7.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		8.4	0.4		4.0	0.9		4.8	0.4	
Delay (s)	26.0	25.4		36.4	26.4		12.3	9.4		12.5	7.7	
Level of Service	C	C		D	C		B	A		B	A	
Approach Delay (s)		25.5			29.8			9.9			8.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	535	0	3	2	2300	0	0	2461	0
Future Volume (vph)	3	0	2	535	0	3	2	2300	0	0	2461	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.950		0.950					
Satd. Flow (prot)	1069	0	1566	1449	1388	1487	1190	3305	0	0	4749	0
Flt Permitted	0.354			0.950	0.950		0.078					
Satd. Flow (perm)	398	0	1566	1449	1388	1487	98	3305	0	0	4749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			79						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Adj. Flow (vph)	3	0	2	601	0	3	2	2584	0	0	2765	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	3	0	2	300	301	3	2	2584	0	0	2765	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



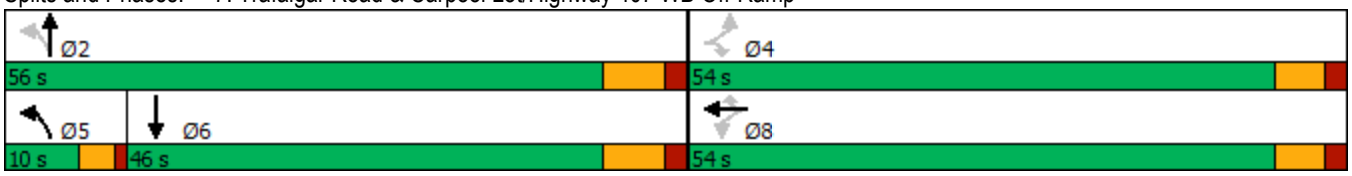
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	54.0		54.0	54.0	54.0	54.0	10.0	56.0			46.0	
Total Split (%)	49.1%		49.1%	49.1%	49.1%	49.1%	9.1%	50.9%			41.8%	
Maximum Green (s)	48.0		48.0	48.0	48.0	48.0	6.0	49.0			39.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	23.8		23.8	23.8	23.8	23.8	52.3	49.3			47.5	
Actuated g/C Ratio	0.28		0.28	0.28	0.28	0.28	0.61	0.57			0.55	
v/c Ratio	0.03		0.00	0.75	0.79	0.01	0.02	1.37			1.06	
Control Delay	21.7		0.0	40.4	43.5	0.0	9.5	190.2			56.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	21.7		0.0	40.4	43.5	0.0	9.5	190.2			56.3	
LOS	C		A	D	D	A	A	F			E	
Approach Delay		13.0			41.8			190.1			56.3	
Approach LOS		B			D			F			E	
Queue Length 50th (m)	0.4		0.0	47.1	49.8	0.0	0.1	~295.5			~160.4	
Queue Length 95th (m)	2.2		0.0	73.8	79.0	0.0	1.2	#397.8			#284.6	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	223		912	811	777	868	135	1890			2619	
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	0.01		0.00	0.37	0.39	0.00	0.01	1.37			1.06	

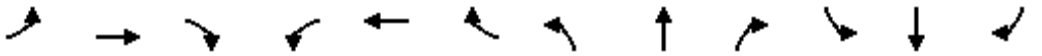
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 86.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 112.8		Intersection LOS: F	
Intersection Capacity Utilization 95.9%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

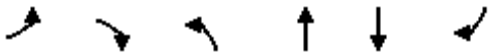
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	535	0	3	2	2300	0	0	2461	0
Future Volume (vph)	3	0	2	535	0	3	2	2300	0	0	2461	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1069		1566	1449	1388	1487	1190	3305			4749	
Flt Permitted	0.35		1.00	0.95	0.95	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	399		1566	1449	1388	1487	97	3305			4749	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	0	2	601	0	3	2	2584	0	0	2765	0
RTOR Reduction (vph)	0	0	1	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	3	0	1	300	301	1	2	2584	0	0	2765	0
Heavy Vehicles (%)	67%	2%	2%	17%	2%	2%	50%	8%	2%	2%	8%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	23.8		23.8	23.8	23.8	23.8	52.6	52.6			47.6	
Effective Green, g (s)	23.8		23.8	23.8	23.8	23.8	52.6	52.6			47.6	
Actuated g/C Ratio	0.27		0.27	0.27	0.27	0.27	0.59	0.59			0.53	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	106		416	385	369	395	69	1944			2528	
v/s Ratio Prot							0.00	c0.78			0.58	
v/s Ratio Perm	0.01		0.00	0.21	0.22	0.00	0.02					
v/c Ratio	0.03		0.00	0.78	0.82	0.00	0.03	1.33			1.09	
Uniform Delay, d1	24.3		24.1	30.4	30.7	24.1	20.3	18.4			20.9	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	9.6	13.0	0.0	0.2	151.8			49.3	
Delay (s)	24.4		24.1	40.0	43.7	24.1	20.5	170.2			70.2	
Level of Service	C		C	D	D	C	C	F			E	
Approach Delay (s)		24.2			41.8			170.1			70.2	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	110.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2302	2999	34
Future Volume (vph)	0	0	0	2302	2999	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	4749	3275	1536
Flt Permitted						
Satd. Flow (perm)	0	0	0	4749	3275	1536
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	8%	9%	4%
Adj. Flow (vph)	0	0	0	2587	3370	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2587	3370	38
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

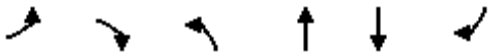
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2302	197	0	2999
Future Volume (vph)	0	0	2302	197	0	2999
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3305	1229	0	3275
Flt Permitted						
Satd. Flow (perm)	0	0	3305	1229	0	3275
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	8%	30%	2%	9%
Adj. Flow (vph)	0	0	2587	221	0	3370
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2587	221	0	3370
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



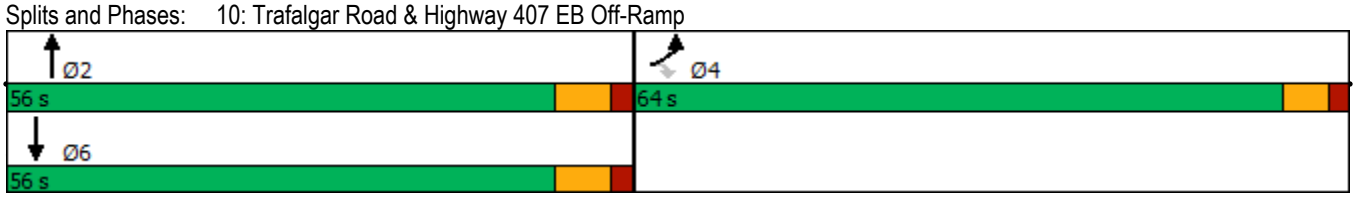
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	538	0	2488	2834	0
Future Volume (vph)	58	538	0	2488	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.879	0.850				
Flt Protected	0.990					
Satd. Flow (prot)	1459	1331	0	3275	3305	0
Flt Permitted	0.990					
Satd. Flow (perm)	1459	1331	0	3275	3305	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Adj. Flow (vph)	64	591	0	2734	3114	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	330	325	0	2734	3114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

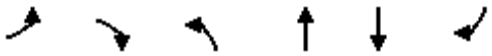
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	64.0	64.0		56.0	56.0	
Total Split (%)	53.3%	53.3%		46.7%	46.7%	
Maximum Green (s)	58.0	58.0		49.0	49.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	26.6	26.6		49.4	49.4	
Actuated g/C Ratio	0.30	0.30		0.55	0.55	
v/c Ratio	0.76	0.82		1.51	1.70	
Control Delay	39.6	45.6		253.1	339.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.6	45.6		253.1	339.2	
LOS	D	D		F	F	
Approach Delay	42.6			253.1	339.2	
Approach LOS	D			F	F	
Queue Length 50th (m)	50.5	53.5		~342.1	~411.8	
Queue Length 95th (m)	78.7	85.2		#462.4	#541.8	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	956	872		1814	1830	
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	0.37		1.51	1.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 89.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.70			
Intersection Signal Delay: 273.1		Intersection LOS: F	
Intersection Capacity Utilization 111.4%		ICU Level of Service H	
Analysis Period (min) 15			

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

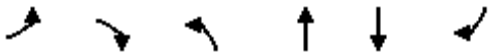
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	538	0	2488	2834	0
Future Volume (vph)	58	538	0	2488	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1460	1331		3275	3305	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1460	1331		3275	3305	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	64	591	0	2734	3114	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	330	325	0	2734	3114	0
Heavy Vehicles (%)	4%	14%	2%	9%	8%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.7	26.7		49.4	49.4	
Effective Green, g (s)	26.7	26.7		49.4	49.4	
Actuated g/C Ratio	0.30	0.30		0.55	0.55	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	398		1815	1832	
v/s Ratio Prot	0.23			0.83	c0.94	
v/s Ratio Perm		c0.24				
v/c Ratio	0.76	0.82		1.51	1.70	
Uniform Delay, d1	28.2	28.9		19.8	19.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	12.2		230.8	317.3	
Delay (s)	35.5	41.1		250.6	337.1	
Level of Service	D	D		F	F	
Approach Delay (s)	38.3			250.6	337.1	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	270.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2496	2834	28
Future Volume (vph)	0	0	0	2496	2834	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3275	3305	1465
Flt Permitted						
Satd. Flow (perm)	0	0	0	3275	3305	1465
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	9%	8%	9%
Adj. Flow (vph)	0	0	0	2743	3114	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2743	3114	31
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

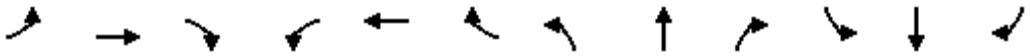
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2488	409	0	3373
Future Volume (vph)	0	0	2488	409	0	3373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3275	1521	0	4749
Flt Permitted						
Satd. Flow (perm)	0	0	3275	1521	0	4749
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	9%	5%	2%	8%
Adj. Flow (vph)	0	0	2734	449	0	3707
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2734	449	0	3707
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

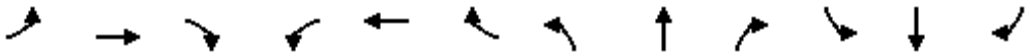
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



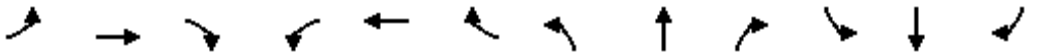
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	2013	538	117	1130	105	299	386	109	220	694	119
Future Volume (vph)	118	2013	538	117	1130	105	299	386	109	220	694	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.970			0.988			0.979			0.983	
Flt Protected		0.998			0.996			0.982			0.989	
Satd. Flow (prot)	0	3320	0	0	3411	0	0	3119	0	0	3403	0
Flt Permitted		0.998			0.996			0.982			0.989	
Satd. Flow (perm)	0	3320	0	0	3411	0	0	3119	0	0	3403	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			357.8			260.8	
Travel Time (s)		14.1			6.1			21.5			15.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	2%	12%	2%	3%	4%	23%	2%	3%	2%	2%	2%
Adj. Flow (vph)	133	2262	604	131	1270	118	336	434	122	247	780	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2999	0	0	1519	0	0	892	0	0	1161	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 179.8%		ICU Level of Service H	
Analysis Period (min) 15			

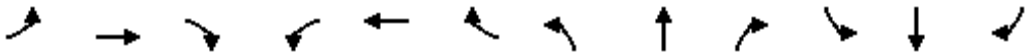


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	118	2013	538	117	1130	105	299	386	109	220	694	119
Future Volume (veh/h)	118	2013	538	117	1130	105	299	386	109	220	694	119
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	133	2262	604	131	1270	118	336	434	122	247	780	134
Approach Volume (veh/h)		2999			1519			892			1161	
Crossing Volume (veh/h)		1158			903			2642#			1737#	
High Capacity (veh/h)		547			674			153			336	
High v/c (veh/h)		5.49			2.25			5.83			3.45	
Low Capacity (veh/h)		418			527			101			243	
Low v/c (veh/h)		7.18			2.88			8.86			4.77	

Intersection Summary					
Maximum v/c High	5.83				
Maximum v/c Low	8.86				
Intersection Capacity Utilization	179.8%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	371	39	2556	364	662	2591	232
Future Volume (vph)	124	22	83	0	0	371	39	2556	364	662	2591	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt		0.882				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1075	1487	0	1842	1842	1566	1653	3400	1566	3395	4980	1566
Flt Permitted	0.576						0.950			0.950		
Satd. Flow (perm)	652	1487	0	1842	1842	1566	1653	3400	1566	3395	4980	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90				353			141			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		355.4			151.9			224.9			145.5	
Travel Time (s)		25.6			10.9			10.1			6.5	
Peak Hour Factor	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Adj. Flow (vph)	135	24	90	0	0	412	42	2778	404	736	2816	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	114	0	0	0	412	42	2778	404	736	2816	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8			2			6
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	60.0		49.0	49.0	49.0	11.0	39.0	39.0	21.0	49.0	49.0
Total Split (%)	9.2%	50.0%		40.8%	40.8%	40.8%	9.2%	32.5%	32.5%	17.5%	40.8%	40.8%
Maximum Green (s)	7.0	53.5		42.5	42.5	42.5	7.0	32.5	32.5	17.0	42.5	42.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	26.3	23.7				12.7	7.0	32.6	32.6	17.0	47.1	47.1
Actuated g/C Ratio	0.29	0.26				0.14	0.08	0.36	0.36	0.19	0.52	0.52
v/c Ratio	0.61	0.25				0.79	0.33	2.27	0.62	1.15	1.08	0.29
Control Delay	39.1	9.7				18.6	48.3	594.0	20.5	120.2	69.6	9.6
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	9.7				18.6	48.3	594.0	20.5	120.2	69.6	9.6
LOS	D	A				B	D	F	C	F	E	A
Approach Delay		25.6			18.6			515.0			75.4	
Approach LOS		C			B			F			E	
Queue Length 50th (m)	18.9	3.1				9.3	6.8	~398.5	34.3	~73.8	~207.5	13.4
Queue Length 95th (m)	35.1	14.9				39.8	18.2	#505.9	75.3	#125.7	#282.6	34.7
Internal Link Dist (m)		331.4			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	221	918				924	128	1224	654	639	2596	867
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	0.12				0.45	0.33	2.27	0.62	1.15	1.08	0.29

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 90.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.27			
Intersection Signal Delay: 255.1		Intersection LOS: F	
Intersection Capacity Utilization 114.7%		ICU Level of Service H	
Analysis Period (min) 15			

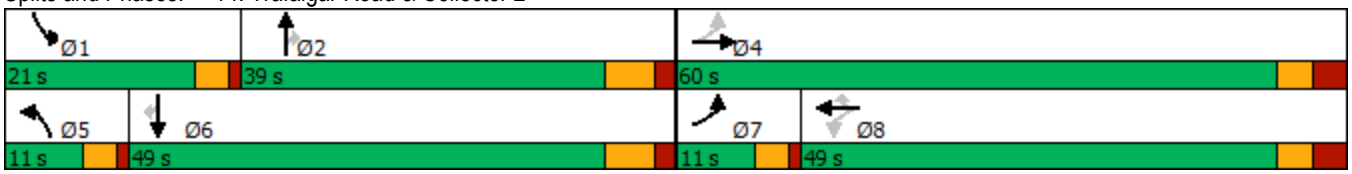
~ Volume exceeds capacity, queue is theoretically infinite.

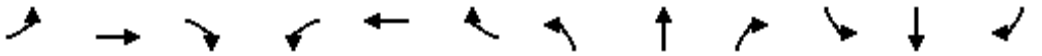
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

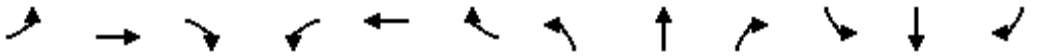
Splits and Phases: 14: Trafalgar Road & Collector 2



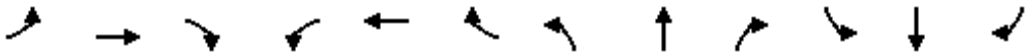


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	22	83	0	0	371	39	2556	364	662	2591	232
Future Volume (vph)	124	22	83	0	0	371	39	2556	364	662	2591	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1075	1486				1566	1653	3400	1566	3395	4980	1566
Flt Permitted	0.58	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	652	1486				1566	1653	3400	1566	3395	4980	1566
Peak-hour factor, PHF	0.92	0.90	0.92	0.90	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92
Adj. Flow (vph)	135	24	90	0	0	412	42	2778	404	736	2816	252
RTOR Reduction (vph)	0	67	0	0	0	304	0	0	89	0	0	51
Lane Group Flow (vph)	135	47	0	0	0	108	42	2778	315	736	2816	201
Heavy Vehicles (%)	66%	2%	14%	2%	2%	2%	8%	5%	2%	2%	3%	2%
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	23.7	23.7				12.7	4.1	34.2	34.2	17.0	47.1	47.1
Effective Green, g (s)	23.7	23.7				12.7	4.1	34.2	34.2	17.0	47.1	47.1
Actuated g/C Ratio	0.26	0.26				0.14	0.04	0.37	0.37	0.18	0.51	0.51
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	200	383				216	73	1265	582	628	2552	802
v/s Ratio Prot	c0.05	0.03					0.03	c0.82		c0.22	0.57	
v/s Ratio Perm	c0.12					0.07			0.20			0.13
v/c Ratio	0.68	0.12				0.50	0.58	2.20	0.54	1.17	1.10	0.25
Uniform Delay, d1	30.1	26.1				36.7	43.0	28.9	22.7	37.5	22.4	12.5
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.7	0.1				1.8	10.5	540.8	3.6	93.5	53.1	0.7
Delay (s)	38.8	26.3				38.5	53.6	569.7	26.3	131.0	75.5	13.3
Level of Service	D	C				D	D	F	C	F	E	B
Approach Delay (s)		33.1			38.5			494.9			82.1	
Approach LOS		C			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	251.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	21.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1832	79	513	672	291	31	31	36	90	5	6
Future Volume (vph)	14	1832	79	513	672	291	31	31	36	90	5	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				0.97	0.99	0.99		0.99	0.99	
Frt		0.994				0.850		0.919			0.919	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3474	0	1750	3500	1566	1750	1672	0	1750	1672	0
Flt Permitted	0.368			0.060			0.749			0.709		
Satd. Flow (perm)	675	3474	0	111	3500	1513	1371	1672	0	1299	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				323		40			7	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		830.2			198.4			579.5			190.6	
Travel Time (s)		49.8			11.9			41.7			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	2036	88	570	747	323	34	34	40	100	6	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	2124	0	570	747	323	34	74	0	100	13	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		1	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		11.5	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	68.0	68.0		17.0	85.0	85.0	35.0	35.0		35.0	35.0	
Total Split (%)	56.7%	56.7%		14.2%	70.8%	70.8%	29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	62.9	62.9		13.0	79.9	79.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.0	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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	3.0	
Recall Mode	Max	Max		None	Max	Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5			5	5	5	5		5	5	
Act Effct Green (s)	63.1	63.1		81.3	80.2	80.2	15.4	15.4		15.4	15.4	
Actuated g/C Ratio	0.59	0.59		0.77	0.76	0.76	0.15	0.15		0.15	0.15	
v/c Ratio	0.04	1.03		1.99	0.28	0.26	0.17	0.27		0.53	0.05	
Control Delay	11.6	49.7		481.7	5.0	1.2	40.4	23.0		51.9	26.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.6	49.7		481.7	5.0	1.2	40.4	23.0		51.9	26.1	
LOS	B	D		F	A	A	D	C		D	C	
Approach Delay		49.4			169.9			28.5			48.9	
Approach LOS		D			F			C			D	
Queue Length 50th (m)	1.2	~214.2		~164.7	18.7	0.0	6.2	6.2		19.3	1.1	
Queue Length 95th (m)	5.4	#353.1		#270.6	44.7	8.7	14.7	18.4		35.1	6.2	
Internal Link Dist (m)		806.2			174.4			555.5			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	401	2069		286	2645	1222	383	497		363	472	
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	0.04	1.03		1.99	0.28	0.26	0.09	0.15		0.28	0.03	

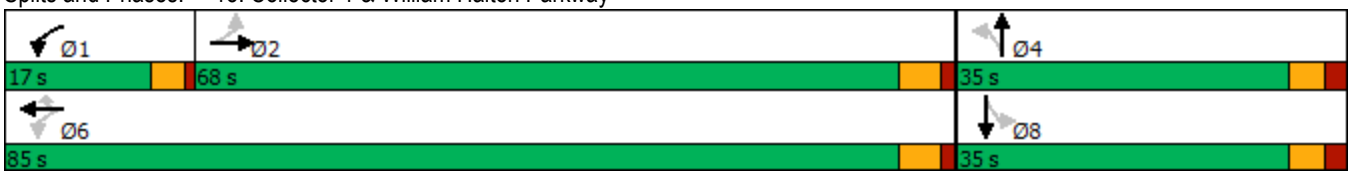
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 106.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.99			
Intersection Signal Delay: 98.2		Intersection LOS: F	
Intersection Capacity Utilization 107.3%		ICU Level of Service G	

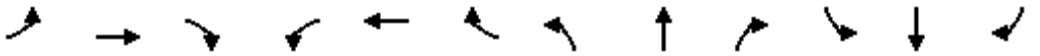
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 15: Collector 1 & William Halton Parkway

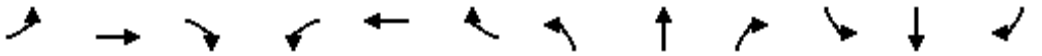




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1832	79	513	672	291	31	31	36	90	5	6
Future Volume (vph)	14	1832	79	513	672	291	31	31	36	90	5	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	3473		1750	3500	1516	1741	1670		1741	1671	
Flt Permitted	0.37	1.00		0.06	1.00	1.00	0.75	1.00		0.71	1.00	
Satd. Flow (perm)	676	3473		110	3500	1516	1372	1670		1299	1671	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	2036	88	570	747	323	34	34	40	100	6	7
RTOR Reduction (vph)	0	2	0	0	0	79	0	34	0	0	6	0
Lane Group Flow (vph)	16	2122	0	570	747	244	34	40	0	100	7	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	63.1	63.1		80.2	80.2	80.2	15.4	15.4		15.4	15.4	
Effective Green, g (s)	63.1	63.1		80.2	80.2	80.2	15.4	15.4		15.4	15.4	
Actuated g/C Ratio	0.59	0.59		0.76	0.76	0.76	0.15	0.15		0.15	0.15	
Clearance Time (s)	5.1	5.1		4.0	5.1	5.1	5.4	5.4		5.4	5.4	
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)	402	2065		285	2645	1145	199	242		188	242	
v/s Ratio Prot		0.61		c0.25	0.21			0.02			0.00	
v/s Ratio Perm	0.02			c1.26		0.16	0.02			c0.08		
v/c Ratio	0.04	1.03		2.00	0.28	0.21	0.17	0.16		0.53	0.03	
Uniform Delay, d1	8.9	21.5		38.1	4.0	3.8	39.8	39.7		42.0	38.9	
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	27.2		462.3	0.3	0.4	0.4	0.3		2.9	0.0	
Delay (s)	9.1	48.7		500.4	4.3	4.2	40.2	40.0		44.9	39.0	
Level of Service	A	D		F	A	A	D	D		D	D	
Approach Delay (s)		48.4			176.7			40.1			44.2	
Approach LOS		D			F			D			D	

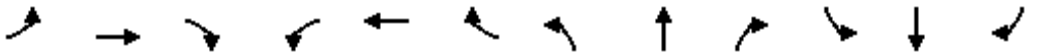
Intersection Summary			
HCM 2000 Control Delay	100.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	106.1	Sum of lost time (s)	14.5
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1880	48	0	1467	146	0	0	257	0	0	9
Future Volume (vph)	0	1880	48	0	1467	146	0	0	257	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3486	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			355.4	
Travel Time (s)		11.9			12.5			10.6			25.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	2089	53	0	1630	162	0	0	286	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2142	0	0	1630	162	0	0	286	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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

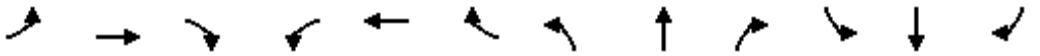
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			



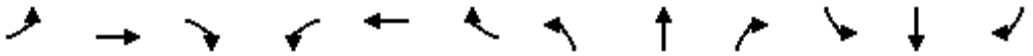
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1880	48	0	1467	146	0	0	257	0	0	9
Future Volume (Veh/h)	0	1880	48	0	1467	146	0	0	257	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2089	53	0	1630	162	0	0	286	0	0	10
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.87			0.42			0.48	0.48	0.42	0.48	0.48	0.87
vC, conflicting volume	1797			2147			2950	3918	1081	2970	3782	825
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1612			959			1662	3658	0	1703	3378	491
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	36	100	100	98
cM capacity (veh/h)	346			297			30	2	449	10	4	449

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1393	749	815	815	162	286	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	53	0	0	162	286	10
cSH	1700	1700	1700	1700	1700	449	449
Volume to Capacity	0.82	0.44	0.48	0.48	0.10	0.64	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	33.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	26.1	13.2
Lane LOS						D	B
Approach Delay (s)	0.0		0.0			26.1	13.2
Approach LOS						D	B

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	76.6%	ICU Level of Service		D
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	665	9	76	416	129	19	127	89	18	203	2
Future Volume (vph)	15	665	9	76	416	129	19	127	89	18	203	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Frt		0.998			0.965			0.938			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3491	0	1750	3352	0	1750	1714	0	1750	1840	0
Flt Permitted	0.423			0.353			0.537			0.511		
Satd. Flow (perm)	777	3491	0	649	3352	0	986	1714	0	938	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			63			46			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			579.5	
Travel Time (s)		9.8			17.7			34.4			41.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	739	10	84	462	143	21	141	99	20	226	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	749	0	84	605	0	21	240	0	20	228	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

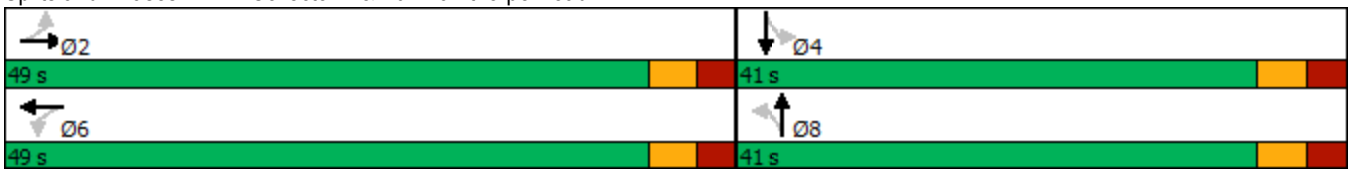


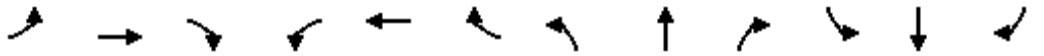
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	43.4	43.4		43.4	43.4		15.0	15.0		15.0	15.0	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.21	0.21		0.21	0.21	
v/c Ratio	0.04	0.35		0.21	0.29		0.10	0.60		0.10	0.58	
Control Delay	7.8	8.1		9.6	6.9		22.0	26.1		22.1	30.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	8.1		9.6	6.9		22.0	26.1		22.1	30.6	
LOS	A	A		A	A		C	C		C	C	
Approach Delay		8.1			7.2			25.8			29.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.7	20.7		4.0	14.1		2.2	22.7		2.1	26.9	
Queue Length 95th (m)	4.2	47.1		15.6	34.1		7.1	41.8		6.9	45.2	
Internal Link Dist (m)		112.3			221.2			453.1			555.5	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	478	2151		400	2089		491	878		467	918	
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	0.35		0.21	0.29		0.04	0.27		0.04	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.5			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 12.9		Intersection LOS: B	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	665	9	76	416	129	19	127	89	18	203	2
Future Volume (vph)	15	665	9	76	416	129	19	127	89	18	203	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3492		1746	3352		1745	1713		1745	1839	
Flt Permitted	0.42	1.00		0.35	1.00		0.54	1.00		0.51	1.00	
Satd. Flow (perm)	777	3492		649	3352		986	1713		939	1839	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	739	10	84	462	143	21	141	99	20	226	2
RTOR Reduction (vph)	0	1	0	0	24	0	0	36	0	0	1	0
Lane Group Flow (vph)	17	748	0	84	581	0	21	204	0	20	227	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	43.4	43.4		43.4	43.4		15.0	15.0		15.0	15.0	
Effective Green, g (s)	43.4	43.4		43.4	43.4		15.0	15.0		15.0	15.0	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.21	0.21		0.21	0.21	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	479	2152		400	2066		210	364		200	391	
v/s Ratio Prot		c0.21			0.17			0.12			c0.12	
v/s Ratio Perm	0.02			0.13			0.02			0.02		
v/c Ratio	0.04	0.35		0.21	0.28		0.10	0.56		0.10	0.58	
Uniform Delay, d1	5.3	6.6		5.9	6.3		22.3	24.8		22.3	24.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4		1.2	0.3		0.2	1.9		0.2	2.2	
Delay (s)	5.4	7.0		7.1	6.6		22.5	26.6		22.5	27.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		7.0			6.7			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	631	1	11	413	3	30
Future Volume (vph)	631	1	11	413	3	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3500	0	0	3496	1750	1566
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3500	0	0	3496	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	701	1	12	459	3	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	0	471	3	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	631	1	11	413	3	30
Future Volume (Veh/h)	631	1	11	413	3	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	701	1	12	459	3	33
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				268		
pX, platoon unblocked						
vC, conflicting volume			707		965	361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			707		965	361
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	95
cM capacity (veh/h)			883		247	629

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	467	235	165	306	3	33
Volume Left	0	0	12	0	3	0
Volume Right	0	1	0	0	0	33
cSH	1700	1700	883	1700	247	629
Volume to Capacity	0.27	0.14	0.01	0.18	0.01	0.05
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.3	1.3
Control Delay (s)	0.0	0.0	0.8	0.0	19.8	11.0
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.3		11.8	
Approach LOS					B	

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	661	0	13	411	0	28
Future Volume (vph)	661	0	13	411	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	30.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.999		
Satd. Flow (prot)	3500	0	0	3496	1842	1566
Flt Permitted				0.999		
Satd. Flow (perm)	3500	0	0	3496	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	734	0	14	457	0	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	734	0	0	471	0	31
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

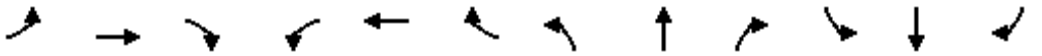
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	661	0	13	411	0	28
Future Volume (Veh/h)	661	0	13	411	0	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	734	0	14	457	0	31
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				136		
pX, platoon unblocked					0.98	
vC, conflicting volume			739		1000	377
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			739		963	377
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	95
cM capacity (veh/h)			859		242	615

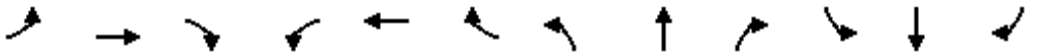
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	489	245	166	305	0	31
Volume Left	0	0	14	0	0	0
Volume Right	0	0	0	0	0	31
cSH	1700	1700	859	1700	1700	615
Volume to Capacity	0.29	0.14	0.02	0.18	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	0.9	0.0	0.0	11.2
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.3		11.2	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1818	10	0	832	45	0	0	25	0	0	220
Future Volume (vph)	0	1818	10	0	832	45	0	0	25	0	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3496	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5						5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	2020	11	0	924	50	0	0	28	0	0	244
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2031	0	0	924	50	0	0	28	0	0	244
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

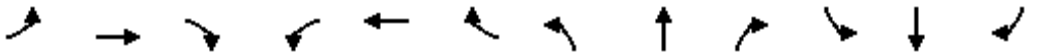
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1818	10	0	832	45	0	0	25	0	0	220
Future Volume (Veh/h)	0	1818	10	0	832	45	0	0	25	0	0	220
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2020	11	0	924	50	0	0	28	0	0	244
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.92			0.65			0.69	0.69	0.65	0.69	0.69	0.92
vC, conflicting volume	979			2036			2742	3010	1026	1972	2965	472
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815			1518			2133	2522	0	1015	2458	267
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	96	100	100	64
cM capacity (veh/h)	744			282			12	19	699	125	21	670

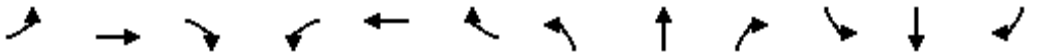
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1347	684	462	462	50	28	244
Volume Left	0	0	0	0	0	0	0
Volume Right	0	11	0	0	50	28	244
cSH	1700	1700	1700	1700	1700	699	670
Volume to Capacity	0.79	0.40	0.27	0.27	0.03	0.04	0.36
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	1.0	12.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.4	13.4
Lane LOS						B	B
Approach Delay (s)	0.0		0.0			10.4	13.4
Approach LOS						B	B

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	62.1%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	805	12	0	737	4	0	0	135	0	0	25
Future Volume (vph)	0	805	12	0	737	4	0	0	135	0	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3496	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	894	13	0	819	4	0	0	150	0	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	907	0	0	823	0	0	0	150	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

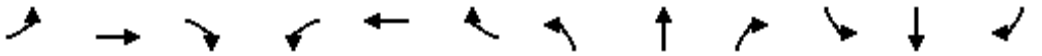
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	805	12	0	737	4	0	0	135	0	0	25
Future Volume (Veh/h)	0	805	12	0	737	4	0	0	135	0	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	894	13	0	819	4	0	0	150	0	0	28
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123			223							
pX, platoon unblocked	0.91			0.89			0.93	0.93	0.89	0.93	0.93	0.91
vC, conflicting volume	828			912			1348	1734	464	1428	1738	422
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	616			647			798	1211	142	884	1216	170
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	81	100	100	96
cM capacity (veh/h)	870			825			245	167	773	177	166	762

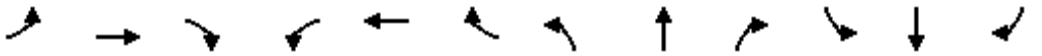
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	596	311	546	277	150	28
Volume Left	0	0	0	0	0	0
Volume Right	0	13	0	4	150	28
cSH	1700	1700	1700	1700	773	762
Volume to Capacity	0.35	0.18	0.32	0.16	0.19	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.4	0.9
Control Delay (s)	0.0	0.0	0.0	0.0	10.8	9.9
Lane LOS					B	A
Approach Delay (s)	0.0		0.0		10.8	9.9
Approach LOS					B	A

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	38.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	115	0	0	109	0	2949	38	0	1999	429
Future Volume (vph)	0	0	115	0	0	109	0	2949	38	0	1999	429
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	3500	1566	0	3500	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	3500	1566	0	3500	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	128	0	0	121	0	3277	42	0	2221	477
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	128	0	0	121	0	3277	42	0	2221	477
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

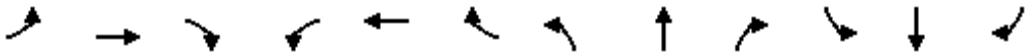
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.4%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	115	0	0	109	0	2949	38	0	1999	429
Future Volume (Veh/h)	0	0	115	0	0	109	0	2949	38	0	1999	429
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	128	0	0	121	0	3277	42	0	2221	477
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.77	0.77	0.67	0.77	0.77	0.61	0.67			0.61		
vC, conflicting volume	3990	5550	1120	4526	5985	1648	2703			3324		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2383	4412	214	3079	4978	770	2560			3535		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	76	100	100	41	100			100		
cM capacity (veh/h)	6	1	529	3	0	206	114			41		

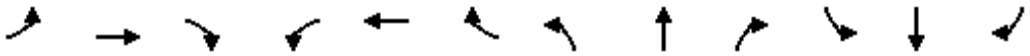
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	128	121	1638	1638	42	1110	1110	477
Volume Left	0	0	0	0	0	0	0	0
Volume Right	128	121	0	0	42	0	0	477
cSH	529	206	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.24	0.59	0.96	0.96	0.02	0.65	0.65	0.28
Queue Length 95th (m)	7.1	24.8	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.0	44.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	E						
Approach Delay (s)	14.0	44.7	0.0			0.0		
Approach LOS	B	E						

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	96.4%	ICU Level of Service	F	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
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
Ped Bike Factor												
Frt		0.977			0.958			0.996			0.952	
Flt Protected		0.965			0.992			0.978			0.996	
Satd. Flow (prot)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Flt Permitted		0.965			0.992			0.978			0.996	
Satd. Flow (perm)	0	1737	0	0	1751	0	0	1794	0	0	1747	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			274.1			250.4			181.9	
Travel Time (s)		24.8			19.7			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	17	28	2	7	4	82	96	6	11	82	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	13	0	0	184	0	0	144	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Future Volume (vph)	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	119	17	28	2	7	4	82	96	6	11	82	51

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	164	13	184	144
Volume Left (vph)	119	2	82	11
Volume Right (vph)	28	4	6	51
Hadj (s)	0.08	-0.12	0.10	-0.16
Departure Headway (s)	4.8	4.8	4.6	4.4
Degree Utilization, x	0.22	0.02	0.24	0.18
Capacity (veh/h)	706	682	746	772
Control Delay (s)	9.1	7.9	9.0	8.3
Approach Delay (s)	9.1	7.9	9.0	8.3
Approach LOS	A	A	A	A

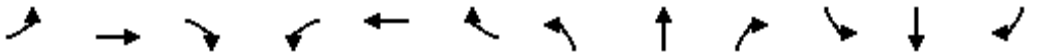
Intersection Summary				
Delay	8.8			
Level of Service	A			
Intersection Capacity Utilization	37.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

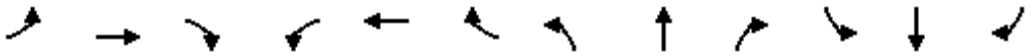
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Future Vol, veh/h	107	15	25	2	6	4	74	86	5	10	74	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	119	17	28	2	7	4	82	96	6	11	82	51
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	7.9	9	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	73%	17%	8%
Vol Thru, %	52%	10%	50%	57%
Vol Right, %	3%	17%	33%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	147	12	130
LT Vol	74	107	2	10
Through Vol	86	15	6	74
RT Vol	5	25	4	46
Lane Flow Rate	183	163	13	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.234	0.215	0.018	0.176
Departure Headway (Hd)	4.598	4.74	4.725	4.381
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	781	756	755	819
Service Time	2.625	2.772	2.767	2.41
HCM Lane V/C Ratio	0.234	0.216	0.017	0.176
HCM Control Delay	9	9.1	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.8	0.1	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	1440	45	29	651	21	170	27	60	104	37	56
Future Volume (vph)	297	1440	45	29	651	21	170	27	60	104	37	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.97		1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.995			0.896			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3479	0	1750	1628	0	1750	1656	0
Flt Permitted	0.351			0.096			0.690			0.694		
Satd. Flow (perm)	645	3500	1514	177	3479	0	1266	1628	0	1273	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38		5			20			62	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	330	1600	50	32	723	23	189	30	67	116	41	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	330	1600	50	32	746	0	189	97	0	116	103	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	



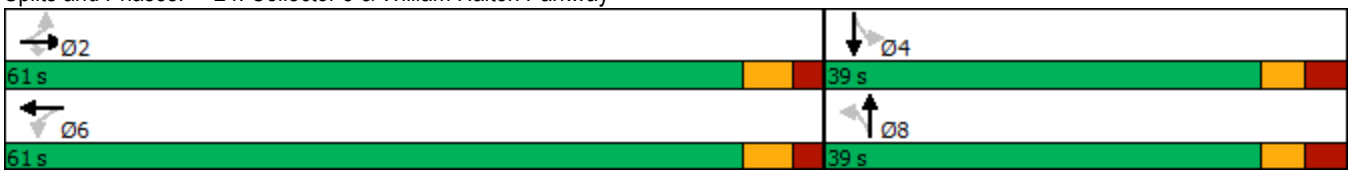
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.9	38.9	38.9	38.9	38.9		38.5	38.5		38.5	38.5	
Total Split (s)	61.0	61.0	61.0	61.0	61.0		39.0	39.0		39.0	39.0	
Total Split (%)	61.0%	61.0%	61.0%	61.0%	61.0%		39.0%	39.0%		39.0%	39.0%	
Maximum Green (s)	54.9	54.9	54.9	54.9	54.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	55.3	55.3	55.3	55.3	55.3		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.22	0.22		0.22	0.22	
v/c Ratio	0.80	0.72	0.05	0.29	0.34		0.69	0.26		0.42	0.25	
Control Delay	32.2	14.3	4.0	18.3	8.7		44.3	23.4		33.3	13.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.2	14.3	4.0	18.3	8.7		44.3	23.4		33.3	13.9	
LOS	C	B	A	B	A		D	C		C	B	
Approach Delay		17.0			9.1			37.3			24.2	
Approach LOS		B			A			D			C	
Queue Length 50th (m)	34.7	79.7	0.6	2.0	25.4		28.9	10.5		16.6	5.5	
Queue Length 95th (m)	#113.4	158.3	6.0	11.7	52.9		49.5	22.3		31.0	17.0	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	411	2232	979	112	2220		477	627		480	663	
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	0.80	0.72	0.05	0.29	0.34		0.40	0.15		0.24	0.16	

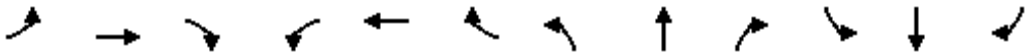
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 86.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	

Analysis Period (min) 15

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

Splits and Phases: 24: Collector 5 & William Halton Parkway

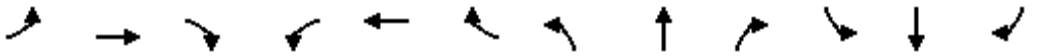




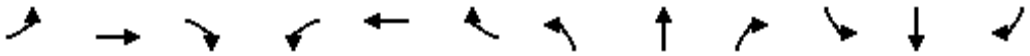
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	1440	45	29	651	21	170	27	60	104	37	56
Future Volume (vph)	297	1440	45	29	651	21	170	27	60	104	37	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3500	1517	1749	3480		1744	1627		1744	1654	
Flt Permitted	0.35	1.00	1.00	0.10	1.00		0.69	1.00		0.69	1.00	
Satd. Flow (perm)	645	3500	1517	177	3480		1267	1627		1274	1654	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	330	1600	50	32	723	23	189	30	67	116	41	62
RTOR Reduction (vph)	0	0	14	0	2	0	0	16	0	0	49	0
Lane Group Flow (vph)	330	1600	36	32	744	0	189	81	0	116	54	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	55.3	55.3	55.3	55.3	55.3		18.7	18.7		18.7	18.7	
Effective Green, g (s)	55.3	55.3	55.3	55.3	55.3		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	411	2234	968	113	2222		273	351		275	357	
v/s Ratio Prot		0.46			0.21			0.05			0.03	
v/s Ratio Perm	c0.51		0.02	0.18			c0.15			0.09		
v/c Ratio	0.80	0.72	0.04	0.28	0.33		0.69	0.23		0.42	0.15	
Uniform Delay, d1	11.6	10.4	5.8	6.9	7.2		31.3	28.0		29.3	27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	1.1	0.0	6.2	0.4		7.4	0.3		1.0	0.2	
Delay (s)	22.4	11.5	5.8	13.1	7.6		38.7	28.4		30.3	27.7	
Level of Service	C	B	A	B	A		D	C		C	C	
Approach Delay (s)		13.2			7.8			35.2			29.1	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	897	8	79	672	4	29	120	187	20	99	40
Future Volume (vph)	35	897	8	79	672	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.999			0.999			0.909			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3495	0	1750	3496	0	1750	1654	0	1750	1753	0
Flt Permitted	0.346			0.243			0.659			0.333		
Satd. Flow (perm)	636	3495	0	447	3496	0	1209	1654	0	612	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1			70			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	997	9	88	747	4	32	133	208	22	110	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1006	0	88	751	0	32	341	0	22	154	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

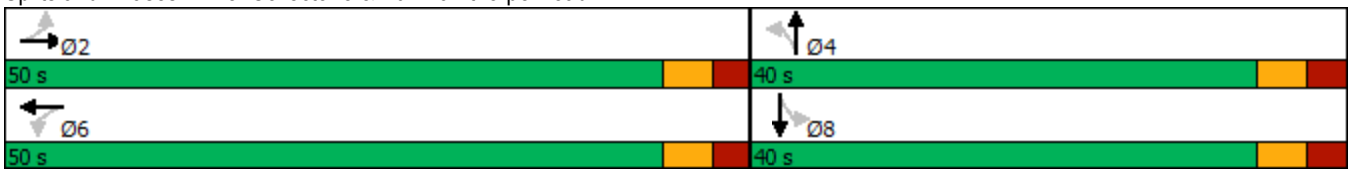


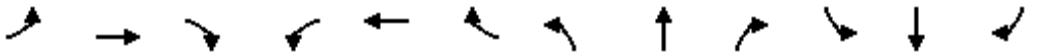
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	32.1	32.1		32.1	32.1		33.1	33.1		33.1	33.1	
Total Split (s)	50.0	50.0		50.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	44.1	44.1		44.1	44.1		33.9	33.9		33.9	33.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	44.3	44.3		44.3	44.3		17.7	17.7		17.7	17.7	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.24	0.24		0.24	0.24	
v/c Ratio	0.10	0.48		0.33	0.36		0.11	0.76		0.15	0.35	
Control Delay	9.1	10.3		13.9	9.1		21.8	32.0		23.7	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.1	10.3		13.9	9.1		21.8	32.0		23.7	20.9	
LOS	A	B		B	A		C	C		C	C	
Approach Delay		10.2			9.6			31.1			21.2	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	2.1	36.8		5.5	24.9		3.5	35.0		2.4	14.6	
Queue Length 95th (m)	7.9	68.2		19.3	47.2		9.6	61.3		7.8	28.6	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	380	2091		267	2092		556	798		281	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	0.10	0.48		0.33	0.36		0.06	0.43		0.08	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 74.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	

Analysis Period (min) 15

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

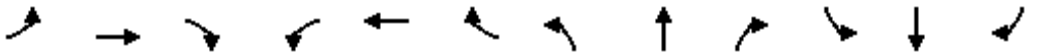




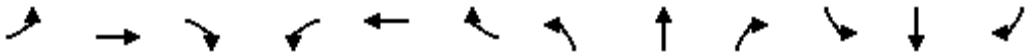
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	897	8	79	672	4	29	120	187	20	99	40
Future Volume (vph)	35	897	8	79	672	4	29	120	187	20	99	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3494		1747	3497		1744	1652		1746	1753	
Flt Permitted	0.35	1.00		0.24	1.00		0.66	1.00		0.33	1.00	
Satd. Flow (perm)	636	3494		448	3497		1210	1652		613	1753	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	997	9	88	747	4	32	133	208	22	110	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	53	0	0	20	0
Lane Group Flow (vph)	39	1006	0	88	751	0	32	288	0	22	134	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	44.4	44.4		44.4	44.4		17.7	17.7		17.7	17.7	
Effective Green, g (s)	44.4	44.4		44.4	44.4		17.7	17.7		17.7	17.7	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.24	0.24		0.24	0.24	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	381	2093		268	2095		289	394		146	418	
v/s Ratio Prot		c0.29			0.21			c0.17			0.08	
v/s Ratio Perm	0.06			0.20			0.03			0.04		
v/c Ratio	0.10	0.48		0.33	0.36		0.11	0.73		0.15	0.32	
Uniform Delay, d1	6.3	8.4		7.4	7.6		22.0	26.0		22.3	23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.8		3.2	0.5		0.2	6.8		0.5	0.4	
Delay (s)	6.9	9.2		10.7	8.1		22.2	32.8		22.7	23.7	
Level of Service	A	A		B	A		C	C		C	C	
Approach Delay (s)		9.1			8.3			31.9			23.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2781	20	61	2165	30
Future Volume (vph)	79	7	22	97	3	97	23	2781	20	61	2165	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98		0.99	0.98		1.00	1.00		1.00	1.00	
Frt		0.887			0.854			0.999			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1607	0	1750	1540	0	1750	3496	0	1750	3491	0
Flt Permitted	0.685			0.736			0.950			0.950		
Satd. Flow (perm)	1256	1607	0	1348	1540	0	1749	3496	0	1750	3491	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			108			1			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	3090	22	68	2406	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	32	0	108	111	0	26	3112	0	68	2439	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		11.0	70.0		11.0	70.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%		9.2%	58.3%		9.2%	58.3%	
Maximum Green (s)	32.5	32.5		32.5	32.5		7.0	63.6		7.0	63.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Lead/Lag							Lead	Lag		Lead	Lag	
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	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			20.0			20.0	
Pedestrian Calls (#/hr)	5	5		5	5			5			5	
Act Effct Green (s)	15.9	15.9		15.9	15.9		7.0	66.2		7.0	70.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.07	0.64		0.07	0.68	
v/c Ratio	0.46	0.12		0.52	0.34		0.22	1.40		0.58	1.02	
Control Delay	46.9	18.0		49.0	10.3		53.6	202.4		68.8	43.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	26.9	
Total Delay	46.9	18.0		49.0	10.3		53.6	202.4		68.8	70.8	
LOS	D	B		D	B		D	F		E	E	
Approach Delay		39.2			29.4			201.2			70.8	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	16.3	1.4		20.2	0.5		4.9	~436.3		13.1	181.9	
Queue Length 95th (m)	30.7	9.1		36.2	13.9		15.2	#602.6		#37.5	#431.3	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	395	522		424	558		118	2230		118	2381	
Starvation Cap Reductn	0	0		0	0		0	4		0	147	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.06		0.25	0.20		0.22	1.40		0.58	1.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 103.8			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 137.0		Intersection LOS: F	
Intersection Capacity Utilization 102.5%		ICU Level of Service G	

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

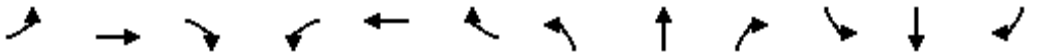
Splits and Phases: 26: Trafalgar Road & Local 6



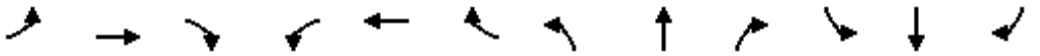
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	7	22	97	3	97	23	2781	20	61	2165	30
Future Volume (vph)	79	7	22	97	3	97	23	2781	20	61	2165	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1605		1742	1536		1750	3495		1750	3491	
Flt Permitted	0.69	1.00		0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1257	1605		1350	1536		1750	3495		1750	3491	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	8	24	108	3	108	26	3090	22	68	2406	33
RTOR Reduction (vph)	0	20	0	0	92	0	0	0	0	0	1	0
Lane Group Flow (vph)	88	12	0	108	19	0	26	3112	0	68	2438	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	15.9	15.9		15.9	15.9		2.6	67.9		5.5	70.8	
Effective Green, g (s)	15.9	15.9		15.9	15.9		2.6	67.9		5.5	70.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.02	0.64		0.05	0.67	
Clearance Time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	188	240		202	229		42	2234		90	2327	
v/s Ratio Prot		0.01			0.01		0.01	c0.89		c0.04	c0.70	
v/s Ratio Perm	0.07			c0.08								
v/c Ratio	0.47	0.05		0.53	0.08		0.62	1.39		0.76	1.05	
Uniform Delay, d1	41.3	38.7		41.7	38.9		51.3	19.1		49.7	17.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.1		2.7	0.2		24.2	179.6		29.7	32.7	
Delay (s)	43.1	38.8		44.4	39.0		75.5	198.7		79.4	50.4	
Level of Service	D	D		D	D		E	F		E	D	
Approach Delay (s)		42.0			41.7			197.7			51.2	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	127.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	16.9
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2612	223	99	2066	119
Future Volume (vph)	153	113	197	334	133	59	89	2612	223	99	2066	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	3500	1566	1750	3500	1566
Flt Permitted	0.663			0.551			0.950			0.950		
Satd. Flow (perm)	1216	1842	1532	1010	1842	1534	1749	3500	1511	1750	3500	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2902	248	110	2296	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	126	219	371	148	66	99	2902	248	110	2296	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	11.0	59.0	59.0	11.0	59.0	59.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	9.2%	49.2%	49.2%	9.2%	49.2%	49.2%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	7.0	52.6	52.6	7.0	52.6	52.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	22.3	22.3	22.3	35.8	33.3	33.3	12.0	56.4	56.4	13.4	57.8	57.8
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.28	0.28	0.10	0.47	0.47	0.11	0.48	0.48
v/c Ratio	0.76	0.37	0.56	1.08	0.29	0.14	0.57	1.76	0.32	0.56	1.36	0.17
Control Delay	65.8	44.0	22.4	109.3	34.0	6.9	65.1	371.4	13.1	63.3	195.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	44.0	22.4	109.3	34.0	6.9	65.1	371.4	13.1	63.3	195.3	6.3
LOS	E	D	C	F	C	A	E	F	B	E	F	A
Approach Delay		42.0			78.7			334.8			179.7	
Approach LOS		D			E			F			F	
Queue Length 50th (m)	38.4	26.2	18.1	~86.3	27.5	0.0	22.1	~543.4	19.9	24.4	~382.2	3.4
Queue Length 95th (m)	56.7	39.7	38.5	#119.8	39.8	9.0	#56.5	#588.2	39.8	#63.4	#435.3	14.9
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	329	498	510	344	667	598	175	1645	765	195	1685	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.25	0.43	1.08	0.22	0.11	0.57	1.76	0.32	0.56	1.36	0.17

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 11 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.76	
Intersection Signal Delay: 234.0	Intersection LOS: F

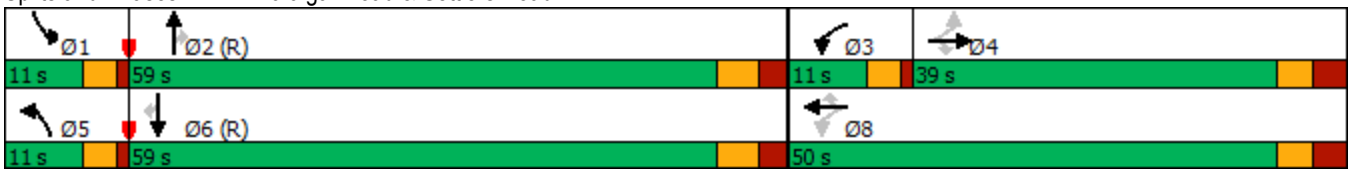
Intersection Capacity Utilization 125.1% ICU Level of Service H

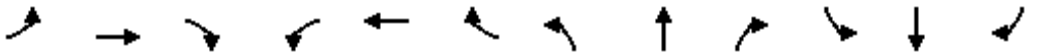
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 27: Trafalgar Road & Settlers Road

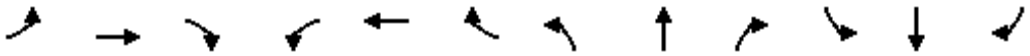




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	113	197	334	133	59	89	2612	223	99	2066	119
Future Volume (vph)	153	113	197	334	133	59	89	2612	223	99	2066	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	1842	1529	1746	1842	1532	1750	3500	1511	1750	3500	1511
Flt Permitted	0.66	1.00	1.00	0.55	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1215	1842	1529	1013	1842	1532	1750	3500	1511	1750	3500	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	126	219	371	148	66	99	2902	248	110	2296	132
RTOR Reduction (vph)	0	0	107	0	0	48	0	0	56	0	0	54
Lane Group Flow (vph)	170	126	112	371	148	18	99	2902	192	110	2296	78
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	22.3	22.3	22.3	33.3	33.3	33.3	12.0	56.4	56.4	13.4	57.8	57.8
Effective Green, g (s)	22.3	22.3	22.3	33.3	33.3	33.3	12.0	56.4	56.4	13.4	57.8	57.8
Actuated g/C Ratio	0.19	0.19	0.19	0.28	0.28	0.28	0.10	0.47	0.47	0.11	0.48	0.48
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	342	284	323	511	425	175	1645	710	195	1685	727
v/s Ratio Prot		0.07		c0.07	0.08		0.06	c0.83		c0.06	0.66	
v/s Ratio Perm	0.14		0.07	c0.25		0.01			0.13			0.05
v/c Ratio	0.76	0.37	0.40	1.15	0.29	0.04	0.57	1.76	0.27	0.56	1.36	0.11
Uniform Delay, d1	46.3	42.7	42.9	43.2	34.1	31.7	51.5	31.8	19.3	50.5	31.1	17.0
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	13.4	0.7	0.9	96.7	0.3	0.0	4.1	346.4	0.9	3.7	167.1	0.3
Delay (s)	59.7	43.4	43.8	139.9	34.4	31.7	55.7	378.2	20.3	54.2	198.2	17.3
Level of Service	E	D	D	F	C	C	E	F	C	D	F	B
Approach Delay (s)		49.0			101.0			341.0			182.5	
Approach LOS		D			F			F			F	

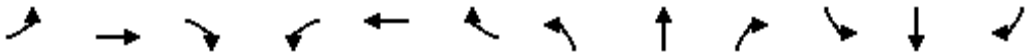
Intersection Summary			
HCM 2000 Control Delay	240.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	125.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	134	40	145	123	29	33	157	143	31	246	8
Future Volume (vph)	5	134	40	145	123	29	33	157	143	31	246	8
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
Ped Bike Factor												
Frt		0.970			0.987			0.942			0.996	
Flt Protected		0.998			0.976			0.995			0.995	
Satd. Flow (prot)	0	1783	0	0	1774	0	0	1727	0	0	1826	0
Flt Permitted		0.998			0.976			0.995			0.995	
Satd. Flow (perm)	0	1783	0	0	1774	0	0	1727	0	0	1826	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	149	44	161	137	32	37	174	159	34	273	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	199	0	0	330	0	0	370	0	0	316	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	134	40	145	123	29	33	157	143	31	246	8
Future Volume (vph)	5	134	40	145	123	29	33	157	143	31	246	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	149	44	161	137	32	37	174	159	34	273	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	199	330	370	316
Volume Left (vph)	6	161	37	34
Volume Right (vph)	44	32	159	9
Hadj (s)	-0.09	0.07	-0.20	0.04
Departure Headway (s)	7.0	6.8	6.4	6.7
Degree Utilization, x	0.39	0.62	0.65	0.59
Capacity (veh/h)	434	485	528	490
Control Delay (s)	14.4	20.4	20.6	18.9
Approach Delay (s)	14.4	20.4	20.6	18.9
Approach LOS	B	C	C	C

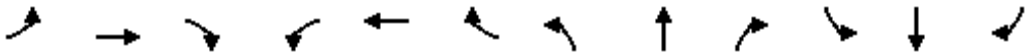
Intersection Summary				
Delay		19.1		
Level of Service		C		
Intersection Capacity Utilization		61.3%	ICU Level of Service	B
Analysis Period (min)		15		

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	134	40	145	123	29	33	157	143	31	246	8
Future Vol, veh/h	5	134	40	145	123	29	33	157	143	31	246	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	149	44	161	137	32	37	174	159	34	273	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

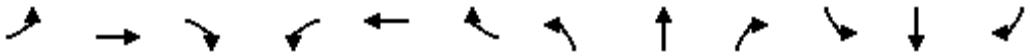
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.4	20	20.1	18.8
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	3%	49%	11%
Vol Thru, %	47%	75%	41%	86%
Vol Right, %	43%	22%	10%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	333	179	297	285
LT Vol	33	5	145	31
Through Vol	157	134	123	246
RT Vol	143	40	29	8
Lane Flow Rate	370	199	330	317
Geometry Grp	1	1	1	1
Degree of Util (X)	0.643	0.387	0.613	0.589
Departure Headway (Hd)	6.369	6.999	6.799	6.698
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	515	535	542
Service Time	4.369	5.018	4.799	4.698
HCM Lane V/C Ratio	0.649	0.386	0.617	0.585
HCM Control Delay	20.1	14.4	20	18.8
HCM Lane LOS	C	B	C	C
HCM 95th-tile Q	4.6	1.8	4.1	3.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
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
Ped Bike Factor												
Frt		0.984			0.997			0.969			0.932	
Flt Protected		0.993			0.997			0.992			0.997	
Satd. Flow (prot)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Flt Permitted		0.993			0.997			0.992			0.997	
Satd. Flow (perm)	0	1800	0	0	1831	0	0	1771	0	0	1712	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	340	56	23	324	9	39	144	54	21	138	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	464	0	0	356	0	0	237	0	0	321	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Future Volume (vph)	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	68	340	56	23	324	9	39	144	54	21	138	162

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	464	356	237	321
Volume Left (vph)	68	23	39	21
Volume Right (vph)	56	9	54	162
Hadj (s)	-0.01	0.03	-0.07	-0.26
Departure Headway (s)	7.3	7.6	8.1	7.6
Degree Utilization, x	0.94	0.75	0.54	0.68
Capacity (veh/h)	486	453	409	440
Control Delay (s)	53.3	30.5	20.1	25.3
Approach Delay (s)	53.3	30.5	20.1	25.3
Approach LOS	F	D	C	D

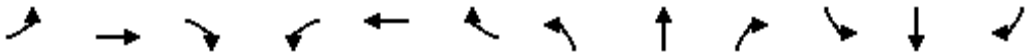
Intersection Summary				
Delay	35.2			
Level of Service	E			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	34.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Future Vol, veh/h	61	306	50	21	292	8	35	130	49	19	124	146
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	340	56	23	324	9	39	144	54	21	138	162
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

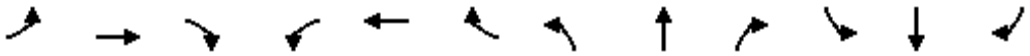
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	52	30.2	20.1	25.1
HCM LOS	F	D	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	15%	7%	7%
Vol Thru, %	61%	73%	91%	43%
Vol Right, %	23%	12%	2%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	417	321	289
LT Vol	35	61	21	19
Through Vol	130	306	292	124
RT Vol	49	50	8	146
Lane Flow Rate	238	463	357	321
Geometry Grp	1	1	1	1
Degree of Util (X)	0.533	0.93	0.75	0.675
Departure Headway (Hd)	8.066	7.225	7.567	7.564
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	445	500	478	475
Service Time	6.145	5.289	5.638	5.637
HCM Lane V/C Ratio	0.535	0.926	0.747	0.676
HCM Control Delay	20.1	52	30.2	25.1
HCM Lane LOS	C	F	D	D
HCM 95th-tile Q	3.1	11.1	6.3	5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
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
Ped Bike Factor												
Frt		0.996			0.971			0.970			0.945	
Flt Protected		0.995			0.998			0.987			0.991	
Satd. Flow (prot)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Flt Permitted		0.995			0.998			0.987			0.991	
Satd. Flow (perm)	0	1826	0	0	1785	0	0	1764	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	358	13	11	212	60	38	71	31	51	123	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	283	0	0	140	0	0	295	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Future Volume (vph)	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	358	13	11	212	60	38	71	31	51	123	121

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	415	283	140	295
Volume Left (vph)	44	11	38	51
Volume Right (vph)	13	60	31	121
Hadj (s)	0.04	-0.09	-0.04	-0.18
Departure Headway (s)	5.9	6.1	6.7	6.2
Degree Utilization, x	0.68	0.48	0.26	0.51
Capacity (veh/h)	578	536	437	530
Control Delay (s)	20.8	14.5	12.1	15.3
Approach Delay (s)	20.8	14.5	12.1	15.3
Approach LOS	C	B	B	C

Intersection Summary				
Delay	16.7			
Level of Service	C			
Intersection Capacity Utilization	58.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Future Vol, veh/h	40	322	12	10	191	54	34	64	28	46	111	109
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	358	13	11	212	60	38	71	31	51	123	121
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.8	14.5	12.1	15.3
HCM LOS	C	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	11%	4%	17%
Vol Thru, %	51%	86%	75%	42%
Vol Right, %	22%	3%	21%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	374	255	266
LT Vol	34	40	10	46
Through Vol	64	322	191	111
RT Vol	28	12	54	109
Lane Flow Rate	140	416	283	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.26	0.683	0.476	0.505
Departure Headway (Hd)	6.674	5.916	6.053	6.147
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	611	595	585
Service Time	4.734	3.961	4.104	4.195
HCM Lane V/C Ratio	0.261	0.681	0.476	0.506
HCM Control Delay	12.1	20.8	14.5	15.3
HCM Lane LOS	B	C	B	C
HCM 95th-tile Q	1	5.3	2.6	2.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	34	2890	36	0	2592
Future Volume (vph)	0	34	2890	36	0	2592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1593	3493	0	0	3500
Flt Permitted						
Satd. Flow (perm)	0	1593	3493	0	0	3500
Link Speed (k/h)	50		60			60
Link Distance (m)	74.3		148.7			268.7
Travel Time (s)	5.3		8.9			16.1
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	38	3211	40	0	2880
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	3251	0	0	2880
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

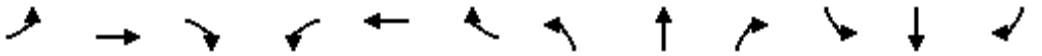
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		



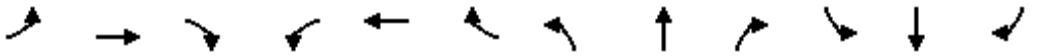
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	34	2890	36	0	2592
Future Volume (Veh/h)	0	34	2890	36	0	2592
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	3211	40	0	2880
Pedestrians	5		5			5
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.0		1.0			1.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.72	0.49			0.49	
vC, conflicting volume	4681	1636			3256	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2398	211			3523	
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	90			100	
cM capacity (veh/h)	20	385			34	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	38	2141	1110	1440	1440
Volume Left	0	0	0	0	0
Volume Right	38	0	40	0	0
cSH	385	1700	1700	1700	1700
Volume to Capacity	0.10	1.26	0.65	0.85	0.85
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0
Control Delay (s)	15.4	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.4	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2859	47	103	2478	20
Future Volume (vph)	33	70	267	238	118	54	235	2859	47	103	2478	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.96	1.00		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	3500	1566	1750	3500	1566
Flt Permitted	0.673			0.552			0.950			0.950		
Satd. Flow (perm)	1234	1842	1532	1012	1842	1534	1750	3500	1511	1750	3500	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257			104			105			141
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	3177	52	114	2753	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	78	297	264	131	60	261	3177	52	114	2753	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	21.0	59.0	59.0	11.0	49.0	49.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	17.5%	49.2%	49.2%	9.2%	40.8%	40.8%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	17.0	52.6	52.6	7.0	42.6	42.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	14.2	14.2	14.2	27.8	25.3	25.3	17.1	52.9	52.9	7.0	42.9	42.9
Actuated g/C Ratio	0.14	0.14	0.14	0.27	0.25	0.25	0.17	0.52	0.52	0.07	0.42	0.42
v/c Ratio	0.22	0.30	0.68	0.81	0.29	0.13	0.89	1.75	0.06	0.95	1.88	0.03
Control Delay	40.6	41.5	16.3	52.7	32.2	1.5	74.9	364.4	0.1	119.6	420.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	41.5	16.3	52.7	32.2	1.5	74.9	364.4	0.1	119.6	420.7	0.1
LOS	D	D	B	D	C	A	E	F	A	F	F	A
Approach Delay		23.2			40.0			337.4			405.6	
Approach LOS		C			D			F			F	
Queue Length 50th (m)	6.6	14.0	7.1	44.6	21.0	0.0	48.3	~464.2	0.0	21.8	~413.3	0.0
Queue Length 95th (m)	15.3	26.5	31.0	67.4	35.4	2.0	#117.9	#653.9	0.0	#67.2	#585.4	0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	394	589	664	325	788	716	292	1811	832	120	1466	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.13	0.45	0.81	0.17	0.08	0.89	1.75	0.06	0.95	1.88	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.3			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.88			
Intersection Signal Delay: 328.0		Intersection LOS: F	
Intersection Capacity Utilization 119.8%		ICU Level of Service H	

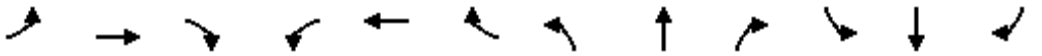
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

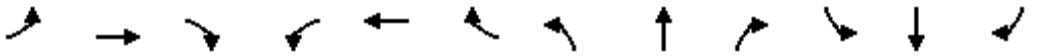




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	70	267	238	118	54	235	2859	47	103	2478	20
Future Volume (vph)	33	70	267	238	118	54	235	2859	47	103	2478	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1743	1842	1527	1746	1842	1533	1750	3500	1514	1750	3500	1513
Flt Permitted	0.67	1.00	1.00	0.55	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1235	1842	1527	1014	1842	1533	1750	3500	1514	1750	3500	1513
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	78	297	264	131	60	261	3177	52	114	2753	22
RTOR Reduction (vph)	0	0	221	0	0	45	0	0	25	0	0	13
Lane Group Flow (vph)	37	78	76	264	131	15	261	3177	27	114	2753	9
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	14.3	14.3	14.3	25.3	25.3	25.3	17.1	53.0	53.0	7.0	42.9	42.9
Effective Green, g (s)	14.3	14.3	14.3	25.3	25.3	25.3	17.1	53.0	53.0	7.0	42.9	42.9
Actuated g/C Ratio	0.14	0.14	0.14	0.25	0.25	0.25	0.17	0.52	0.52	0.07	0.42	0.42
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	257	213	301	455	379	292	1815	785	119	1469	635
v/s Ratio Prot		0.04		c0.06	0.07		c0.15	c0.91		0.07	c0.79	
v/s Ratio Perm	0.03		0.05	c0.16		0.01			0.02			0.01
v/c Ratio	0.22	0.30	0.36	0.88	0.29	0.04	0.89	1.75	0.03	0.96	1.87	0.01
Uniform Delay, d1	39.0	39.5	39.8	36.6	31.2	29.2	41.7	24.6	12.1	47.5	29.7	17.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.7	1.0	23.7	0.4	0.0	27.2	340.0	0.1	68.6	395.9	0.0
Delay (s)	39.6	40.1	40.8	60.2	31.5	29.3	68.9	364.6	12.1	116.0	425.6	17.4
Level of Service	D	D	D	E	C	C	E	F	B	F	F	B
Approach Delay (s)		40.6			47.9			337.2			410.3	
Approach LOS		D			D			F			F	

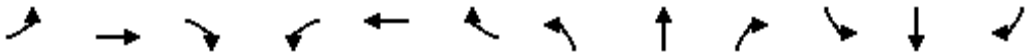
Intersection Summary			
HCM 2000 Control Delay	331.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	102.2	Sum of lost time (s)	20.9
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	82	9	8	191	185	20	81	3	205	203	33
Future Volume (vph)	13	82	9	8	191	185	20	81	3	205	203	33
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
Ped Bike Factor												
Frt		0.988			0.935			0.996			0.990	
Flt Protected		0.994			0.999			0.991			0.977	
Satd. Flow (prot)	0	1809	0	0	1721	0	0	1818	0	0	1782	0
Flt Permitted		0.994			0.999			0.991			0.977	
Satd. Flow (perm)	0	1809	0	0	1721	0	0	1818	0	0	1782	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	91	10	9	212	206	22	90	3	228	226	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	427	0	0	115	0	0	491	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	82	9	8	191	185	20	81	3	205	203	33
Future Volume (vph)	13	82	9	8	191	185	20	81	3	205	203	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	91	10	9	212	206	22	90	3	228	226	37

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	115	427	115	491
Volume Left (vph)	14	9	22	228
Volume Right (vph)	10	206	3	37
Hadj (s)	0.01	-0.25	0.06	0.08
Departure Headway (s)	6.8	5.8	6.7	5.9
Degree Utilization, x	0.22	0.69	0.21	0.81
Capacity (veh/h)	472	590	468	592
Control Delay (s)	11.6	20.7	11.5	29.1
Approach Delay (s)	11.6	20.7	11.5	29.1
Approach LOS	B	C	B	D

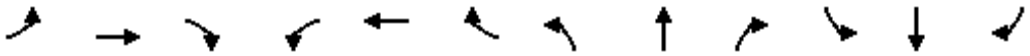
Intersection Summary			
Delay	22.4		
Level of Service	C		
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	21.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	82	9	8	191	185	20	81	3	205	203	33
Future Vol, veh/h	13	82	9	8	191	185	20	81	3	205	203	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	91	10	9	212	206	22	90	3	228	226	37
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

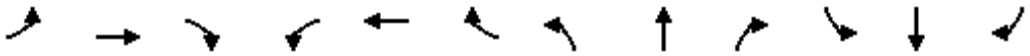
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.6	20.6	11.5	27.8
HCM LOS	B	C	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	12%	2%	46%
Vol Thru, %	78%	79%	50%	46%
Vol Right, %	3%	9%	48%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	104	384	441
LT Vol	20	13	8	205
Through Vol	81	82	191	203
RT Vol	3	9	185	33
Lane Flow Rate	116	116	427	490
Geometry Grp	1	1	1	1
Degree of Util (X)	0.214	0.216	0.688	0.792
Departure Headway (Hd)	6.669	6.721	5.809	5.946
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	538	535	627	612
Service Time	4.711	4.749	3.809	3.946
HCM Lane V/C Ratio	0.216	0.217	0.681	0.801
HCM Control Delay	11.5	11.6	20.6	27.8
HCM Lane LOS	B	B	C	D
HCM 95th-tile Q	0.8	0.8	5.4	7.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
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
Ped Bike Factor												
Frt		0.927			0.997			0.963			0.923	
Flt Protected		0.988			0.971			0.988			0.997	
Satd. Flow (prot)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Flt Permitted		0.988			0.971			0.988			0.997	
Satd. Flow (perm)	0	1687	0	0	1783	0	0	1753	0	0	1695	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	49	126	186	117	8	53	104	60	22	163	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	233	0	0	311	0	0	217	0	0	432	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Future Volume (vph)	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	58	49	126	186	117	8	53	104	60	22	163	247

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	233	311	217	432
Volume Left (vph)	58	186	53	22
Volume Right (vph)	126	8	60	247
Hadj (s)	-0.24	0.14	-0.08	-0.30
Departure Headway (s)	6.5	6.7	6.6	5.9
Degree Utilization, x	0.42	0.57	0.40	0.71
Capacity (veh/h)	481	490	462	567
Control Delay (s)	14.2	18.3	14.0	22.3
Approach Delay (s)	14.2	18.3	14.0	22.3
Approach LOS	B	C	B	C

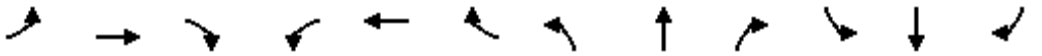
Intersection Summary				
Delay	18.1			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

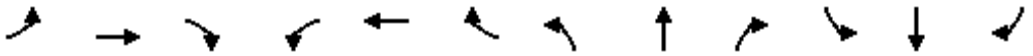
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Future Vol, veh/h	52	44	113	167	105	7	48	94	54	20	147	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	49	126	186	117	8	53	104	60	22	163	247
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	18.1	13.9	22
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	25%	60%	5%
Vol Thru, %	48%	21%	38%	38%
Vol Right, %	28%	54%	3%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	209	279	389
LT Vol	48	52	167	20
Through Vol	94	44	105	147
RT Vol	54	113	7	222
Lane Flow Rate	218	232	310	432
Geometry Grp	1	1	1	1
Degree of Util (X)	0.396	0.416	0.568	0.707
Departure Headway (Hd)	6.554	6.443	6.598	5.888
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	547	555	546	609
Service Time	4.633	4.52	4.669	3.95
HCM Lane V/C Ratio	0.399	0.418	0.568	0.709
HCM Control Delay	13.9	14.1	18.1	22
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	1.9	2	3.5	5.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1119	830	190	707	1126	584	593	2082	60	328	2090	456
Future Volume (vph)	1119	830	190	707	1126	584	593	2082	60	328	2090	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			120			89			182
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		207.8			119.4			182.8			224.9	
Travel Time (s)		12.5			7.2			11.0			13.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Adj. Flow (vph)	1203	892	204	760	1211	628	638	2239	65	353	2247	490
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1203	892	204	760	1211	628	638	2239	65	353	2247	490
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.4	48.4	11.0	48.4	48.4	11.0	45.4	45.4	11.0	44.4	44.4
Total Split (s)	21.0	49.0	49.0	21.0	49.0	49.0	19.0	58.0	58.0	12.0	51.0	51.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	13.6%	41.4%	41.4%	8.6%	36.4%	36.4%
Maximum Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	2.7	2.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		35.0	35.0		35.0	35.0		32.0	32.0		32.0	32.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
v/c Ratio	2.92	0.84	0.35	1.88	1.14	1.12	1.76	1.74	0.10	1.90	1.97	0.78
Control Delay	891.3	53.7	13.9	438.1	117.4	112.8	387.0	363.6	2.8	456.8	467.3	36.3
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	891.3	53.7	13.9	438.1	117.4	112.8	387.0	363.6	2.8	456.8	467.3	36.3
LOS	F	D	B	F	F	F	F	F	A	F	F	D
Approach Delay		488.5			210.1			360.7			397.8	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~295.1	121.6	12.3	~165.1	~205.1	~175.8	~135.0	~481.9	0.0	~76.9	~507.0	80.9
Queue Length 95th (m)	#336.6	147.6	32.9	#203.9	#247.4	#248.6	#172.3	#521.8	5.3	#108.2	#546.6	127.3
Internal Link Dist (m)		183.8			95.4			158.8			200.9	
Turn Bay Length (m)	150.0		60.0	160.0		220.0	120.0		55.0	100.0		80.0
Base Capacity (vph)	412	1065	575	404	1065	559	363	1290	622	186	1140	625
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	2.92	0.84	0.35	1.88	1.14	1.12	1.76	1.74	0.10	1.90	1.97	0.78

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.92	
Intersection Signal Delay: 362.2	Intersection LOS: F

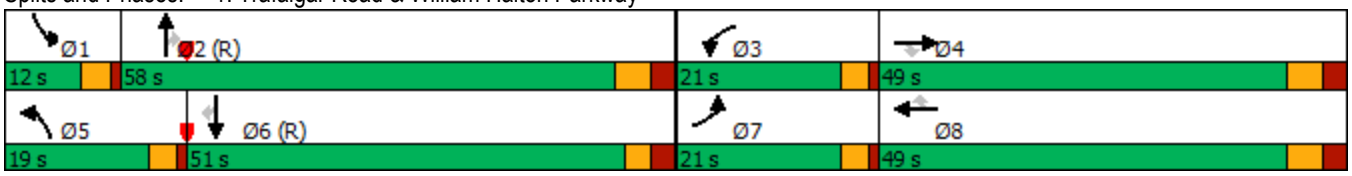
Intersection Capacity Utilization 154.2% ICU Level of Service H

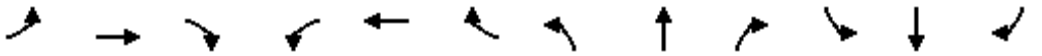
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Trafalgar Road & William Halton Parkway



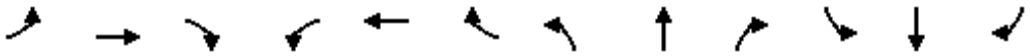


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1119	830	190	707	1126	584	593	2082	60	328	2090	456
Future Volume (vph)	1119	830	190	707	1126	584	593	2082	60	328	2090	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1545
Flt Permitted	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 (perm)	3395	3500	1566	3330	3500	1566	3395	3500	1536	3267	3500	1545
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1203	892	204	760	1211	628	638	2239	65	353	2247	490
RTOR Reduction (vph)	0	0	99	0	0	83	0	0	41	0	0	123
Lane Group Flow (vph)	1203	892	105	760	1211	545	638	2239	24	353	2247	367
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	4%	6%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Effective Green, g (s)	17.0	42.6	42.6	17.0	42.6	42.6	15.0	51.6	51.6	8.0	45.6	45.6
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.11	0.37	0.37	0.06	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	5.4	5.4
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)	412	1065	476	404	1065	476	363	1290	566	186	1140	503
v/s Ratio Prot	c0.35	0.25		0.23	0.35		c0.19	0.64		0.11	c0.64	
v/s Ratio Perm			0.07			c0.35			0.02			0.24
v/c Ratio	2.92	0.84	0.22	1.88	1.14	1.14	1.76	1.74	0.04	1.90	1.97	0.73
Uniform Delay, d1	61.5	45.5	36.3	61.5	48.7	48.7	62.5	44.2	28.4	66.0	47.2	41.8
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	870.6	6.5	0.5	405.8	73.5	87.1	352.0	334.3	0.1	423.5	440.2	9.0
Delay (s)	932.1	52.0	36.8	467.3	122.2	135.8	414.5	378.5	28.5	489.5	487.4	50.8
Level of Service	F	D	D	F	F	F	F	F	C	F	F	D
Approach Delay (s)		511.2			226.4			378.6			418.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	381.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	154.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	360	179	345	348	234	140	2423	198	267	2349	351
Future Volume (vph)	213	360	179	345	348	234	140	2423	198	267	2349	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3500	1566	1750	3500	1566	1750	3493	1559	1750	3459	1559
Flt Permitted	0.369			0.350			0.950			0.950		
Satd. Flow (perm)	648	3500	1566	645	3500	1566	1750	3493	1559	1750	3459	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			160			104			104
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		245.2			123.4			230.0			280.2	
Travel Time (s)		17.7			8.9			13.8			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Adj. Flow (vph)	224	379	188	363	366	246	147	2551	208	281	2473	369
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	379	188	363	366	246	147	2551	208	281	2473	369
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02	1.01	1.02	1.02
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	Prot	NA	Perm	Prot	NA	Perm



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	41.4	41.4	11.0	41.4	41.4	11.0	37.3	37.3	11.0	37.3	37.3
Total Split (s)	13.0	42.0	42.0	13.0	42.0	42.0	11.0	52.0	52.0	13.0	54.0	54.0
Total Split (%)	10.8%	35.0%	35.0%	10.8%	35.0%	35.0%	9.2%	43.3%	43.3%	10.8%	45.0%	45.0%
Maximum Green (s)	9.0	35.6	35.6	9.0	35.6	35.6	7.0	45.7	45.7	9.0	47.7	47.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
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	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	30.0	18.6	18.6	30.0	18.6	18.6	21.5	45.7	45.7	26.0	50.1	50.1
Actuated g/C Ratio	0.25	0.16	0.16	0.25	0.16	0.16	0.18	0.38	0.38	0.22	0.42	0.42
v/c Ratio	0.94	0.70	0.52	1.49	0.67	0.65	0.47	1.92	0.32	0.74	1.71	0.52
Control Delay	83.7	54.8	19.3	271.4	53.9	25.1	50.9	441.0	14.1	58.0	350.0	21.3
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	83.7	54.8	19.3	271.4	53.9	25.1	50.9	441.0	14.1	58.0	350.0	21.3
LOS	F	D	B	F	D	C	D	F	B	E	F	C
Approach Delay		54.6			127.6			390.7			284.9	
Approach LOS		D			F			F			F	
Queue Length 50th (m)	43.9	45.1	10.7	~90.1	43.4	18.4	31.9	~486.3	16.1	62.1	~444.8	43.8
Queue Length 95th (m)	#79.4	58.2	31.3	#169.4	56.2	43.4	53.3	#526.0	34.2	#116.6	#500.6	76.4
Internal Link Dist (m)		221.2			99.4			206.0			256.2	
Turn Bay Length (m)	100.0		30.0	120.0		30.0	130.0		50.0	170.0		40.0
Base Capacity (vph)	238	1038	560	244	1038	577	314	1330	658	378	1444	711
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	0.94	0.37	0.34	1.49	0.35	0.43	0.47	1.92	0.32	0.74	1.71	0.52

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.92			
Intersection Signal Delay: 281.3		Intersection LOS: F	
Intersection Capacity Utilization 128.1%		ICU Level of Service H	

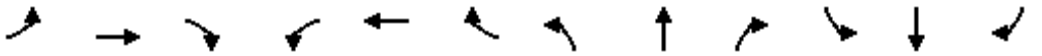
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Trafalgar Road & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	360	179	345	348	234	140	2423	198	267	2349	351
Future Volume (vph)	213	360	179	345	348	234	140	2423	198	267	2349	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1668	3500	1566	1750	3500	1566	1750	3493	1559	1750	3459	1559
Flt Permitted	0.37	1.00	1.00	0.35	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	647	3500	1566	645	3500	1566	1750	3493	1559	1750	3459	1559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	224	379	188	363	366	246	147	2551	208	281	2473	369
RTOR Reduction (vph)	0	0	116	0	0	135	0	0	64	0	0	60
Lane Group Flow (vph)	224	379	72	363	366	111	147	2551	144	281	2473	309
Heavy Vehicles (%)	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	1	1	0	1	1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	27.6	18.6	18.6	27.6	18.6	18.6	21.5	45.7	45.7	26.0	50.2	50.2
Effective Green, g (s)	27.6	18.6	18.6	27.6	18.6	18.6	21.5	45.7	45.7	26.0	50.2	50.2
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.18	0.38	0.38	0.22	0.42	0.42
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	225	542	242	231	542	242	313	1330	593	379	1447	652
v/s Ratio Prot	0.07	0.11		c0.12	0.10		0.08	c0.73		c0.16	c0.71	
v/s Ratio Perm	0.15		0.05	c0.24		0.07			0.09			0.20
v/c Ratio	1.00	0.70	0.30	1.57	0.68	0.46	0.47	1.92	0.24	0.74	1.71	0.47
Uniform Delay, d1	44.2	48.0	44.9	44.2	47.8	46.1	44.1	37.1	25.3	43.9	34.9	25.3
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	58.4	3.9	0.7	277.0	3.3	1.4	1.1	415.9	1.0	7.6	322.0	2.5
Delay (s)	102.6	52.0	45.6	321.2	51.2	47.5	45.3	453.1	26.3	51.5	356.9	27.8
Level of Service	F	D	D	F	D	D	D	F	C	D	F	C
Approach Delay (s)		64.8			150.8			401.9			290.6	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	291.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1217	1	1104	1871	0	1027
Future Volume (vph)	1217	1	1104	1871	0	1027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	150.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		50.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950			
Satd. Flow (prot)	3433	0	1750	3500	1842	1566
Flt Permitted			0.096			
Satd. Flow (perm)	3433	0	177	3500	1842	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						564
Link Speed (k/h)	60			60	50	
Link Distance (m)	657.5			390.6	221.9	
Travel Time (s)	39.5			23.4	16.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1268	1	1150	1949	0	1070
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1269	0	1150	1949	0	1070
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	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)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			6			3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	7.0	7.0
Minimum Split (s)	28.4		11.5	28.4	31.0	31.0
Total Split (s)	44.0		44.0	88.0	32.0	32.0
Total Split (%)	36.7%		36.7%	73.3%	26.7%	26.7%
Maximum Green (s)	37.6		40.0	81.6	28.0	28.0
Yellow Time (s)	3.7		3.0	3.7	3.0	3.0
All-Red Time (s)	2.7		1.0	2.7	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4		4.0	6.4	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	20.0	20.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	37.6		84.0	81.6		28.0
Actuated g/C Ratio	0.31		0.70	0.68		0.23
v/c Ratio	1.18		1.77	0.82		1.34
Control Delay	128.3		379.8	17.6		181.4
Queue Delay	0.0		0.0	0.0		0.0
Total Delay	128.3		379.8	17.6		181.4
LOS	F		F	B		F
Approach Delay	128.3			152.0	181.4	
Approach LOS	F			F	F	
Queue Length 50th (m)	~188.5		~392.4	158.4		~221.6
Queue Length 95th (m)	#230.3		#472.2	192.0		#300.8
Internal Link Dist (m)	633.5			366.6	197.9	
Turn Bay Length (m)			150.0			
Base Capacity (vph)	1075		648	2380		797
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	1.18		1.77	0.82		1.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.77			
Intersection Signal Delay: 152.3		Intersection LOS: F	
Intersection Capacity Utilization 105.9%		ICU Level of Service G	
Analysis Period (min) 15			

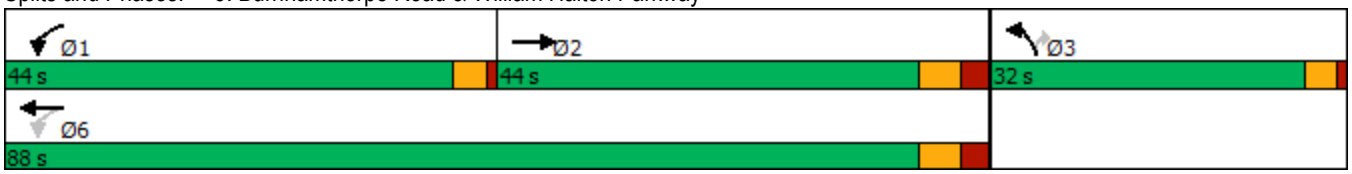
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

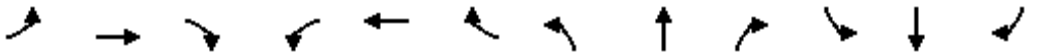
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



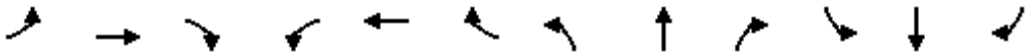


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1217	1	1104	1871	0	1027
Future Volume (vph)	1217	1	1104	1871	0	1027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		4.0	6.4		4.0
Lane Util. Factor	0.95		1.00	0.95		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	3432		1750	3500		1566
Flt Permitted	1.00		0.10	1.00		1.00
Satd. Flow (perm)	3432		177	3500		1566
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1268	1	1150	1949	0	1070
RTOR Reduction (vph)	0	0	0	0	0	432
Lane Group Flow (vph)	1269	0	1150	1949	0	638
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	37.6		81.6	81.6		28.0
Effective Green, g (s)	37.6		81.6	81.6		28.0
Actuated g/C Ratio	0.31		0.68	0.68		0.23
Clearance Time (s)	6.4		4.0	6.4		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1075		644	2380		365
v/s Ratio Prot	0.37		c0.59	0.56		
v/s Ratio Perm			c0.62			c0.41
v/c Ratio	1.18		1.79	0.82		1.75
Uniform Delay, d1	41.2		34.2	13.9		46.0
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	91.0		359.8	2.3		347.2
Delay (s)	132.2		394.0	16.2		393.2
Level of Service	F		F	B		F
Approach Delay (s)	132.2			156.4	393.2	
Approach LOS	F			F	F	

Intersection Summary			
HCM 2000 Control Delay	197.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	105.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	682	1776	208	311	1930	759	341	2293	241	763	1790	588
Future Volume (vph)	682	1776	208	311	1930	759	341	2293	241	763	1790	588
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3395	3466	1566	3395	3500	1566	3395	3500	1566	3362	3500	1566
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3393	3466	1527	3389	3500	1540	3392	3500	1541	3361	3500	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			162			96			150
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		592.0			816.3			644.9			1233.0	
Travel Time (s)		30.4			42.0			38.7			74.0	
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	703	1831	214	321	1990	782	352	2364	248	787	1845	606
Shared Lane Traffic (%)												
Lane Group Flow (vph)	703	1831	214	321	1990	782	352	2364	248	787	1845	606
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	50.4	50.4	12.0	50.4	50.4	11.0	48.4	48.4	11.0	48.4	48.4
Total Split (s)	14.0	55.0	55.0	13.0	54.0	54.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	10.8%	42.3%	42.3%	10.0%	41.5%	41.5%	10.0%	37.7%	37.7%	10.0%	37.7%	37.7%
Maximum Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		37.0	37.0		37.0	37.0		35.0	35.0		35.0	35.0
Pedestrian Calls (#/hr)		15	15		5	5		4	4		6	6
Act Effct Green (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
v/c Ratio	2.69	1.41	0.33	1.37	1.55	1.17	1.50	2.06	0.44	3.39	1.61	1.00
Control Delay	795.2	223.7	14.0	233.6	283.8	123.8	285.3	506.5	23.1	1105.1	309.5	70.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	795.2	223.7	14.0	233.6	283.8	123.8	285.3	506.5	23.1	1105.1	309.5	70.5
LOS	F	F	B	F	F	F	F	F	C	F	F	E
Approach Delay		353.5			238.1			439.8			458.2	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~157.0	~331.4	16.0	~55.8	~377.9	~211.6	~64.3	~501.5	29.7	~183.9	~356.1	~126.9
Queue Length 95th (m)	#194.6	#373.4	35.4	#85.1	#419.4	#287.3	#94.7	#541.6	53.8	#222.3	#398.2	#204.7
Internal Link Dist (m)		568.0			792.3			620.9			1209.0	
Turn Bay Length (m)	170.0		85.0	80.0		250.0	90.0		50.0	230.0		100.0
Base Capacity (vph)	261	1295	646	235	1281	666	235	1146	569	232	1146	604
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	2.69	1.41	0.33	1.37	1.55	1.17	1.50	2.06	0.44	3.39	1.61	1.00

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 3.39	
Intersection Signal Delay: 373.3	Intersection LOS: F

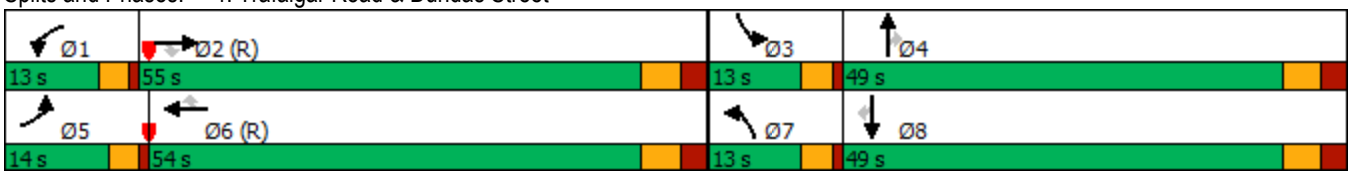
Intersection Capacity Utilization 175.3% ICU Level of Service H

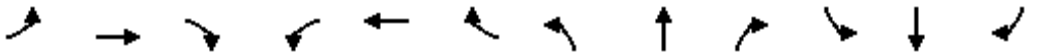
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Trafalgar Road & Dundas Street

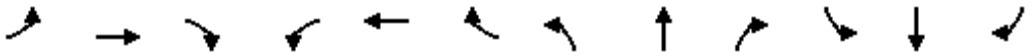




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	682	1776	208	311	1930	759	341	2293	241	763	1790	588
Future Volume (vph)	682	1776	208	311	1930	759	341	2293	241	763	1790	588
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3395	3466	1527	3395	3500	1540	3395	3500	1541	3362	3500	1538
Flt Permitted	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 (perm)	3395	3466	1527	3395	3500	1540	3395	3500	1541	3362	3500	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	703	1831	214	321	1990	782	352	2364	248	787	1845	606
RTOR Reduction (vph)	0	0	75	0	0	103	0	0	65	0	0	101
Lane Group Flow (vph)	703	1831	139	321	1990	679	352	2364	183	787	1845	505
Confl. Peds. (#/hr)	5		15	15		5	6		4	4		6
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Effective Green, g (s)	10.0	48.6	48.6	9.0	47.6	47.6	9.0	42.6	42.6	9.0	42.6	42.6
Actuated g/C Ratio	0.08	0.37	0.37	0.07	0.37	0.37	0.07	0.33	0.33	0.07	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (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
Lane Grp Cap (vph)	261	1295	570	235	1281	563	235	1146	504	232	1146	503
v/s Ratio Prot	c0.21	0.53		0.09	c0.57		0.10	c0.68		c0.23	0.53	
v/s Ratio Perm			0.09			0.44			0.12			0.33
v/c Ratio	2.69	1.41	0.24	1.37	1.55	1.21	1.50	2.06	0.36	3.39	1.61	1.00
Uniform Delay, d1	60.0	40.7	28.0	60.5	41.2	41.2	60.5	43.7	33.4	60.5	43.7	43.7
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	772.9	190.9	1.0	189.5	252.9	108.9	245.1	481.3	0.9	1087.4	278.6	41.2
Delay (s)	832.9	231.6	29.1	250.0	294.1	150.1	305.6	525.0	34.3	1147.9	322.3	84.9
Level of Service	F	F	C	F	F	F	F	F	C	F	F	F
Approach Delay (s)		369.6			253.2			457.9			478.5	
Approach LOS		F			F			F			F	

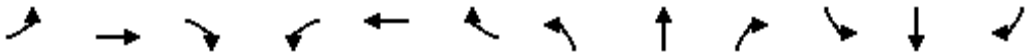
Intersection Summary			
HCM 2000 Control Delay	390.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	175.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



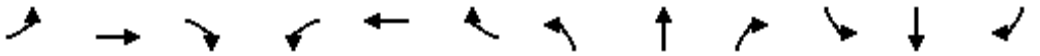
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	457	65	236	755	660	11	340	152	326	414	292
Future Volume (vph)	246	457	65	236	755	660	11	340	152	326	414	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.940			0.955			0.958	
Flt Protected		0.984			0.993			0.999			0.984	
Satd. Flow (prot)	0	3399	0	0	3267	0	0	3339	0	0	3299	0
Flt Permitted		0.984			0.993			0.999			0.984	
Satd. Flow (perm)	0	3399	0	0	3267	0	0	3339	0	0	3299	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		476.6			825.2			671.6			229.3	
Travel Time (s)		28.6			49.5			40.3			13.8	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	251	466	66	241	770	673	11	347	155	333	422	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	783	0	0	1684	0	0	513	0	0	1053	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	128.9%	ICU Level of Service	H
Analysis Period (min)	15		

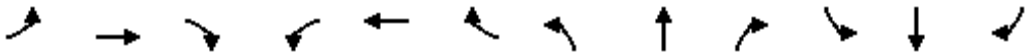


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	246	457	65	236	755	660	11	340	152	326	414	292
Future Volume (veh/h)	246	457	65	236	755	660	11	340	152	326	414	292
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	251	466	66	241	770	673	11	347	155	333	422	298
Approach Volume (veh/h)		783			1684			513			1053	
Crossing Volume (veh/h)		996			609			1050			1022	
High Capacity (veh/h)		625			855			597			611	
High v/c (veh/h)		1.25			1.97			0.86			1.72	
Low Capacity (veh/h)		484			685			461			473	
Low v/c (veh/h)		1.62			2.46			1.11			2.23	

Intersection Summary				
Maximum v/c High	1.97			
Maximum v/c Low	2.46			
Intersection Capacity Utilization	128.9%	ICU Level of Service	H	



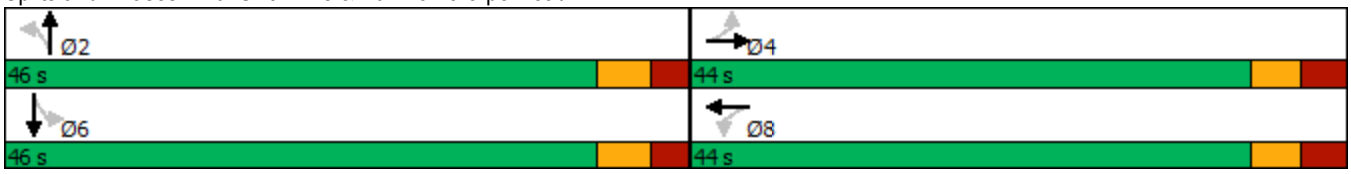
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	139	50	248	302	57	97	490	248	81	756	35
Future Volume (vph)	36	139	50	248	302	57	97	490	248	81	756	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	50.0		0.0	40.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			15.0			15.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.960			0.976			0.950			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3360	0	1750	3368	0	1750	3314	0	1750	3475	0
Flt Permitted	0.522			0.626			0.292			0.318		
Satd. Flow (perm)	962	3360	0	1153	3368	0	538	3314	0	586	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			30			127			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		241.5			345.8			218.8			671.6	
Travel Time (s)		17.4			24.9			13.1			40.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	38	148	53	264	321	61	103	521	264	86	804	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	201	0	264	382	0	103	785	0	86	841	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

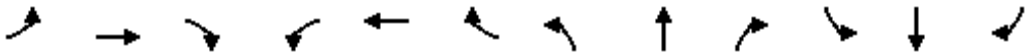


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5		32.4	32.4		32.4	32.4	
Total Split (s)	44.0	44.0		44.0	44.0		46.0	46.0		46.0	46.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	37.5	37.5		37.5	37.5		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		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)	21.0	21.0		21.0	21.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.5	22.5		22.5	22.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.53	0.53		0.53	0.53	
v/c Ratio	0.13	0.19		0.77	0.37		0.36	0.43		0.28	0.46	
Control Delay	19.1	13.8		39.0	19.5		18.2	11.1		16.0	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.1	13.8		39.0	19.5		18.2	11.1		16.0	13.4	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		14.6			27.5			11.9			13.6	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	3.9	8.0		33.7	20.3		7.7	26.4		6.1	35.0	
Queue Length 95th (m)	10.1	14.6		58.2	30.3		26.3	55.9		20.9	69.6	
Internal Link Dist (m)		217.5			321.8			194.8			647.6	
Turn Bay Length (m)	55.0			50.0			40.0			30.0		
Base Capacity (vph)	482	1711		578	1703		284	1814		310	1843	
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	0.08	0.12		0.46	0.22		0.36	0.43		0.28	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

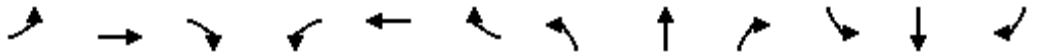
Splits and Phases: 6: Sixth Line & Burnhamthorpe Road



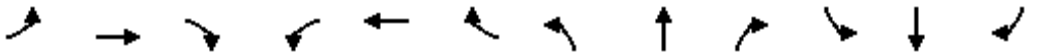


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	139	50	248	302	57	97	490	248	81	756	35
Future Volume (vph)	36	139	50	248	302	57	97	490	248	81	756	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3361		1750	3369		1750	3312		1750	3477	
Flt Permitted	0.52	1.00		0.63	1.00		0.29	1.00		0.32	1.00	
Satd. Flow (perm)	961	3361		1152	3369		539	3312		586	3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	148	53	264	321	61	103	521	264	86	804	37
RTOR Reduction (vph)	0	37	0	0	21	0	0	60	0	0	3	0
Lane Group Flow (vph)	38	164	0	264	361	0	103	725	0	86	838	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	11%	2%	2%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.5	22.5		22.5	22.5		40.1	40.1		40.1	40.1	
Effective Green, g (s)	22.5	22.5		22.5	22.5		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	1001		343	1004		286	1759		311	1846	
v/s Ratio Prot		0.05			0.11			0.22			c0.24	
v/s Ratio Perm	0.04			c0.23			0.19			0.15		
v/c Ratio	0.13	0.16		0.77	0.36		0.36	0.41		0.28	0.45	
Uniform Delay, d1	19.4	19.6		24.1	20.8		10.3	10.6		9.7	10.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		10.0	0.2		3.5	0.7		2.2	0.8	
Delay (s)	19.6	19.6		34.1	21.1		13.8	11.3		11.9	11.7	
Level of Service	B	B		C	C		B	B		B	B	
Approach Delay (s)		19.6			26.4			11.6			11.8	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	709	2	20	7	3614	0	0	2441	0
Future Volume (vph)	7	0	6	709	2	20	7	3614	0	0	2441	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1526	0	1331	1615	1543	1431	1750	3500	0	0	4980	0
Flt Permitted	0.285			0.950	0.953		0.092					
Satd. Flow (perm)	458	0	1331	1615	1543	1431	169	3500	0	0	4980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			393.0			34.5			195.6	
Travel Time (s)		14.7			23.6			1.6			8.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	7	0	6	739	2	21	7	3765	0	0	2543	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	7	0	6	369	374	19	7	3765	0	0	2543	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



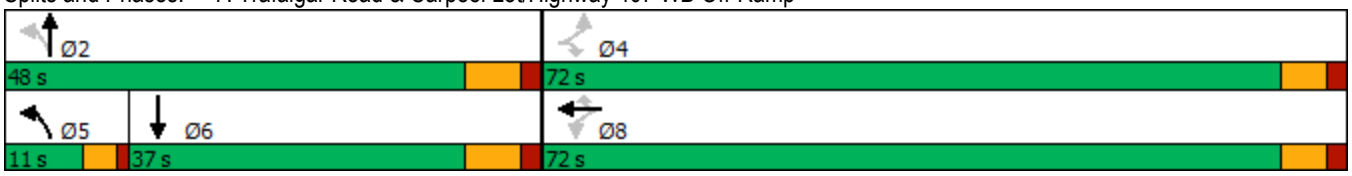
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			7.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	11.0	42.0			22.5	
Total Split (s)	72.0		72.0	72.0	72.0	72.0	11.0	48.0			37.0	
Total Split (%)	60.0%		60.0%	60.0%	60.0%	60.0%	9.2%	40.0%			30.8%	
Maximum Green (s)	66.0		66.0	66.0	66.0	66.0	7.0	41.0			30.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	24.4		24.4	24.4	24.4	24.4	44.3	41.3			39.5	
Actuated g/C Ratio	0.31		0.31	0.31	0.31	0.31	0.56	0.52			0.50	
v/c Ratio	0.05		0.01	0.74	0.78	0.04	0.03	2.05			1.02	
Control Delay	18.6		0.0	33.5	36.7	0.2	10.6	495.3			45.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	18.6		0.0	33.5	36.7	0.2	10.6	495.3			45.3	
LOS	B		A	C	D	A	B	F			D	
Approach Delay		10.0			34.3			494.4			45.3	
Approach LOS		A			C			F			D	
Queue Length 50th (m)	0.7		0.0	50.9	54.9	0.0	0.4	~472.3			126.7	
Queue Length 95th (m)	3.5		0.0	80.2	86.8	0.0	2.7	#599.6			#250.9	
Internal Link Dist (m)		57.5			369.0			10.5			171.6	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	386		1134	1362	1301	1218	236	1834			2497	
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		0.01	0.27	0.29	0.02	0.03	2.05			1.02	

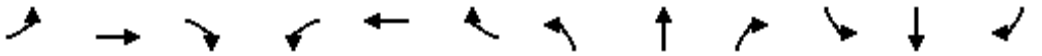
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 78.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.05			
Intersection Signal Delay: 283.0		Intersection LOS: F	
Intersection Capacity Utilization 137.3%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

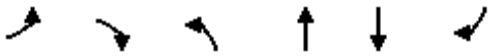
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	6	709	2	20	7	3614	0	0	2441	0
Future Volume (vph)	7	0	6	709	2	20	7	3614	0	0	2441	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1526		1331	1615	1543	1431	1750	3500			4980	
Flt Permitted	0.29		1.00	0.95	0.95	1.00	0.09	1.00			1.00	
Satd. Flow (perm)	458		1331	1615	1543	1431	169	3500			4980	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	6	739	2	21	7	3765	0	0	2543	0
RTOR Reduction (vph)	0	0	4	0	0	13	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	2	369	374	6	7	3765	0	0	2543	0
Heavy Vehicles (%)	17%	2%	20%	5%	100%	6%	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	24.4		24.4	24.4	24.4	24.4	44.6	44.6			39.5	
Effective Green, g (s)	24.4		24.4	24.4	24.4	24.4	44.6	44.6			39.5	
Actuated g/C Ratio	0.30		0.30	0.30	0.30	0.30	0.54	0.54			0.48	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	136		396	480	459	425	113	1903			2398	
v/s Ratio Prot							0.00	c1.08			0.51	
v/s Ratio Perm	0.02		0.00	0.23	0.24	0.00	0.03					
v/c Ratio	0.05		0.00	0.77	0.81	0.01	0.06	1.98			1.06	
Uniform Delay, d1	20.5		20.3	26.2	26.7	20.3	18.1	18.7			21.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.2		0.0	7.3	10.6	0.0	0.2	442.2			36.9	
Delay (s)	20.7		20.3	33.5	37.4	20.3	18.3	460.9			58.2	
Level of Service	C		C	C	D	C	B	F			E	
Approach Delay (s)		20.5			35.1			460.1			58.2	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	269.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	137.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3623	3210	49
Future Volume (vph)	0	0	0	3623	3210	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3433	1521
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3433	1521
Link Speed (k/h)	60			80	80	
Link Distance (m)	166.7			156.0	34.5	
Travel Time (s)	10.0			7.0	1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	4%	5%
Adj. Flow (vph)	0	0	0	3774	3344	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3774	3344	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		

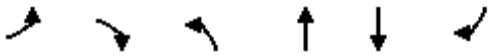
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3623	283	0	3210
Future Volume (vph)	0	0	3623	283	0	3210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1521	0	3433
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1521	0	3433
Link Speed (k/h)	30		80			80
Link Distance (m)	189.2		37.4			156.0
Travel Time (s)	22.7		1.7			7.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	5%	2%	4%
Adj. Flow (vph)	0	0	3774	295	0	3344
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3774	295	0	3344
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.



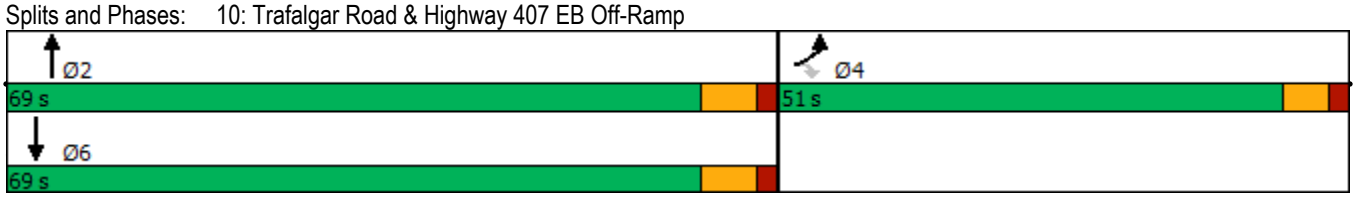
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	407	0	4398	2987	0
Future Volume (vph)	42	407	0	4398	2987	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.878	0.850				
Flt Protected	0.991					
Satd. Flow (prot)	1355	1214	0	3500	3466	0
Flt Permitted	0.991					
Satd. Flow (perm)	1355	1214	0	3500	3466	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	415.1			117.5	129.7	
Travel Time (s)	24.9			5.3	5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Adj. Flow (vph)	45	433	0	4679	3178	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	240	238	0	4679	3178	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

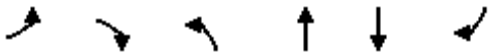
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	51.0	51.0		69.0	69.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	45.0	45.0		62.0	62.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	24.5	24.5		62.3	62.3	
Actuated g/C Ratio	0.25	0.25		0.62	0.62	
v/c Ratio	0.73	0.80		2.14	1.47	
Control Delay	47.2	55.3		534.6	235.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.2	55.3		534.6	235.4	
LOS	D	E		F	F	
Approach Delay	51.2			534.6	235.4	
Approach LOS	D			F	F	
Queue Length 50th (m)	42.5	45.4		~759.8	~444.1	
Queue Length 95th (m)	68.0	73.6		#909.4	#565.2	
Internal Link Dist (m)	391.1			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	613	549		2184	2163	
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	0.39	0.43		2.14	1.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.9			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.14			
Intersection Signal Delay: 392.8		Intersection LOS: F	
Intersection Capacity Utilization 143.1%		ICU Level of Service H	
Analysis Period (min) 15			

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

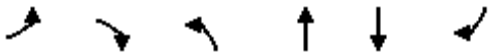
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





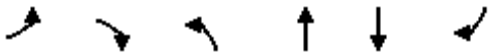
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	407	0	4398	2987	0
Future Volume (vph)	42	407	0	4398	2987	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1354	1214		3500	3466	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1354	1214		3500	3466	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	45	433	0	4679	3178	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	240	238	0	4679	3178	0
Heavy Vehicles (%)	2%	25%	2%	2%	3%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.5	24.5		62.3	62.3	
Effective Green, g (s)	24.5	24.5		62.3	62.3	
Actuated g/C Ratio	0.25	0.25		0.62	0.62	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	332	298		2184	2163	
v/s Ratio Prot	0.18			c1.34	0.92	
v/s Ratio Perm		c0.20				
v/c Ratio	0.72	0.80		2.14	1.47	
Uniform Delay, d1	34.5	35.3		18.8	18.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.6	13.8		515.6	213.7	
Delay (s)	42.1	49.2		534.4	232.5	
Level of Service	D	D		F	F	
Approach Delay (s)	45.6			534.4	232.5	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	391.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.76		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3900	2987	23
Future Volume (vph)	0	0	0	3900	2987	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3466	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3466	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	113.6			129.7	37.4	
Travel Time (s)	13.6			5.8	1.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	0	0	0	4149	3178	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	4149	3178	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 143.1%		ICU Level of Service H	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	3900	2987	23
Future Volume (Veh/h)	0	0	0	3900	2987	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	4149	3178	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				130	228	
pX, platoon unblocked	0.63	0.50	0.50			
vC, conflicting volume	5252	1589	3202			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3029	198	3401			
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)	6	408	39			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	2074	2074	1589	1589	24
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	24
cSH	1700	1700	1700	1700	1700
Volume to Capacity	1.22	1.22	0.93	0.93	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

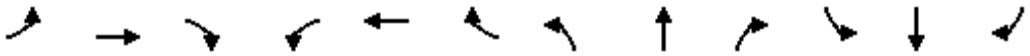
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	4398	343	0	3392
Future Volume (vph)	0	0	4398	343	0	3392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1452	0	4885
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1452	0	4885
Link Speed (k/h)	50		80			80
Link Distance (m)	246.0		145.5			117.5
Travel Time (s)	17.7		6.5			5.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	10%	2%	5%
Adj. Flow (vph)	0	0	4679	365	0	3609
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	4679	365	0	3609
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

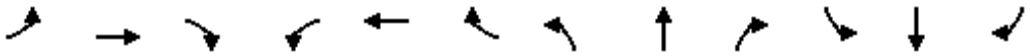
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	124.9%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.



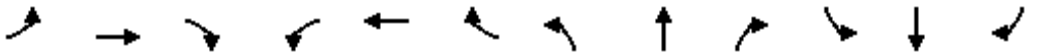
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	1816	414	162	2156	151	628	743	265	129	384	142
Future Volume (vph)	53	1816	414	162	2156	151	628	743	265	129	384	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.973			0.991			0.976			0.967	
Flt Protected		0.999			0.997			0.981			0.990	
Satd. Flow (prot)	0	3353	0	0	3458	0	0	3338	0	0	3351	0
Flt Permitted		0.999			0.997			0.981			0.990	
Satd. Flow (perm)	0	3353	0	0	3458	0	0	3338	0	0	3351	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		234.8			101.3			359.6			262.5	
Travel Time (s)		14.1			6.1			21.6			15.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	10%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	55	1892	431	169	2246	157	654	774	276	134	400	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2378	0	0	2572	0	0	1704	0	0	682	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)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 213.5%		ICU Level of Service H	
Analysis Period (min) 15			

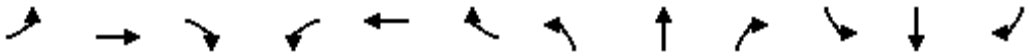


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	53	1816	414	162	2156	151	628	743	265	129	384	142
Future Volume (veh/h)	53	1816	414	162	2156	151	628	743	265	129	384	142
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	55	1892	431	169	2246	157	654	774	276	134	400	148
Approach Volume (veh/h)		2378			2572			1704			682	
Crossing Volume (veh/h)		703			1483#			2081#			3069#	
High Capacity (veh/h)		793			417			250			105	
High v/c (veh/h)		3.00			6.17			6.81			6.53	
Low Capacity (veh/h)		630			309			175			65	
Low v/c (veh/h)		3.77			8.32			9.75			10.42	

Intersection Summary					
Maximum v/c High	6.81				
Maximum v/c Low	10.42				
Intersection Capacity Utilization	213.5%	ICU Level of Service		H	
# Crossing flow exceeds 1200, method is not applicable					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	1128	37	3494	300	527	2799	175
Future Volume (vph)	363	44	192	0	0	1128	37	3494	300	527	2799	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	95.0		0.0	30.0		300.0	45.0		70.0	120.0		40.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	15.0			15.0			80.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt		0.878				0.850			0.850			0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1617	0	1842	1842	1566	1750	3500	1566	3395	5029	1566
Flt Permitted	0.693						0.950			0.950		
Satd. Flow (perm)	1277	1617	0	1842	1842	1566	1750	3500	1566	3395	5029	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168				180			105			105
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		359.5			151.9			224.9			145.5	
Travel Time (s)		25.9			10.9			10.1			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	1253	41	3882	333	586	3110	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	262	0	0	0	1253	41	3882	333	586	3110	194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		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
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
Detector 1 Size(m)	2.0	0.6		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
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
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
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
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		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6



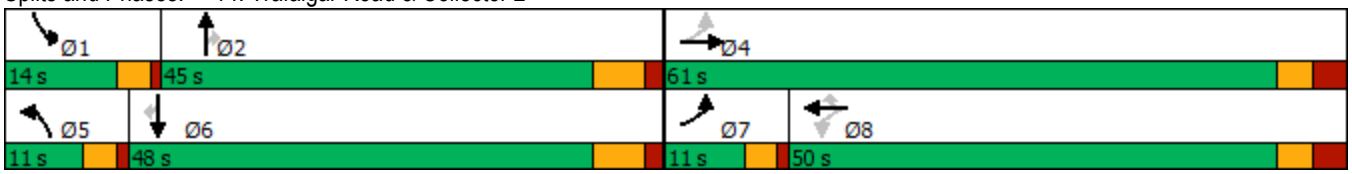
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	48.5		48.5	48.5	48.5	11.0	38.5	38.5	11.0	38.5	38.5
Total Split (s)	11.0	61.0		50.0	50.0	50.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	9.2%	50.8%		41.7%	41.7%	41.7%	9.2%	37.5%	37.5%	11.7%	40.0%	40.0%
Maximum Green (s)	7.0	54.5		43.5	43.5	43.5	7.0	38.5	38.5	10.0	41.5	41.5
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.2		3.2	3.2	3.2	1.0	1.9	1.9	1.0	1.9	1.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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)		35.0		35.0	35.0	35.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effct Green (s)	57.0	54.5				43.5	7.0	38.5	38.5	10.0	43.7	43.7
Actuated g/C Ratio	0.48	0.45				0.36	0.06	0.32	0.32	0.08	0.36	0.36
v/c Ratio	0.64	0.32				1.84	0.40	3.46	0.58	2.08	1.70	0.30
Control Delay	28.2	8.5				405.7	66.5	1124.9	27.4	524.8	344.3	14.5
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.5				405.7	66.5	1124.9	27.4	524.8	344.3	14.5
LOS	C	A				F	E	F	C	F	F	B
Approach Delay		20.4			405.7			1028.9			355.0	
Approach LOS		C			F			F			F	
Queue Length 50th (m)	63.0	12.6				~422.5	9.5	~856.3	44.5	~112.2	~402.1	14.5
Queue Length 95th (m)	90.6	29.7				#503.2	21.2	#886.5	74.5	#147.1	#427.4	32.5
Internal Link Dist (m)		335.5			127.9			200.9			121.5	
Turn Bay Length (m)	95.0					300.0	45.0		70.0	120.0		40.0
Base Capacity (vph)	634	826				682	102	1122	573	282	1831	637
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	0.64	0.32				1.84	0.40	3.46	0.58	2.08	1.70	0.30

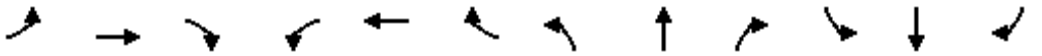
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 3.46			
Intersection Signal Delay: 624.2		Intersection LOS: F	
Intersection Capacity Utilization 200.7%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 14: Trafalgar Road & Collector 2

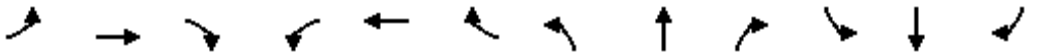




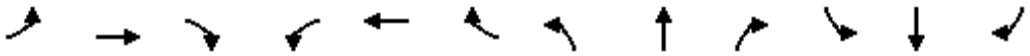
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	44	192	0	0	1128	37	3494	300	527	2799	175
Future Volume (vph)	363	44	192	0	0	1128	37	3494	300	527	2799	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00				1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	0.88				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)	1750	1617				1566	1750	3500	1566	3395	5029	1566
Flt Permitted	0.69	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1277	1617				1566	1750	3500	1566	3395	5029	1566
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	403	49	213	0	0	1253	41	3882	333	586	3110	194
RTOR Reduction (vph)	0	92	0	0	0	115	0	0	71	0	0	67
Lane Group Flow (vph)	403	170	0	0	0	1138	41	3882	262	586	3110	127
Turn Type	pm+pt	NA		Perm		Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8			2			6
Actuated Green, G (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Effective Green, g (s)	54.5	54.5				43.5	5.6	39.3	39.3	10.0	43.7	43.7
Actuated g/C Ratio	0.45	0.45				0.36	0.05	0.33	0.33	0.08	0.36	0.36
Clearance Time (s)	4.0	6.5				6.5	4.0	6.5	6.5	4.0	6.5	6.5
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)	603	729				563	81	1138	509	281	1819	566
v/s Ratio Prot	c0.04	0.10					0.02	c1.11		c0.17	0.62	
v/s Ratio Perm	0.26					c0.73			0.17			0.08
v/c Ratio	0.67	0.23				2.02	0.51	3.41	0.52	2.09	1.71	0.22
Uniform Delay, d1	26.5	20.3				38.6	56.2	40.8	33.0	55.4	38.5	26.8
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2				465.7	4.9	1087.3	3.7	500.4	321.7	0.9
Delay (s)	29.4	20.5				504.3	61.2	1128.0	36.7	555.8	360.3	27.7
Level of Service	C	C				F	E	F	D	F	F	C
Approach Delay (s)		25.9			504.3			1032.4			373.2	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	645.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.49		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	200.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	919	32	392	1523	146	106	6	213	330	33	27
Future Volume (vph)	3	919	32	392	1523	146	106	6	213	330	33	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	110.0		30.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.97	1.00	0.98		1.00	0.99	
Frt		0.995				0.850		0.854			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3479	0	1750	3500	1566	1750	1543	0	1750	1703	0
Flt Permitted	0.080			0.201			0.713			0.524		
Satd. Flow (perm)	147	3479	0	370	3500	1516	1308	1543	0	962	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				81		92			16	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		825.2			198.4			580.4			190.6	
Travel Time (s)		49.5			11.9			41.8			13.7	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1021	36	436	1692	162	118	7	237	367	37	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1057	0	436	1692	162	118	244	0	367	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
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		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	
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	2	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	32.1	32.1		32.1	32.1	32.1	34.4	34.4		34.4	34.4	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	35.0	35.0		35.0	35.0	
Total Split (%)	61.1%	61.1%		61.1%	61.1%	61.1%	38.9%	38.9%		38.9%	38.9%	
Maximum Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.4	1.4		1.4	1.4	1.4	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	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)	20.0	20.0		20.0	20.0	20.0	22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.55	0.55		0.55	0.55	0.55	0.33	0.33		0.33	0.33	
v/c Ratio	0.04	0.55		2.13	0.87	0.18	0.27	0.43		1.16	0.12	
Control Delay	10.7	14.1		542.5	23.8	5.7	24.5	17.0		132.5	17.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.7	14.1		542.5	23.8	5.7	24.5	17.0		132.5	17.6	
LOS	B	B		F	C	A	C	B		F	B	
Approach Delay		14.1			121.2			19.5			114.8	
Approach LOS		B			F			B			F	
Queue Length 50th (m)	0.2	57.2		~87.2	124.3	6.2	14.9	19.4		~75.9	6.0	
Queue Length 95th (m)	1.6	74.2		#143.7	159.1	15.1	28.4	39.8		#127.5	15.0	
Internal Link Dist (m)		801.2			174.4			556.4			166.6	
Turn Bay Length (m)	30.0			110.0		30.0	30.0			40.0		
Base Capacity (vph)	81	1931		205	1940	876	430	569		316	570	
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	0.04	0.55		2.13	0.87	0.18	0.27	0.43		1.16	0.12	

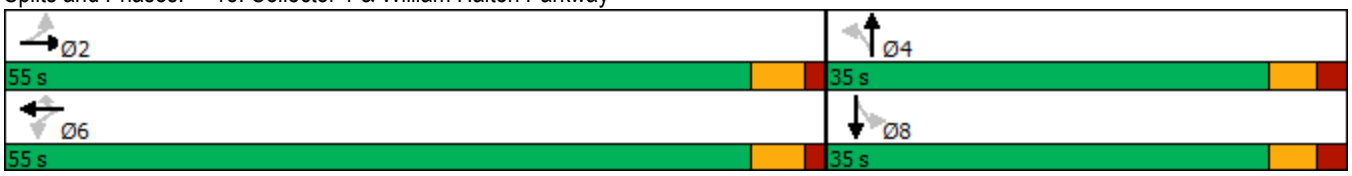
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.13			
Intersection Signal Delay: 84.3		Intersection LOS: F	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	

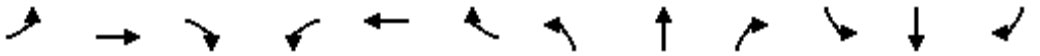
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 15: Collector 1 & William Halton Parkway

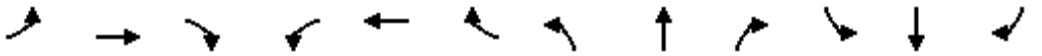




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	919	32	392	1523	146	106	6	213	330	33	27
Future Volume (vph)	3	919	32	392	1523	146	106	6	213	330	33	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3478		1747	3500	1516	1743	1543		1745	1703	
Flt Permitted	0.08	1.00		0.20	1.00	1.00	0.71	1.00		0.52	1.00	
Satd. Flow (perm)	148	3478		370	3500	1516	1308	1543		962	1703	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	1021	36	436	1692	162	118	7	237	367	37	30
RTOR Reduction (vph)	0	3	0	0	0	36	0	62	0	0	11	0
Lane Group Flow (vph)	3	1054	0	436	1692	126	118	182	0	367	56	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Effective Green, g (s)	49.9	49.9		49.9	49.9	49.9	29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.55	0.55		0.55	0.55	0.55	0.33	0.33		0.33	0.33	
Clearance Time (s)	5.1	5.1		5.1	5.1	5.1	5.4	5.4		5.4	5.4	
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)	82	1928		205	1940	840	430	507		316	560	
v/s Ratio Prot		0.30			0.48			0.12			0.03	
v/s Ratio Perm	0.02			c1.18		0.08	0.09			c0.38		
v/c Ratio	0.04	0.55		2.13	0.87	0.15	0.27	0.36		1.16	0.10	
Uniform Delay, d1	9.1	12.8		20.1	17.3	9.7	22.3	23.0		30.2	21.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.1		523.1	5.8	0.4	0.3	0.4		101.9	0.1	
Delay (s)	10.0	13.9		543.2	23.1	10.1	22.6	23.4		132.1	21.0	
Level of Service	A	B		F	C	B	C	C		F	C	
Approach Delay (s)		13.9			121.2			23.2			114.9	
Approach LOS		B			F			C			F	

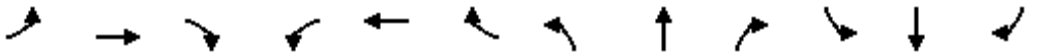
Intersection Summary			
HCM 2000 Control Delay	84.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1436	16	0	2022	152	0	0	689	0	0	39
Future Volume (vph)	0	1436	16	0	2022	152	0	0	689	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		30.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3493	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		198.4			207.8			147.0			359.5	
Travel Time (s)		11.9			12.5			10.6			25.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1596	18	0	2247	169	0	0	766	0	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1614	0	0	2247	169	0	0	766	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

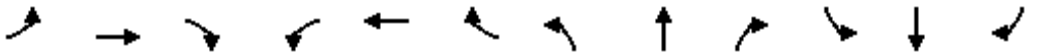
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			



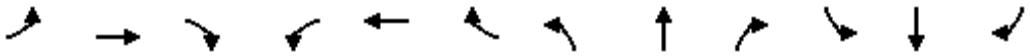
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1436	16	0	2022	152	0	0	689	0	0	39
Future Volume (Veh/h)	0	1436	16	0	2022	152	0	0	689	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1596	18	0	2247	169	0	0	766	0	0	43
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		198			208							
pX, platoon unblocked	0.70			0.81			0.80	0.80	0.81	0.80	0.80	0.70
vC, conflicting volume	2421			1619			2782	4031	817	3821	3871	1134
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2177			1291			1647	3210	299	2947	3010	346
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	0	0	100	90
cM capacity (veh/h)	169			428			46	8	558	0	10	453

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1064	550	1124	1124	169	766	43
Volume Left	0	0	0	0	0	0	0
Volume Right	0	18	0	0	169	766	43
cSH	1700	1700	1700	1700	1700	558	453
Volume to Capacity	0.63	0.32	0.66	0.66	0.10	1.37	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	261.2	2.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	200.3	13.8
Lane LOS						F	B
Approach Delay (s)	0.0		0.0			200.3	13.8
Approach LOS						F	B

Intersection Summary				
Average Delay	31.8			
Intersection Capacity Utilization	90.1%	ICU Level of Service		E
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	564	18	92	722	24	13	255	75	114	185	13
Future Volume (vph)	3	564	18	92	722	24	13	255	75	114	185	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.995			0.995			0.966			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3479	0	1750	3479	0	1750	1771	0	1750	1821	0
Flt Permitted	0.306			0.392			0.571			0.323		
Satd. Flow (perm)	562	3479	0	720	3479	0	1048	1771	0	593	1821	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			19			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		136.3			245.2			477.1			580.4	
Travel Time (s)		9.8			17.7			34.4			41.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	627	20	102	802	27	14	283	83	127	206	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	647	0	102	829	0	14	366	0	127	220	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



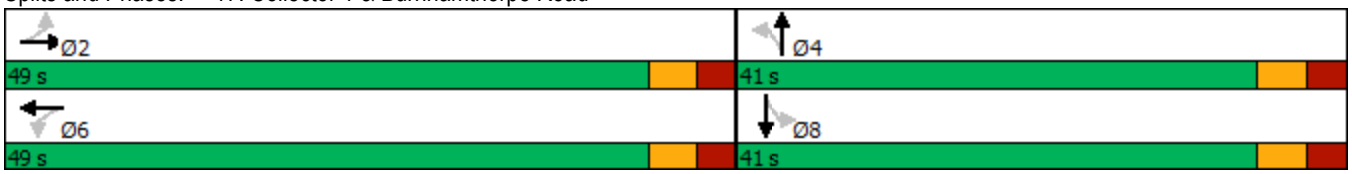
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	49.0	49.0		49.0	49.0		41.0	41.0		41.0	41.0	
Total Split (%)	54.4%	54.4%		54.4%	54.4%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	43.1	43.1		43.1	43.1		34.9	34.9		34.9	34.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	43.3	43.3		43.3	43.3		19.8	19.8		19.8	19.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.26	0.26		0.26	0.26	
v/c Ratio	0.01	0.32		0.25	0.41		0.05	0.76		0.81	0.46	
Control Delay	9.3	9.6		11.6	10.4		19.8	35.0		63.4	25.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.3	9.6		11.6	10.4		19.8	35.0		63.4	25.5	
LOS	A	A		B	B		B	C		E	C	
Approach Delay		9.6			10.6			34.4			39.4	
Approach LOS		A			B			C			D	
Queue Length 50th (m)	0.2	22.5		6.5	30.8		1.5	45.0		16.8	25.4	
Queue Length 95th (m)	1.5	41.5		18.9	55.5		5.3	72.1		#41.3	43.0	
Internal Link Dist (m)		112.3			221.2			453.1			556.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	323	2007		414	2007		488	836		276	851	
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	0.01	0.32		0.25	0.41		0.03	0.44		0.46	0.26	

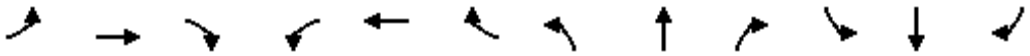
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	

Analysis Period (min) 15

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

Splits and Phases: 17: Collector 1 & Burnhamthorpe Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	564	18	92	722	24	13	255	75	114	185	13
Future Volume (vph)	3	564	18	92	722	24	13	255	75	114	185	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1746	3480		1745	3479		1745	1771		1746	1822	
Flt Permitted	0.31	1.00		0.39	1.00		0.57	1.00		0.32	1.00	
Satd. Flow (perm)	562	3480		720	3479		1048	1771		594	1822	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	627	20	102	802	27	14	283	83	127	206	14
RTOR Reduction (vph)	0	2	0	0	2	0	0	14	0	0	3	0
Lane Group Flow (vph)	3	645	0	102	827	0	14	352	0	127	217	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	43.3	43.3		43.3	43.3		19.8	19.8		19.8	19.8	
Effective Green, g (s)	43.3	43.3		43.3	43.3		19.8	19.8		19.8	19.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.26	0.26		0.26	0.26	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	2006		415	2005		276	466		156	480	
v/s Ratio Prot		0.19			c0.24			0.20			0.12	
v/s Ratio Perm	0.01			0.14			0.01			c0.21		
v/c Ratio	0.01	0.32		0.25	0.41		0.05	0.76		0.81	0.45	
Uniform Delay, d1	6.8	8.3		7.8	8.8		20.6	25.4		25.9	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4		1.4	0.6		0.1	6.8		26.7	0.7	
Delay (s)	6.8	8.7		9.3	9.5		20.7	32.3		52.6	23.8	
Level of Service	A	A		A	A		C	C		D	C	
Approach Delay (s)		8.7			9.4			31.8			34.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	545	3	28	691	2	20
Future Volume (vph)	545	3	28	691	2	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.850
Flt Protected				0.998	0.950	
Satd. Flow (prot)	3496	0	0	3493	1750	1566
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	3496	0	0	3493	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	139.2			131.8	226.2	
Travel Time (s)	10.0			9.5	16.3	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	606	3	31	768	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	609	0	0	799	2	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	545	3	28	691	2	20
Future Volume (Veh/h)	545	3	28	691	2	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	606	3	31	768	2	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				268		
pX, platoon unblocked					0.91	
vC, conflicting volume			614		1064	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			614		864	314
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	97
cM capacity (veh/h)			957		255	675

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	404	205	287	512	2	22
Volume Left	0	0	31	0	2	0
Volume Right	0	3	0	0	0	22
cSH	1700	1700	957	1700	255	675
Volume to Capacity	0.24	0.12	0.03	0.30	0.01	0.03
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.2	0.8
Control Delay (s)	0.0	0.0	1.3	0.0	19.2	10.5
Lane LOS			A		C	B
Approach Delay (s)	0.0		0.5		11.2	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	565	0	29	712	0	20
Future Volume (vph)	565	0	29	712	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	0.0		30.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.850
Flt Protected				0.998		
Satd. Flow (prot)	3500	0	0	3493	1842	1566
Flt Permitted				0.998		
Satd. Flow (perm)	3500	0	0	3493	1842	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	131.8			136.3	271.1	
Travel Time (s)	9.5			9.8	19.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	628	0	32	791	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	628	0	0	823	0	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

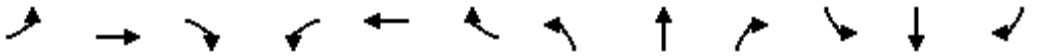
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	565	0	29	712	0	20
Future Volume (Veh/h)	565	0	29	712	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	628	0	32	791	0	22
Pedestrians	5			5	5	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.0			1.0	1.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				136		
pX, platoon unblocked					0.88	
vC, conflicting volume			633		1098	324
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			633		829	324
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	97
cM capacity (veh/h)			941		259	665

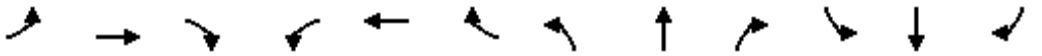
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	419	209	296	527	0	22
Volume Left	0	0	32	0	0	0
Volume Right	0	0	0	0	0	22
cSH	1700	1700	941	1700	1700	665
Volume to Capacity	0.25	0.12	0.03	0.31	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	1.3	0.0	0.0	10.6
Lane LOS			A		A	B
Approach Delay (s)	0.0		0.5		10.6	
Approach LOS					B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1332	27	0	1836	100	0	0	18	0	0	581
Future Volume (vph)	0	1332	27	0	1836	100	0	0	18	0	0	581
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3489	0	0	3500	1566	0	0	1593	0	0	1593
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		119.4			229.9			118.2			144.7	
Travel Time (s)		7.2			13.8			8.5			10.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1480	30	0	2040	111	0	0	20	0	0	646
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1510	0	0	2040	111	0	0	20	0	0	646
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

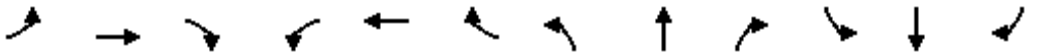
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.9%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1332	27	0	1836	100	0	0	18	0	0	581
Future Volume (Veh/h)	0	1332	27	0	1836	100	0	0	18	0	0	581
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1480	30	0	2040	111	0	0	20	0	0	646
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			230							
pX, platoon unblocked	0.45			0.76			0.57	0.57	0.76	0.57	0.57	0.45
vC, conflicting volume	2156			1515			3171	3656	765	2810	3560	1030
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1144			1051			1431	2276	67	802	2109	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			0	100	97	100	100	0
cM capacity (veh/h)	274			499			0	22	742	151	29	488

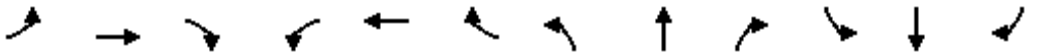
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	987	523	1020	1020	111	20	646
Volume Left	0	0	0	0	0	0	0
Volume Right	0	30	0	0	111	20	646
cSH	1700	1700	1700	1700	1700	742	488
Volume to Capacity	0.58	0.31	0.60	0.60	0.07	0.03	1.32
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.6	214.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.0	183.3
Lane LOS						A	F
Approach Delay (s)	0.0		0.0			10.0	183.3
Approach LOS						A	F

Intersection Summary				
Average Delay	27.4			
Intersection Capacity Utilization	93.9%	ICU Level of Service	F	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	797	26	0	900	11	0	0	105	0	0	18
Future Volume (vph)	0	797	26	0	900	11	0	0	105	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.998				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3482	0	0	3493	0	0	0	1593	0	0	1593
Flt Permitted												
Satd. Flow (perm)	0	3482	0	0	3493	0	0	0	1593	0	0	1593
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.4			223.5			492.2			141.1	
Travel Time (s)		8.9			16.1			35.4			10.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	886	29	0	1000	12	0	0	117	0	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	915	0	0	1012	0	0	0	117	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

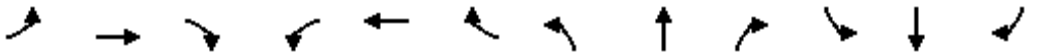
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	797	26	0	900	11	0	0	105	0	0	18
Future Volume (Veh/h)	0	797	26	0	900	11	0	0	105	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	886	29	0	1000	12	0	0	117	0	0	20
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		123			223							
pX, platoon unblocked	0.88			0.90			0.93	0.93	0.90	0.93	0.93	0.88
vC, conflicting volume	1017			920			1430	1922	468	1576	1931	516
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	743			694			833	1364	193	990	1373	173
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	97
cM capacity (veh/h)	752			805			232	135	729	154	133	731

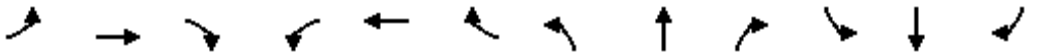
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	591	324	667	345	117	20
Volume Left	0	0	0	0	0	0
Volume Right	0	29	0	12	117	20
cSH	1700	1700	1700	1700	729	731
Volume to Capacity	0.35	0.19	0.39	0.20	0.16	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.3	0.6
Control Delay (s)	0.0	0.0	0.0	0.0	10.9	10.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.9	10.1
Approach LOS					B	B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	37.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	345	0	0	74	0	2756	109	0	2664	312
Future Volume (vph)	0	0	345	0	0	74	0	2756	109	0	2664	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		30.0
Storage Lanes	0		1	0		1	0		1	0		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1593	0	0	1593	0	3500	1566	0	3500	1566
Flt Permitted												
Satd. Flow (perm)	0	0	1593	0	0	1593	0	3500	1566	0	3500	1566
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		168.4			345.0			280.2			182.8	
Travel Time (s)		12.1			24.8			16.8			11.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	383	0	0	82	0	3062	121	0	2960	347
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	383	0	0	82	0	3062	121	0	2960	347
Enter Blocked Intersection	No	No	No	No	No	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			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

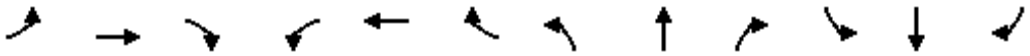
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 102.2%		ICU Level of Service G	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	345	0	0	74	0	2756	109	0	2664	312
Future Volume (Veh/h)	0	0	345	0	0	74	0	2756	109	0	2664	312
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	383	0	0	82	0	3062	121	0	2960	347
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								280			183	
pX, platoon unblocked	0.79	0.79	0.68	0.79	0.79	0.63	0.68			0.63		
vC, conflicting volume	4583	6153	1490	4935	6379	1541	3312			3188		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3187	5174	783	3633	5460	688	3458			3298		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	0	0	100	66	100			100		
cM capacity (veh/h)	2	0	227	0	0	243	50			54		

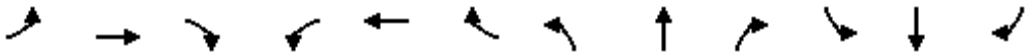
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	383	82	1531	1531	121	1480	1480	347
Volume Left	0	0	0	0	0	0	0	0
Volume Right	383	82	0	0	121	0	0	347
cSH	227	243	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.69	0.34	0.90	0.90	0.07	0.87	0.87	0.20
Queue Length 95th (m)	191.5	10.8	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	365.2	27.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	D						
Approach Delay (s)	365.2	27.2	0.0			0.0		
Approach LOS	F	D						

Intersection Summary				
Average Delay	20.4			
Intersection Capacity Utilization	102.2%	ICU Level of Service	G	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
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
Ped Bike Factor												
Frt		0.979			0.955			0.998			0.935	
Flt Protected		0.964			0.992			0.977			0.998	
Satd. Flow (prot)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Flt Permitted		0.964			0.992			0.977			0.998	
Satd. Flow (perm)	0	1738	0	0	1745	0	0	1796	0	0	1719	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			275.5			250.4			181.9	
Travel Time (s)		24.8			19.8			18.0			13.1	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	12	20	6	18	12	113	120	4	8	110	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	129	0	0	36	0	0	237	0	0	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Future Volume (vph)	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	12	20	6	18	12	113	120	4	8	110	110

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	129	36	237	228
Volume Left (vph)	97	6	113	8
Volume Right (vph)	20	12	4	110
Hadj (s)	0.09	-0.13	0.12	-0.25
Departure Headway (s)	5.1	5.1	4.7	4.4
Degree Utilization, x	0.18	0.05	0.31	0.28
Capacity (veh/h)	641	631	731	779
Control Delay (s)	9.3	8.3	9.8	9.1
Approach Delay (s)	9.3	8.3	9.8	9.1
Approach LOS	A	A	A	A

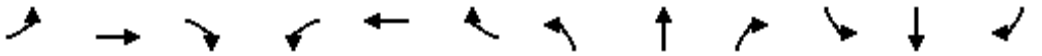
Intersection Summary				
Delay	9.4			
Level of Service	A			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

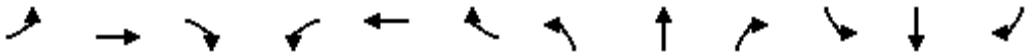
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Future Vol, veh/h	87	11	18	5	16	11	102	108	4	7	99	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	12	20	6	18	12	113	120	4	8	110	110
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.3	9.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	75%	16%	3%
Vol Thru, %	50%	9%	50%	48%
Vol Right, %	2%	16%	34%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	116	32	205
LT Vol	102	87	5	7
Through Vol	108	11	16	99
RT Vol	4	18	11	99
Lane Flow Rate	238	129	36	228
Geometry Grp	1	1	1	1
Degree of Util (X)	0.309	0.182	0.049	0.275
Departure Headway (Hd)	4.685	5.083	4.994	4.348
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	702	713	825
Service Time	2.725	3.135	3.056	2.387
HCM Lane V/C Ratio	0.311	0.184	0.05	0.276
HCM Control Delay	9.8	9.3	8.3	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.7	0.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	955	127	82	1715	50	117	16	43	201	47	104
Future Volume (vph)	248	955	127	82	1715	50	117	16	43	201	47	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	50.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.996			0.891			0.896	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3500	1566	1750	3483	0	1750	1618	0	1750	1629	0
Flt Permitted	0.088			0.222			0.651			0.714		
Satd. Flow (perm)	162	3500	1515	408	3483	0	1195	1618	0	1310	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100		5			48			5	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		229.9			1297.0			181.9			123.7	
Travel Time (s)		13.8			77.8			13.1			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	276	1061	141	91	1906	56	130	18	48	223	52	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	1061	141	91	1962	0	130	66	0	223	168	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	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	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	38.1	38.1	38.1	38.1	38.1		38.5	38.5		38.5	38.5	
Total Split (s)	51.0	51.0	51.0	51.0	51.0		39.0	39.0		39.0	39.0	
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%		43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	44.9	44.9	44.9	44.9	44.9		32.5	32.5		32.5	32.5	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	None	None		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)	19.0	19.0	19.0	19.0	19.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5		5	5	
Act Effct Green (s)	45.3	45.3	45.3	45.3	45.3		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.59	0.59	0.59	0.59	0.59		0.24	0.24		0.24	0.24	
v/c Ratio	2.91	0.51	0.15	0.38	0.95		0.45	0.15		0.70	0.42	
Control Delay	900.6	11.6	4.1	17.1	29.2		28.8	10.0		38.0	26.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	900.6	11.6	4.1	17.1	29.2		28.8	10.0		38.0	26.1	
LOS	F	B	A	B	C		C	B		D	C	
Approach Delay		176.9			28.7			22.5			32.9	
Approach LOS		F			C			C			C	
Queue Length 50th (m)	~56.1	41.3	2.2	6.1	121.7		15.9	2.0		29.2	19.7	
Queue Length 95th (m)	#119.9	84.6	12.5	24.3	#250.1		30.0	10.1		50.1	34.9	
Internal Link Dist (m)		205.9			1273.0			157.9			99.7	
Turn Bay Length (m)	30.0		30.0	50.0			80.0			40.0		
Base Capacity (vph)	95	2065	935	240	2057		510	718		559	698	
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	2.91	0.51	0.15	0.38	0.95		0.25	0.09		0.40	0.24	

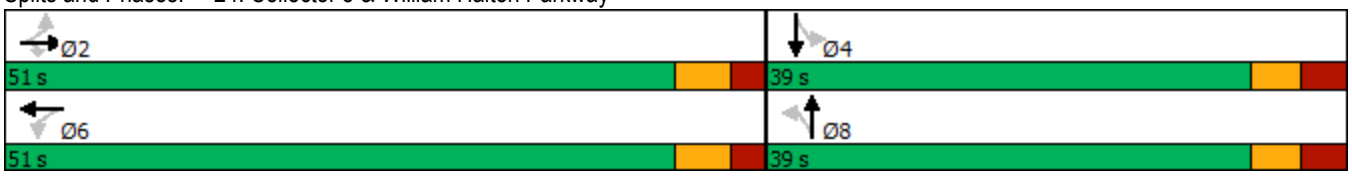
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.7			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.91			
Intersection Signal Delay: 82.0		Intersection LOS: F	
Intersection Capacity Utilization 106.0%		ICU Level of Service G	

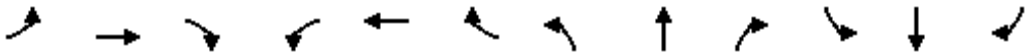
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 24: Collector 5 & William Halton Parkway

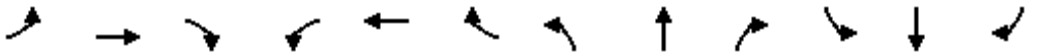




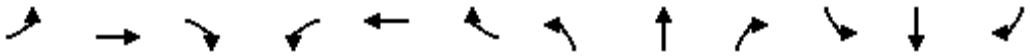
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	955	127	82	1715	50	117	16	43	201	47	104
Future Volume (vph)	248	955	127	82	1715	50	117	16	43	201	47	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3500	1518	1747	3482		1745	1617		1744	1628	
Flt Permitted	0.09	1.00	1.00	0.22	1.00		0.65	1.00		0.71	1.00	
Satd. Flow (perm)	163	3500	1518	409	3482		1196	1617		1311	1628	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	276	1061	141	91	1906	56	130	18	48	223	52	116
RTOR Reduction (vph)	0	0	41	0	2	0	0	36	0	0	4	0
Lane Group Flow (vph)	276	1061	100	91	1960	0	130	30	0	223	164	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	45.3	45.3	45.3	45.3	45.3		18.7	18.7		18.7	18.7	
Effective Green, g (s)	45.3	45.3	45.3	45.3	45.3		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.59	0.59	0.59	0.59	0.59		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1		6.5	6.5		6.5	6.5	
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)	96	2069	897	241	2059		291	394		320	397	
v/s Ratio Prot		0.30			0.56			0.02			0.10	
v/s Ratio Perm	c1.70		0.07	0.22			0.11			c0.17		
v/c Ratio	2.88	0.51	0.11	0.38	0.95		0.45	0.08		0.70	0.41	
Uniform Delay, d1	15.6	9.2	6.8	8.2	14.6		24.6	22.3		26.4	24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	871.6	0.9	0.3	1.0	10.7		1.1	0.1		6.5	0.7	
Delay (s)	887.2	10.1	7.1	9.2	25.3		25.7	22.4		32.8	25.0	
Level of Service	F	B	A	A	C		C	C		C	C	
Approach Delay (s)		173.6			24.6			24.6			29.5	
Approach LOS		F			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	78.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.23		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	787	17	180	865	11	18	95	118	14	117	28
Future Volume (vph)	98	787	17	180	865	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Frt		0.997			0.998			0.917			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3487	0	1750	3492	0	1750	1670	0	1750	1782	0
Flt Permitted	0.268			0.298			0.653			0.464		
Satd. Flow (perm)	493	3487	0	548	3492	0	1198	1670	0	852	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			2			72			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		223.5			463.9			185.3			250.4	
Travel Time (s)		16.1			33.4			13.3			18.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	874	19	200	961	12	20	106	131	16	130	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	893	0	200	973	0	20	237	0	16	161	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.9	31.9		31.9	31.9		33.1	33.1		33.1	33.1	
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	
Maximum Green (s)	50.1	50.1		50.1	50.1		27.9	27.9		27.9	27.9	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
v/c Ratio	0.34	0.39		0.55	0.42		0.09	0.65		0.10	0.47	
Control Delay	11.5	7.6		17.1	7.9		25.1	27.9		25.7	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.5	7.6		17.1	7.9		25.1	27.9		25.7	29.4	
LOS	B	A		B	A		C	C		C	C	
Approach Delay		8.0			9.5			27.7			29.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	5.6	25.1		12.6	28.2		2.4	21.7		1.9	19.0	
Queue Length 95th (m)	22.7	57.5		#52.9	64.2		7.5	42.0		6.6	34.7	
Internal Link Dist (m)		199.5			439.9			161.3			226.4	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	324	2298		361	2301		438	656		311	660	
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	0.34	0.39		0.55	0.42		0.05	0.36		0.05	0.24	

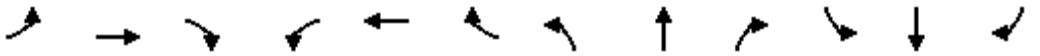
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.0		Intersection LOS: B	
Intersection Capacity Utilization 63.3%		ICU Level of Service B	

Analysis Period (min) 15

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

Splits and Phases: 25: Collector 5 & Burnhamthorpe Road

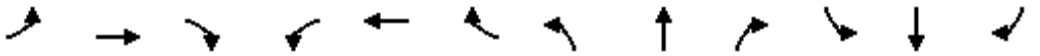




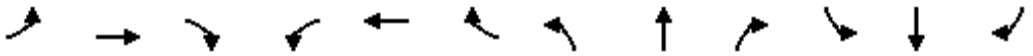
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	787	17	180	865	11	18	95	118	14	117	28
Future Volume (vph)	98	787	17	180	865	11	18	95	118	14	117	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1747	3486		1746	3492		1744	1669		1745	1781	
Flt Permitted	0.27	1.00		0.30	1.00		0.65	1.00		0.46	1.00	
Satd. Flow (perm)	493	3486		547	3492		1198	1669		853	1781	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	874	19	200	961	12	20	106	131	16	130	31
RTOR Reduction (vph)	0	1	0	0	1	0	0	59	0	0	11	0
Lane Group Flow (vph)	109	892	0	200	972	0	20	178	0	16	150	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Effective Green, g (s)	50.6	50.6		50.6	50.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	325	2299		360	2303		220	306		156	327	
v/s Ratio Prot		0.26			0.28			c0.11			0.08	
v/s Ratio Perm	0.22			c0.37			0.02			0.02		
v/c Ratio	0.34	0.39		0.56	0.42		0.09	0.58		0.10	0.46	
Uniform Delay, d1	5.7	6.0		7.0	6.2		26.0	28.6		26.0	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	0.5		6.1	0.6		0.2	2.8		0.3	1.0	
Delay (s)	8.5	6.5		13.1	6.7		26.2	31.4		26.3	28.9	
Level of Service	A	A		B	A		C	C		C	C	
Approach Delay (s)		6.7			7.8			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	76.7	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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2649	44	131	2656	80
Future Volume (vph)	51	5	26	62	7	62	27	2649	44	131	2656	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98		0.99	0.98		1.00	1.00		1.00	1.00	
Frt		0.876			0.866			0.998			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1585	0	1750	1564	0	1750	3491	0	1750	3482	0
Flt Permitted	0.707			0.734			0.950			0.950		
Satd. Flow (perm)	1296	1585	0	1345	1564	0	1750	3491	0	1750	3482	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			69			2			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		117.5			110.5			259.2			230.0	
Travel Time (s)		8.5			8.0			15.6			13.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2943	49	146	2951	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	35	0	69	77	0	30	2992	0	146	3040	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		11.0	33.4		11.0	33.4	
Total Split (s)	39.0	39.0		39.0	39.0		11.0	70.0		11.0	70.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%		9.2%	58.3%		9.2%	58.3%	
Maximum Green (s)	32.5	32.5		32.5	32.5		7.0	63.6		7.0	63.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		1.0	2.7		1.0	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Lead/Lag							Lead	Lag		Lead	Lag	
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	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			20.0			20.0	
Pedestrian Calls (#/hr)	5	5		5	5			5			5	
Act Effct Green (s)	14.3	14.3		14.3	14.3		7.0	67.0		7.0	73.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.07	0.66		0.07	0.72	
v/c Ratio	0.31	0.14		0.37	0.28		0.25	1.30		1.21	1.22	
Control Delay	43.0	16.6		44.3	13.2		53.4	160.5		191.4	121.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.0	16.6		44.3	13.2		53.4	160.5		191.4	121.7	
LOS	D	B		D	B		D	F		F	F	
Approach Delay		33.0			27.9			159.5			124.9	
Approach LOS		C			C			F			F	
Queue Length 50th (m)	10.3	1.0		12.5	1.4		5.5	~390.2		~33.1	~401.0	
Queue Length 95th (m)	21.3	8.9		24.8	12.8		16.7	#572.3		#87.2	#585.0	
Internal Link Dist (m)		93.5			86.5			235.2			206.0	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	416	529		432	549		121	2297		121	2498	
Starvation Cap Reductn	0	0		0	0		0	6		0	25	
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	0.14	0.07		0.16	0.14		0.25	1.31		1.21	1.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.8			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay: 137.6		Intersection LOS: F	
Intersection Capacity Utilization 108.6%		ICU Level of Service G	

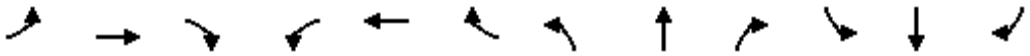
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 26: Trafalgar Road & Local 6

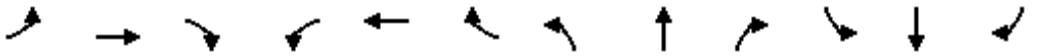




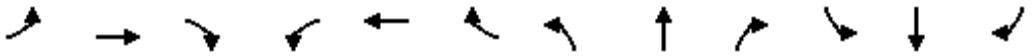
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	5	26	62	7	62	27	2649	44	131	2656	80
Future Volume (vph)	51	5	26	62	7	62	27	2649	44	131	2656	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1578		1742	1557		1750	3489		1750	3481	
Flt Permitted	0.71	1.00		0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1296	1578		1346	1557		1750	3489		1750	3481	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	6	29	69	8	69	30	2943	49	146	2951	89
RTOR Reduction (vph)	0	26	0	0	61	0	0	1	0	0	1	0
Lane Group Flow (vph)	57	9	0	69	16	0	30	2991	0	146	3039	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.2	12.2		12.2	12.2		4.1	68.8		7.0	71.7	
Effective Green, g (s)	12.2	12.2		12.2	12.2		4.1	68.8		7.0	71.7	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.04	0.66		0.07	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	183		156	181		68	2288		116	2379	
v/s Ratio Prot		0.01			0.01		0.02	0.86		c0.08	c0.87	
v/s Ratio Perm	0.04			c0.05								
v/c Ratio	0.38	0.05		0.44	0.09		0.44	1.31		1.26	1.28	
Uniform Delay, d1	42.9	41.2		43.2	41.4		49.3	18.1		49.0	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.1		2.0	0.2		4.5	141.6		168.5	128.2	
Delay (s)	44.5	41.3		45.2	41.6		53.8	159.6		217.5	144.8	
Level of Service	D	D		D	D		D	F		F	F	
Approach Delay (s)		43.3			43.3			158.6			148.1	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	149.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	16.9
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2600	241	145	2485	116
Future Volume (vph)	87	112	140	200	100	32	198	2600	241	145	2485	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00		0.98	1.00		0.96	1.00		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	3500	1566	1750	3500	1566
Flt Permitted	0.685			0.513			0.950			0.950		
Satd. Flow (perm)	1262	1842	1532	941	1842	1534	1750	3500	1511	1750	3500	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156			67			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		219.8			129.6			268.7			259.2	
Travel Time (s)		15.8			9.3			16.1			15.6	
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2889	268	161	2761	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	124	156	222	111	36	220	2889	268	161	2761	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	11.0	50.0	50.0	13.0	58.0	58.0	12.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	9.2%	41.7%	41.7%	10.8%	48.3%	48.3%	10.0%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	7.0	43.5	43.5	9.0	51.6	51.6	8.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	17.1	17.1	17.1	30.6	28.1	28.1	24.4	54.7	54.7	20.3	50.6	50.6
Actuated g/C Ratio	0.14	0.14	0.14	0.26	0.23	0.23	0.20	0.46	0.46	0.17	0.42	0.42
v/c Ratio	0.54	0.47	0.44	0.77	0.26	0.09	0.62	1.81	0.36	0.55	1.87	0.19
Control Delay	56.8	51.2	10.0	56.7	36.9	1.9	54.5	389.5	16.6	55.2	419.8	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	51.2	10.0	56.7	36.9	1.9	54.5	389.5	16.6	55.2	419.8	6.7
LOS	E	D	A	E	D	A	D	F	B	E	F	A
Approach Delay		35.6			45.4			338.1			383.1	
Approach LOS		D			D			F			F	
Queue Length 50th (m)	22.1	27.9	0.0	46.1	22.0	0.0	55.5	~528.3	21.3	34.8	~521.7	3.3
Queue Length 95th (m)	33.3	39.3	15.8	56.6	30.8	2.1	m32.2	m#221.1	m12.5	#91.2	#560.4	14.8
Internal Link Dist (m)		195.8			105.6			244.7			235.2	
Turn Bay Length (m)	60.0		40.0	85.0		30.0	90.0		40.0	70.0		30.0
Base Capacity (vph)	341	498	528	287	667	598	355	1594	745	295	1475	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.30	0.77	0.17	0.06	0.62	1.81	0.36	0.55	1.87	0.19

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 14 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.87	
Intersection Signal Delay: 326.3	Intersection LOS: F

Intersection Capacity Utilization 113.1%	ICU Level of Service H
Analysis Period (min) 15	

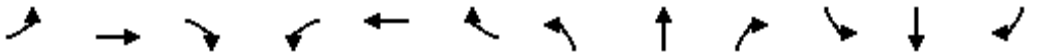
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: Trafalgar Road & Settlers Road

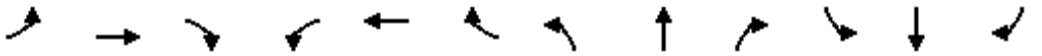




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	112	140	200	100	32	198	2600	241	145	2485	116
Future Volume (vph)	87	112	140	200	100	32	198	2600	241	145	2485	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	1842	1526	1746	1842	1531	1750	3500	1511	1750	3500	1511
Flt Permitted	0.69	1.00	1.00	0.51	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1263	1842	1526	943	1842	1531	1750	3500	1511	1750	3500	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	124	156	222	111	36	220	2889	268	161	2761	129
RTOR Reduction (vph)	0	0	134	0	0	28	0	0	57	0	0	61
Lane Group Flow (vph)	97	124	22	222	111	8	220	2889	211	161	2761	68
Confl. Peds. (#/hr)			5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	17.1	17.1	17.1	28.1	28.1	28.1	24.4	54.7	54.7	20.3	50.6	50.6
Effective Green, g (s)	17.1	17.1	17.1	28.1	28.1	28.1	24.4	54.7	54.7	20.3	50.6	50.6
Actuated g/C Ratio	0.14	0.14	0.14	0.23	0.23	0.23	0.20	0.46	0.46	0.17	0.42	0.42
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	262	217	267	431	358	355	1595	688	296	1475	637
v/s Ratio Prot		0.07		c0.05	0.06		c0.13	c0.83		0.09	0.79	
v/s Ratio Perm	0.08		0.01	c0.15		0.01			0.14			0.05
v/c Ratio	0.54	0.47	0.10	0.83	0.26	0.02	0.62	1.81	0.31	0.54	1.87	0.11
Uniform Delay, d1	47.8	47.3	44.8	43.3	37.4	35.4	43.6	32.6	20.7	45.6	34.7	21.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.22	0.88	1.28	1.00	1.00	1.00
Incremental Delay, d2	3.3	1.4	0.2	19.3	0.3	0.0	0.3	365.3	0.1	2.0	394.9	0.3
Delay (s)	51.1	48.7	45.0	62.6	37.8	35.4	53.6	394.0	26.5	47.7	429.6	21.4
Level of Service	D	D	D	E	D	D	D	F	C	D	F	C
Approach Delay (s)		47.8			52.5			342.7			392.2	
Approach LOS		D			D			F			F	

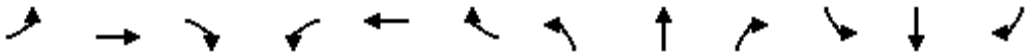
Intersection Summary			
HCM 2000 Control Delay	333.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	129	32	104	126	33	29	289	90	35	213	7
Future Volume (vph)	9	129	32	104	126	33	29	289	90	35	213	7
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
Ped Bike Factor												
Frt		0.974			0.983			0.970			0.996	
Flt Protected		0.997			0.981			0.996			0.993	
Satd. Flow (prot)	0	1789	0	0	1776	0	0	1780	0	0	1822	0
Flt Permitted		0.997			0.981			0.996			0.993	
Satd. Flow (perm)	0	1789	0	0	1776	0	0	1780	0	0	1822	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		249.4			219.8			429.8			477.1	
Travel Time (s)		18.0			15.8			30.9			34.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	143	36	116	140	37	32	321	100	39	237	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	293	0	0	453	0	0	284	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	129	32	104	126	33	29	289	90	35	213	7
Future Volume (vph)	9	129	32	104	126	33	29	289	90	35	213	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	143	36	116	140	37	32	321	100	39	237	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	189	293	453	284
Volume Left (vph)	10	116	32	39
Volume Right (vph)	36	37	100	8
Hadj (s)	-0.07	0.04	-0.08	0.04
Departure Headway (s)	7.1	6.8	6.2	6.7
Degree Utilization, x	0.37	0.56	0.78	0.53
Capacity (veh/h)	440	473	549	485
Control Delay (s)	14.2	18.1	27.8	16.9
Approach Delay (s)	14.2	18.1	27.8	16.9
Approach LOS	B	C	D	C

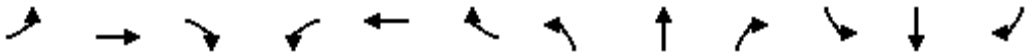
Intersection Summary				
Delay	20.8			
Level of Service	C			
Intersection Capacity Utilization	60.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	20.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	129	32	104	126	33	29	289	90	35	213	7
Future Vol, veh/h	9	129	32	104	126	33	29	289	90	35	213	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	143	36	116	140	37	32	321	100	39	237	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

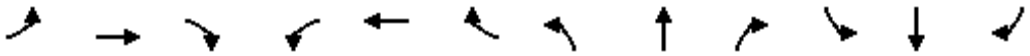
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	17.9	27.2	16.8
HCM LOS	B	C	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	5%	40%	14%
Vol Thru, %	71%	76%	48%	84%
Vol Right, %	22%	19%	13%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	408	170	263	255
LT Vol	29	9	104	35
Through Vol	289	129	126	213
RT Vol	90	32	33	7
Lane Flow Rate	453	189	292	283
Geometry Grp	1	1	1	1
Degree of Util (X)	0.773	0.366	0.549	0.521
Departure Headway (Hd)	6.137	6.969	6.764	6.616
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	585	512	529	541
Service Time	4.211	5.067	4.85	4.702
HCM Lane V/C Ratio	0.774	0.369	0.552	0.523
HCM Control Delay	27.2	14.1	17.9	16.8
HCM Lane LOS	D	B	C	C
HCM 95th-tile Q	7.1	1.7	3.3	3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
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
Ped Bike Factor												
Frt		0.967			0.989			0.990			0.948	
Flt Protected		0.986			0.995			0.994			0.998	
Satd. Flow (prot)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Flt Permitted		0.986			0.995			0.994			0.998	
Satd. Flow (perm)	0	1756	0	0	1813	0	0	1813	0	0	1743	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		129.6			125.1			416.4			492.2	
Travel Time (s)		9.3			9.0			30.0			35.4	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	146	236	122	22	193	19	27	191	17	13	152	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	504	0	0	234	0	0	235	0	0	267	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Future Volume (vph)	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	146	236	122	22	193	19	27	191	17	13	152	102

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	504	234	235	267
Volume Left (vph)	146	22	27	13
Volume Right (vph)	122	19	17	102
Hadj (s)	-0.05	0.00	0.01	-0.19
Departure Headway (s)	6.2	6.9	7.1	6.8
Degree Utilization, x	0.87	0.45	0.46	0.50
Capacity (veh/h)	560	472	465	488
Control Delay (s)	36.7	15.3	15.9	16.4
Approach Delay (s)	36.7	15.3	15.9	16.4
Approach LOS	E	C	C	C

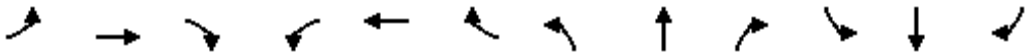
Intersection Summary				
Delay	24.3			
Level of Service	C			
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	23.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Future Vol, veh/h	131	212	110	20	174	17	24	172	15	12	137	92
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	236	122	22	193	19	27	191	17	13	152	102
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

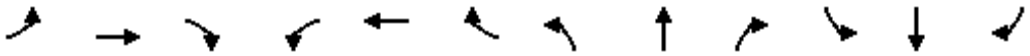
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	35.6	15.2	15.8	16.3
HCM LOS	E	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	29%	9%	5%
Vol Thru, %	82%	47%	82%	57%
Vol Right, %	7%	24%	8%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	453	211	241
LT Vol	24	131	20	12
Through Vol	172	212	174	137
RT Vol	15	110	17	92
Lane Flow Rate	234	503	234	268
Geometry Grp	1	1	1	1
Degree of Util (X)	0.454	0.857	0.441	0.498
Departure Headway (Hd)	6.979	6.127	6.774	6.7
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	513	589	527	533
Service Time	5.075	4.201	4.87	4.792
HCM Lane V/C Ratio	0.456	0.854	0.444	0.503
HCM Control Delay	15.8	35.6	15.2	16.3
HCM Lane LOS	C	E	C	C
HCM 95th-tile Q	2.3	9.4	2.2	2.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
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
Ped Bike Factor												
Frt		0.981			0.967			0.982			0.940	
Flt Protected		0.982			0.993			0.992			0.995	
Satd. Flow (prot)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Flt Permitted		0.982			0.993			0.992			0.995	
Satd. Flow (perm)	0	1775	0	0	1769	0	0	1794	0	0	1723	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		125.1			190.9			160.4			138.9	
Travel Time (s)		9.0			13.7			11.5			10.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	131	38	31	142	57	23	102	19	23	112	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	0	0	230	0	0	144	0	0	242	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Future Volume (vph)	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	97	131	38	31	142	57	23	102	19	23	112	107

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	266	230	144	242
Volume Left (vph)	97	31	23	23
Volume Right (vph)	38	57	19	107
Hadj (s)	0.02	-0.09	-0.01	-0.21
Departure Headway (s)	5.4	5.3	5.7	5.3
Degree Utilization, x	0.40	0.34	0.23	0.36
Capacity (veh/h)	621	620	558	620
Control Delay (s)	11.9	11.1	10.3	11.2
Approach Delay (s)	11.9	11.1	10.3	11.2
Approach LOS	B	B	B	B

Intersection Summary				
Delay	11.2			
Level of Service	B			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Future Vol, veh/h	87	118	34	28	128	51	21	92	17	21	101	96
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	131	38	31	142	57	23	102	19	23	112	107
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	11.1	10.3	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	36%	14%	10%
Vol Thru, %	71%	49%	62%	46%
Vol Right, %	13%	14%	25%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	239	207	218
LT Vol	21	87	28	21
Through Vol	92	118	128	101
RT Vol	17	34	51	96
Lane Flow Rate	144	266	230	242
Geometry Grp	1	1	1	1
Degree of Util (X)	0.226	0.395	0.339	0.355
Departure Headway (Hd)	5.64	5.359	5.313	5.278
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	636	672	676	681
Service Time	3.689	3.399	3.355	3.322
HCM Lane V/C Ratio	0.226	0.396	0.34	0.355
HCM Control Delay	10.3	11.9	11.1	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.9	1.9	1.5	1.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	21	3017	101	0	2797
Future Volume (vph)	0	21	3017	101	0	2797
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.865	0.995			
Flt Protected						
Satd. Flow (prot)	0	1593	3482	0	0	3500
Flt Permitted						
Satd. Flow (perm)	0	1593	3482	0	0	3500
Link Speed (k/h)	50		60			60
Link Distance (m)	98.5		148.7			268.7
Travel Time (s)	7.1		8.9			16.1
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	23	3352	112	0	3108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	3464	0	0	3108
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

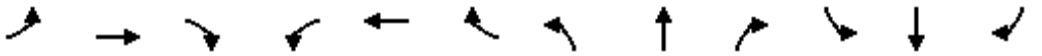
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		



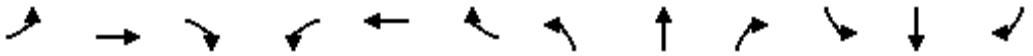
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	21	3017	101	0	2797
Future Volume (Veh/h)	0	21	3017	101	0	2797
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	3352	112	0	3108
Pedestrians	5		5			5
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.0		1.0			1.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			149			269
pX, platoon unblocked	0.67	0.47			0.47	
vC, conflicting volume	4972	1742			3469	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3185	314			4001	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			100	
cM capacity (veh/h)	5	316			20	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	23	2235	1229	1554	1554
Volume Left	0	0	0	0	0
Volume Right	23	0	112	0	0
cSH	316	1700	1700	1700	1700
Volume to Capacity	0.07	1.31	0.72	0.91	0.91
Queue Length 95th (m)	1.8	0.0	0.0	0.0	0.0
Control Delay (s)	17.3	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	17.3	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	3078	135	91	2707	4
Future Volume (vph)	19	99	152	146	92	65	222	3078	135	91	2707	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	3500	1566	1750	3500	1566
Flt Permitted	0.691			0.539			0.950			0.950		
Satd. Flow (perm)	1267	1842	1532	988	1842	1533	1750	3500	1511	1750	3500	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162			72			105			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		193.0			130.2			1233.0			148.7	
Travel Time (s)		13.9			9.4			74.0			8.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	3420	150	101	3008	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	110	169	162	102	72	247	3420	150	101	3008	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)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	11.0	38.5	38.5	11.0	33.4	33.4	11.0	33.4	33.4
Total Split (s)	39.0	39.0	39.0	10.0	49.0	49.0	14.0	60.0	60.0	11.0	57.0	57.0
Total Split (%)	32.5%	32.5%	32.5%	8.3%	40.8%	40.8%	11.7%	50.0%	50.0%	9.2%	47.5%	47.5%
Maximum Green (s)	32.5	32.5	32.5	6.0	42.5	42.5	10.0	53.6	53.6	7.0	50.6	50.6
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	1.0	3.2	3.2	1.0	2.7	2.7	1.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-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)	25.0	25.0	25.0		25.0	25.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5	5		5	5
Act Effct Green (s)	15.9	15.9	15.9	28.4	25.9	25.9	26.6	64.6	64.6	12.6	50.6	50.6
Actuated g/C Ratio	0.13	0.13	0.13	0.24	0.22	0.22	0.22	0.54	0.54	0.10	0.42	0.42
v/c Ratio	0.13	0.45	0.49	0.60	0.26	0.19	0.64	1.82	0.17	0.55	2.04	0.01
Control Delay	43.2	51.9	11.9	47.2	38.6	8.0	52.2	392.3	6.4	47.1	491.0	0.0
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	43.2	51.9	11.9	47.2	38.6	8.0	52.2	392.3	6.4	47.1	491.0	0.0
LOS	D	D	B	D	D	A	D	F	A	D	F	A
Approach Delay		28.7			36.2			355.1			475.9	
Approach LOS		C			D			F			F	
Queue Length 50th (m)	4.6	25.1	1.5	33.5	20.9	0.0	51.0	~633.0	4.7	24.5	~577.6	0.0
Queue Length 95th (m)	10.1	35.4	17.5	42.6	29.2	9.7	#134.0	#714.4	18.0	m16.1	m#265.8	m0.0
Internal Link Dist (m)		169.0			106.2			1209.0			124.7	
Turn Bay Length (m)	30.0		50.0	90.0		30.0	120.0		30.0	30.0		30.0
Base Capacity (vph)	343	498	533	272	652	589	387	1884	861	183	1475	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.22	0.32	0.60	0.16	0.12	0.64	1.82	0.17	0.55	2.04	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.04	
Intersection Signal Delay: 377.7	Intersection LOS: F

Intersection Capacity Utilization 121.6%	ICU Level of Service H
Analysis Period (min) 15	

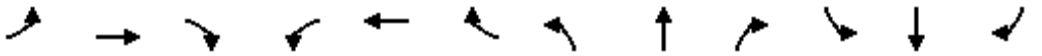
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Trafalgar Road & Marvin Avenue

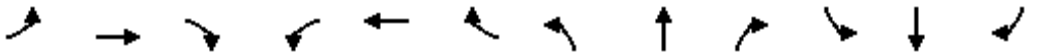




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	99	152	146	92	65	222	3078	135	91	2707	4
Future Volume (vph)	19	99	152	146	92	65	222	3078	135	91	2707	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1741	1842	1525	1746	1842	1530	1750	3500	1512	1750	3500	1511
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1267	1842	1525	990	1842	1530	1750	3500	1512	1750	3500	1511
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	110	169	162	102	72	247	3420	150	101	3008	4
RTOR Reduction (vph)	0	0	141	0	0	56	0	0	48	0	0	2
Lane Group Flow (vph)	21	110	28	162	102	16	247	3420	102	101	3008	2
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	15.9	15.9	15.9	25.9	25.9	25.9	26.6	64.6	64.6	12.6	50.6	50.6
Effective Green, g (s)	15.9	15.9	15.9	25.9	25.9	25.9	26.6	64.6	64.6	12.6	50.6	50.6
Actuated g/C Ratio	0.13	0.13	0.13	0.22	0.22	0.22	0.22	0.54	0.54	0.10	0.42	0.42
Clearance Time (s)	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.4	6.4	4.0	6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	244	202	251	397	330	387	1884	813	183	1475	637
v/s Ratio Prot		0.06		c0.03	0.06		c0.14	c0.98		0.06	c0.86	
v/s Ratio Perm	0.02		0.02	c0.11		0.01			0.07			0.00
v/c Ratio	0.13	0.45	0.14	0.65	0.26	0.05	0.64	1.82	0.12	0.55	2.04	0.00
Uniform Delay, d1	45.9	48.0	46.0	42.4	39.1	37.3	42.3	27.7	13.7	51.0	34.7	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.96	1.00
Incremental Delay, d2	0.3	1.3	0.3	5.6	0.3	0.1	3.4	369.0	0.3	0.3	467.9	0.0
Delay (s)	46.3	49.3	46.3	48.0	39.4	37.3	45.8	396.7	14.0	44.4	501.4	20.1
Level of Service	D	D	D	D	D	D	D	F	B	D	F	C
Approach Delay (s)		47.4			43.1			358.9			485.9	
Approach LOS		D			D			F			F	

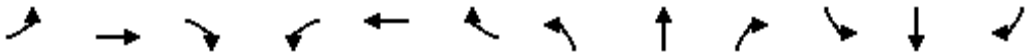
Intersection Summary			
HCM 2000 Control Delay	384.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	108	4	5	77	177	4	261	8	134	156	21
Future Volume (vph)	32	108	4	5	77	177	4	261	8	134	156	21
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
Ped Bike Factor												
Frt		0.997			0.908			0.996			0.991	
Flt Protected		0.989			0.999			0.999			0.979	
Satd. Flow (prot)	0	1816	0	0	1671	0	0	1833	0	0	1787	0
Flt Permitted		0.989			0.999			0.999			0.979	
Satd. Flow (perm)	0	1816	0	0	1671	0	0	1833	0	0	1787	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.5			193.0			213.8			429.8	
Travel Time (s)		14.9			13.9			15.4			30.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	120	4	6	86	197	4	290	9	149	173	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	289	0	0	303	0	0	345	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	32	108	4	5	77	177	4	261	8	134	156	21
Future Volume (vph)	32	108	4	5	77	177	4	261	8	134	156	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	120	4	6	86	197	4	290	9	149	173	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	160	289	303	345
Volume Left (vph)	36	6	4	149
Volume Right (vph)	4	197	9	23
Hadj (s)	0.06	-0.37	0.02	0.08
Departure Headway (s)	6.6	5.9	6.1	6.0
Degree Utilization, x	0.29	0.47	0.51	0.58
Capacity (veh/h)	462	544	548	552
Control Delay (s)	12.3	14.0	15.2	16.9
Approach Delay (s)	12.3	14.0	15.2	16.9
Approach LOS	B	B	C	C

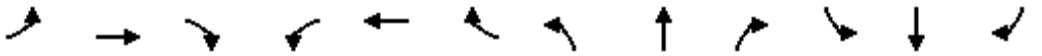
Intersection Summary				
Delay	15.0			
Level of Service	C			
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	108	4	5	77	177	4	261	8	134	156	21
Future Vol, veh/h	32	108	4	5	77	177	4	261	8	134	156	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	120	4	6	86	197	4	290	9	149	173	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

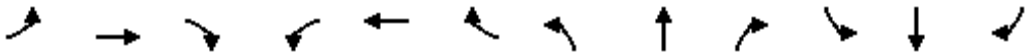
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.3	14	15.1	17
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	22%	2%	43%
Vol Thru, %	96%	75%	30%	50%
Vol Right, %	3%	3%	68%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	273	144	259	311
LT Vol	4	32	5	134
Through Vol	261	108	77	156
RT Vol	8	4	177	21
Lane Flow Rate	303	160	288	346
Geometry Grp	1	1	1	1
Degree of Util (X)	0.507	0.292	0.468	0.579
Departure Headway (Hd)	6.016	6.573	5.859	6.033
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	598	546	613	601
Service Time	4.065	4.632	3.909	4.033
HCM Lane V/C Ratio	0.507	0.293	0.47	0.576
HCM Control Delay	15.1	12.3	14	17
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	2.9	1.2	2.5	3.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
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
Ped Bike Factor												
Frt		0.968			0.987			0.949			0.921	
Flt Protected		0.980			0.973			0.991			0.998	
Satd. Flow (prot)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Flt Permitted		0.980			0.973			0.991			0.998	
Satd. Flow (perm)	0	1747	0	0	1769	0	0	1732	0	0	1693	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		130.2			198.3			214.8			416.4	
Travel Time (s)		9.4			14.3			15.5			30.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	118	76	121	78	22	76	177	153	13	99	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	323	0	0	221	0	0	406	0	0	271	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)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Future Volume (vph)	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	129	118	76	121	78	22	76	177	153	13	99	159

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	323	221	406	271
Volume Left (vph)	129	121	76	13
Volume Right (vph)	76	22	153	159
Hadj (s)	-0.03	0.08	-0.15	-0.31
Departure Headway (s)	6.7	7.0	6.3	6.5
Degree Utilization, x	0.60	0.43	0.71	0.49
Capacity (veh/h)	491	442	542	492
Control Delay (s)	19.0	15.3	23.0	15.4
Approach Delay (s)	19.0	15.3	23.0	15.4
Approach LOS	C	C	C	C

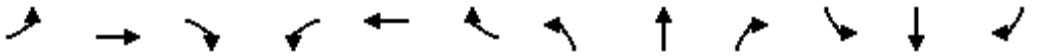
Intersection Summary				
Delay	18.9			
Level of Service	C			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

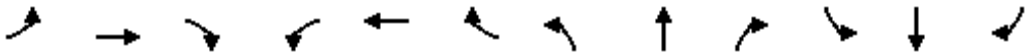
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Future Vol, veh/h	116	106	68	109	70	20	68	159	138	12	89	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	129	118	76	121	78	22	76	177	153	13	99	159
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.8	15.2	22.6	15.3
HCM LOS	C	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	40%	55%	5%
Vol Thru, %	44%	37%	35%	36%
Vol Right, %	38%	23%	10%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	365	290	199	244
LT Vol	68	116	109	12
Through Vol	159	106	70	89
RT Vol	138	68	20	143
Lane Flow Rate	406	322	221	271
Geometry Grp	1	1	1	1
Degree of Util (X)	0.699	0.589	0.427	0.48
Departure Headway (Hd)	6.207	6.577	6.948	6.371
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	580	545	515	561
Service Time	4.287	4.664	5.048	4.462
HCM Lane V/C Ratio	0.7	0.591	0.429	0.483
HCM Control Delay	22.6	18.8	15.2	15.3
HCM Lane LOS	C	C	C	C
HCM 95th-tile Q	5.5	3.8	2.1	2.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Future Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1565	1487	1750	3500	0	0	5029	0
Flt Permitted	0.254			0.950	0.953		0.062					
Satd. Flow (perm)	239	0	1566	1630	1565	1487	114	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		73	73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	642	0	26	1	3123	0	0	2440	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	321	324	23	1	3123	0	0	2440	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	



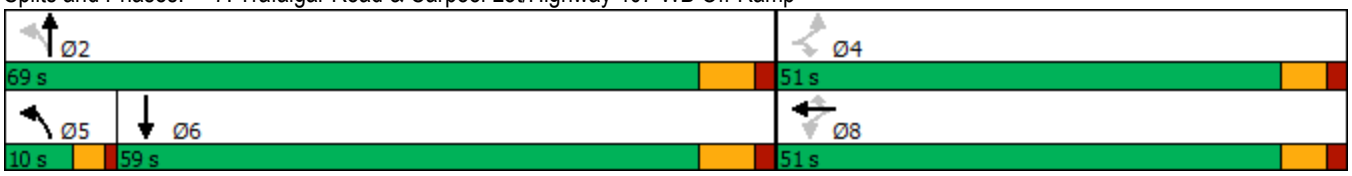
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	51.0		51.0	51.0	51.0	51.0	10.0	69.0			59.0	
Total Split (%)	42.5%		42.5%	42.5%	42.5%	42.5%	8.3%	57.5%			49.2%	
Maximum Green (s)	45.0		45.0	45.0	45.0	45.0	6.0	62.0			52.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	24.9		24.9	24.9	24.9	24.9	65.3	62.3			60.5	
Actuated g/C Ratio	0.25		0.25	0.25	0.25	0.25	0.65	0.62			0.60	
v/c Ratio	0.02		0.01	0.79	0.73	0.05	0.01	1.44			0.80	
Control Delay	27.0		0.0	49.7	36.3	0.2	9.0	221.1			20.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	27.0		0.0	49.7	36.3	0.2	9.0	221.1			20.1	
LOS	C		A	D	D	A	A	F			C	
Approach Delay		6.8			41.5			221.0			20.1	
Approach LOS		A			D			F			C	
Queue Length 50th (m)	0.2		0.0	61.3	49.4	0.0	0.1	~431.5			115.5	
Queue Length 95th (m)	1.4		0.0	92.4	81.5	0.0	0.8	#546.0			#235.2	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	108		746	734	745	710	172	2173			3035	
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	0.01		0.00	0.44	0.43	0.03	0.01	1.44			0.80	

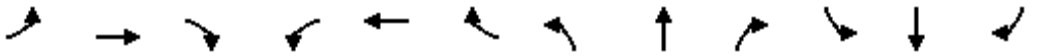
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 100.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 123.0		Intersection LOS: F	
Intersection Capacity Utilization 113.5%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

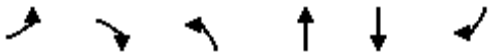
Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Future Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1565	1487	1750	3500			5029	
Flt Permitted	0.25		1.00	0.95	0.95	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	239		1566	1630	1565	1487	114	3500			5029	
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)	1	0	3	642	0	26	1	3123	0	0	2440	0
RTOR Reduction (vph)	0	0	2	0	55	17	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	321	269	6	1	3123	0	0	2440	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	24.9		24.9	24.9	24.9	24.9	65.5	65.5			60.5	
Effective Green, g (s)	24.9		24.9	24.9	24.9	24.9	65.5	65.5			60.5	
Actuated g/C Ratio	0.24		0.24	0.24	0.24	0.24	0.63	0.63			0.59	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	57		377	392	376	358	88	2217			2942	
v/s Ratio Prot							0.00	c0.89			0.49	
v/s Ratio Perm	0.00		0.00	c0.20	0.17	0.00	0.01					
v/c Ratio	0.02		0.00	0.82	0.71	0.02	0.01	1.41			0.83	
Uniform Delay, d1	29.9		29.8	37.1	36.0	29.9	14.4	19.0			17.3	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	12.5	6.3	0.0	0.1	186.7			2.1	
Delay (s)	30.0		29.8	49.6	42.3	29.9	14.5	205.6			19.4	
Level of Service	C		C	D	D	C	B	F			B	
Approach Delay (s)		29.9			45.4			205.5			19.4	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	115.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2874	2840	43
Future Volume (vph)	0	0	0	2874	2840	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	3124	3087	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3124	3087	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

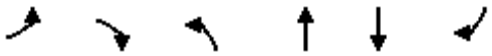
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	2874	162	0	2840
Future Volume (vph)	0	0	2874	162	0	2840
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	3124	176	0	3087
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3124	176	0	3087
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



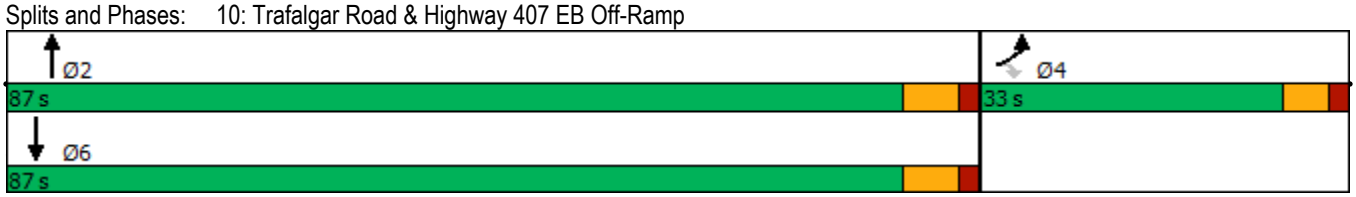
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	360	0	3519	2834	0
Future Volume (vph)	43	360	0	3519	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.881	0.850				
Flt Protected	0.990					
Satd. Flow (prot)	1449	1308	0	3500	3500	0
Flt Permitted	0.990					
Satd. Flow (perm)	1449	1308	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2	2				
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	46	387	0	3784	3047	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	220	213	0	3784	3047	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

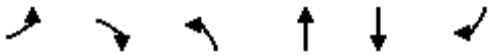
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	33.0	33.0		87.0	87.0	
Total Split (%)	27.5%	27.5%		72.5%	72.5%	
Maximum Green (s)	27.0	27.0		80.0	80.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	22.5	22.5		80.1	80.1	
Actuated g/C Ratio	0.19	0.19		0.69	0.69	
v/c Ratio	0.78	0.84		1.56	1.26	
Control Delay	62.8	70.8		275.2	139.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	62.8	70.8		275.2	139.8	
LOS	E	E		F	F	
Approach Delay	66.7			275.2	139.8	
Approach LOS	E			F	F	
Queue Length 50th (m)	47.1	48.7		~653.3	~467.5	
Queue Length 95th (m)	74.6	#83.2		#705.9	#521.7	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	340	307		2425	2425	
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	0.65	0.69		1.56	1.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 115.6			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.56			
Intersection Signal Delay: 206.0		Intersection LOS: F	
Intersection Capacity Utilization 117.9%		ICU Level of Service H	
Analysis Period (min) 15			

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

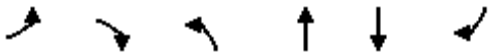
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	360	0	3519	2834	0
Future Volume (vph)	43	360	0	3519	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1449	1308		3500	3500	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1449	1308		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	387	0	3784	3047	0
RTOR Reduction (vph)	2	2	0	0	0	0
Lane Group Flow (vph)	218	211	0	3784	3047	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.5	22.5		80.1	80.1	
Effective Green, g (s)	22.5	22.5		80.1	80.1	
Actuated g/C Ratio	0.19	0.19		0.69	0.69	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	282	254		2425	2425	
v/s Ratio Prot	0.15			c1.08	0.87	
v/s Ratio Perm		c0.16				
v/c Ratio	0.77	0.83		1.56	1.26	
Uniform Delay, d1	44.1	44.7		17.8	17.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.5	20.2		254.2	119.0	
Delay (s)	56.6	64.9		272.0	136.7	
Level of Service	E	E		F	F	
Approach Delay (s)	60.7			272.0	136.7	
Approach LOS	E			F	F	

Intersection Summary			
HCM 2000 Control Delay	202.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	115.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3022	2834	17
Future Volume (vph)	0	0	0	3022	2834	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	3249	3047	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3249	3047	18
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 117.9%		ICU Level of Service H	
Analysis Period (min) 15			

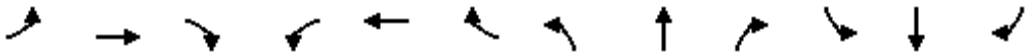
Intersection Sign configuration not allowed in HCM analysis.



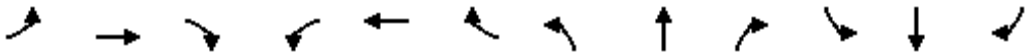
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3519	222	0	3192
Future Volume (vph)	0	0	3519	222	0	3192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	3784	239	0	3432
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3784	239	0	3432
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Future Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		5.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850		0.999	0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	892	0	1566	1630	1565	1487	1750	3500	0	0	5029	0
Flt Permitted	0.305			0.950	0.953		0.084					
Satd. Flow (perm)	287	0	1566	1630	1565	1487	155	3500	0	0	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		73	73						
Link Speed (k/h)		20			60			80			80	
Link Distance (m)		81.5			394.8			34.5			189.8	
Travel Time (s)		14.7			23.7			1.6			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	0	3	642	0	26	1	3123	0	0	2440	0
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	1	0	3	321	324	23	1	3123	0	0	2440	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)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1		1	1	2	1	1	2			2	
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0			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		2.0	2.0	0.6	2.0	2.0	0.6			0.6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	

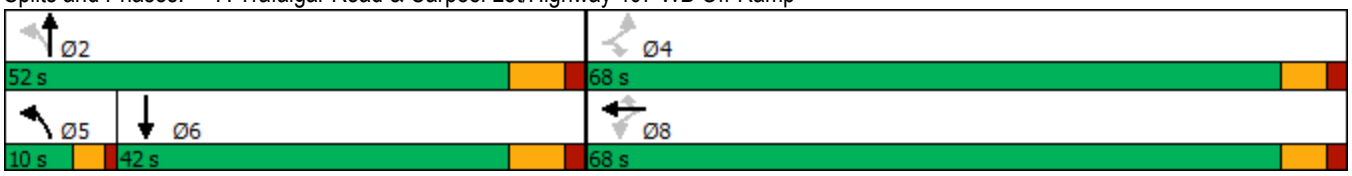


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2					
Detector Phase	4		4	8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	4.0	35.0			35.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5	9.5	42.0			42.0	
Total Split (s)	68.0		68.0	68.0	68.0	68.0	10.0	52.0			42.0	
Total Split (%)	56.7%		56.7%	56.7%	56.7%	56.7%	8.3%	43.3%			35.0%	
Maximum Green (s)	62.0		62.0	62.0	62.0	62.0	6.0	45.0			35.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	3.0	5.0			5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	1.0	2.0			2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							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	None	None	Min			Min	
Act Effct Green (s)	20.7		20.7	20.7	20.7	20.7	48.2	45.2			43.5	
Actuated g/C Ratio	0.26		0.26	0.26	0.26	0.26	0.61	0.57			0.55	
v/c Ratio	0.01		0.01	0.75	0.70	0.05	0.00	1.56			0.88	
Control Delay	21.0		0.0	38.2	28.4	0.2	8.0	275.1			22.8	
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	21.0		0.0	38.2	28.4	0.2	8.0	275.1			22.8	
LOS	C		A	D	C	A	A	F			C	
Approach Delay		5.3			32.1			275.0			22.8	
Approach LOS		A			C			F			C	
Queue Length 50th (m)	0.1		0.0	46.3	36.9	0.0	0.1	~349.8			100.1	
Queue Length 95th (m)	1.3		0.0	73.8	65.3	0.0	0.8	#451.9			#212.2	
Internal Link Dist (m)		57.5			370.8			10.5			165.8	
Turn Bay Length (m)			5.0			60.0						
Base Capacity (vph)	226		1250	1284	1249	1187	216	2002			2766	
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	0.00		0.00	0.25	0.26	0.02	0.00	1.56			0.88	

Intersection Summary

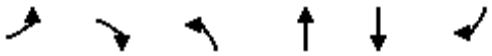
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 79
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.56
Intersection Signal Delay: 150.1 Intersection LOS: F
Intersection Capacity Utilization 113.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Trafalgar Road & Carpool Lot/Highway 407 WB Off-Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Future Volume (vph)	1	0	3	591	0	24	1	2873	0	0	2245	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Lane Util. Factor	1.00		1.00	0.95	0.91	0.95	1.00	0.95			0.91	
Frt	1.00		0.85	1.00	1.00	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	892		1566	1630	1565	1487	1750	3500			5029	
Flt Permitted	0.31		1.00	0.95	0.95	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	287		1566	1630	1565	1487	155	3500			5029	
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)	1	0	3	642	0	26	1	3123	0	0	2440	0
RTOR Reduction (vph)	0	0	2	0	55	17	0	0	0	0	0	0
Lane Group Flow (vph)	1	0	1	321	269	6	1	3123	0	0	2440	0
Heavy Vehicles (%)	100%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)	20.7		20.7	20.7	20.7	20.7	48.5	48.5			43.5	
Effective Green, g (s)	20.7		20.7	20.7	20.7	20.7	48.5	48.5			43.5	
Actuated g/C Ratio	0.25		0.25	0.25	0.25	0.25	0.59	0.59			0.53	
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0	4.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	72		394	410	394	374	110	2065			2661	
v/s Ratio Prot							0.00	c0.89			0.49	
v/s Ratio Perm	0.00		0.00	c0.20	0.17	0.00	0.01					
v/c Ratio	0.01		0.00	0.78	0.68	0.02	0.01	1.51			0.92	
Uniform Delay, d1	23.1		23.0	28.7	27.8	23.1	14.4	16.9			17.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1		0.0	9.4	4.9	0.0	0.0	233.1			5.6	
Delay (s)	23.2		23.0	38.1	32.6	23.1	14.5	250.0			23.3	
Level of Service	C		C	D	C	C	B	F			C	
Approach Delay (s)		23.1			34.9			249.9			23.3	
Approach LOS		C			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	138.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑	↱
Traffic Volume (vph)	0	0	0	2874	2840	43
Future Volume (vph)	0	0	0	2874	2840	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	5029	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	5029	3500	1566
Link Speed (k/h)	60			80	80	
Link Distance (m)	161.4			55.2	34.5	
Travel Time (s)	9.7			2.5	1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	3124	3087	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3124	3087	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

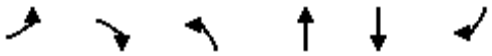
Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↱		↑↑
Traffic Volume (vph)	0	0	2874	162	0	2840
Future Volume (vph)	0	0	2874	162	0	2840
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1465	0	3500
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1465	0	3500
Link Speed (k/h)	30		80			80
Link Distance (m)	192.3		37.4			100.8
Travel Time (s)	23.1		1.7			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	9%	2%	2%
Adj. Flow (vph)	0	0	3124	176	0	3087
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3124	176	0	3087
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



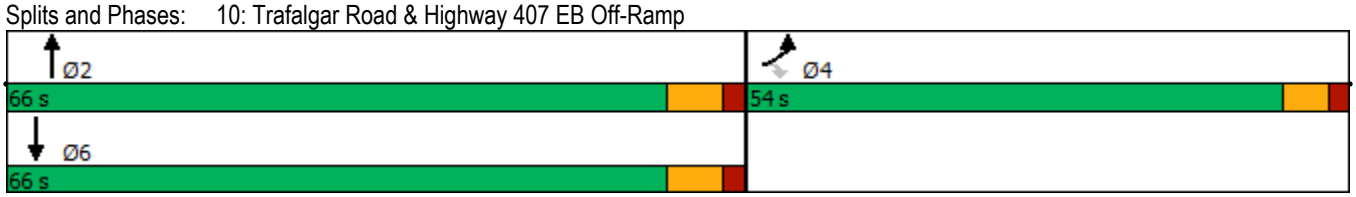
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	360	0	3519	2834	0
Future Volume (vph)	43	360	0	3519	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00
Frt	0.881	0.850				
Flt Protected	0.990					
Satd. Flow (prot)	1449	1308	0	3500	3500	0
Flt Permitted	0.990					
Satd. Flow (perm)	1449	1308	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	60			80	80	
Link Distance (m)	417.0			117.5	129.7	
Travel Time (s)	25.0			5.3	5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Adj. Flow (vph)	46	387	0	3784	3047	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	220	213	0	3784	3047	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						

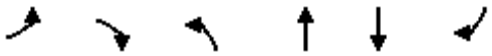
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	6.0	6.0		20.0	20.0	
Minimum Split (s)	24.0	24.0		27.0	27.0	
Total Split (s)	54.0	54.0		66.0	66.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	48.0	48.0		59.0	59.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Act Effct Green (s)	20.0	20.0		59.2	59.2	
Actuated g/C Ratio	0.22	0.22		0.64	0.64	
v/c Ratio	0.70	0.75		1.69	1.36	
Control Delay	45.5	50.4		330.7	184.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	45.5	50.4		330.7	184.2	
LOS	D	D		F	F	
Approach Delay	47.9			330.7	184.2	
Approach LOS	D			F	F	
Queue Length 50th (m)	36.1	37.3		~520.0	~375.9	
Queue Length 95th (m)	59.4	62.2		#632.0	#476.8	
Internal Link Dist (m)	393.0			93.5	105.7	
Turn Bay Length (m)						
Base Capacity (vph)	756	682		2245	2245	
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	0.29	0.31		1.69	1.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 92.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.69			
Intersection Signal Delay: 252.4		Intersection LOS: F	
Intersection Capacity Utilization 117.9%		ICU Level of Service H	
Analysis Period (min) 15			

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

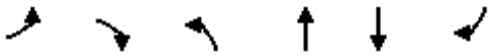
Splits and Phases: 10: Trafalgar Road & Highway 407 EB Off-Ramp





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	360	0	3519	2834	0
Future Volume (vph)	43	360	0	3519	2834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	
Frt	0.88	0.85		1.00	1.00	
Flt Protected	0.99	1.00		1.00	1.00	
Satd. Flow (prot)	1449	1308		3500	3500	
Flt Permitted	0.99	1.00		1.00	1.00	
Satd. Flow (perm)	1449	1308		3500	3500	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	46	387	0	3784	3047	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	220	213	0	3784	3047	0
Heavy Vehicles (%)	2%	16%	2%	2%	2%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.0	20.0		59.2	59.2	
Effective Green, g (s)	20.0	20.0		59.2	59.2	
Actuated g/C Ratio	0.22	0.22		0.64	0.64	
Clearance Time (s)	6.0	6.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	283		2247	2247	
v/s Ratio Prot	0.15			c1.08	0.87	
v/s Ratio Perm		c0.16				
v/c Ratio	0.70	0.75		1.68	1.36	
Uniform Delay, d1	33.3	33.8		16.5	16.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.9	10.8		309.8	163.2	
Delay (s)	40.2	44.5		326.3	179.7	
Level of Service	D	D		F	F	
Approach Delay (s)	42.4			326.3	179.7	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	247.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	3022	2834	17
Future Volume (vph)	0	0	0	3022	2834	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3500	3500	1566
Flt Permitted						
Satd. Flow (perm)	0	0	0	3500	3500	1566
Link Speed (k/h)	30			80	80	
Link Distance (m)	110.1			129.7	37.4	
Travel Time (s)	13.2			5.8	1.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	3249	3047	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3249	3047	18
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 117.9%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	3519	222	0	3192
Future Volume (vph)	0	0	3519	222	0	3192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.91
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3500	1507	0	5029
Flt Permitted						
Satd. Flow (perm)	0	0	3500	1507	0	5029
Link Speed (k/h)	50		80			80
Link Distance (m)	247.7		145.5			117.5
Travel Time (s)	17.8		6.5			5.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%
Adj. Flow (vph)	0	0	3784	239	0	3432
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	3784	239	0	3432
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Appendix P

Conceptual Intersection Layout



Key Plan:



LENGEND:

- CONCRETE SIDEWALK
- ASPHALT MUP
- PROPOSED RIGHT-OF-WAY

NOTES:

1. THE CONCEPTUAL INTERSECTION LAYOUT SHOWN WAS COMPLETED TO SHOW THE RIGHT-OF-WAY REQUIREMENTS IN THE VICINITY OF THE INTERSECTIONS. A TOPOGRAPHIC SURVEY WILL BE REQUIRED TO ADEQUATELY ESTABLISH PROPERTY LIMITS.
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01	Issued for Review	BB	2024-11-28

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: EM4 JC7 JC9 Landowner's Group

ARCHITECT:

SITE: EM4 JC7 JC9 Area

TITLE: Conceptual Intersection Layout

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-28	BB	AL

PROJECT NO:	DRAWING NO:	REVISION:
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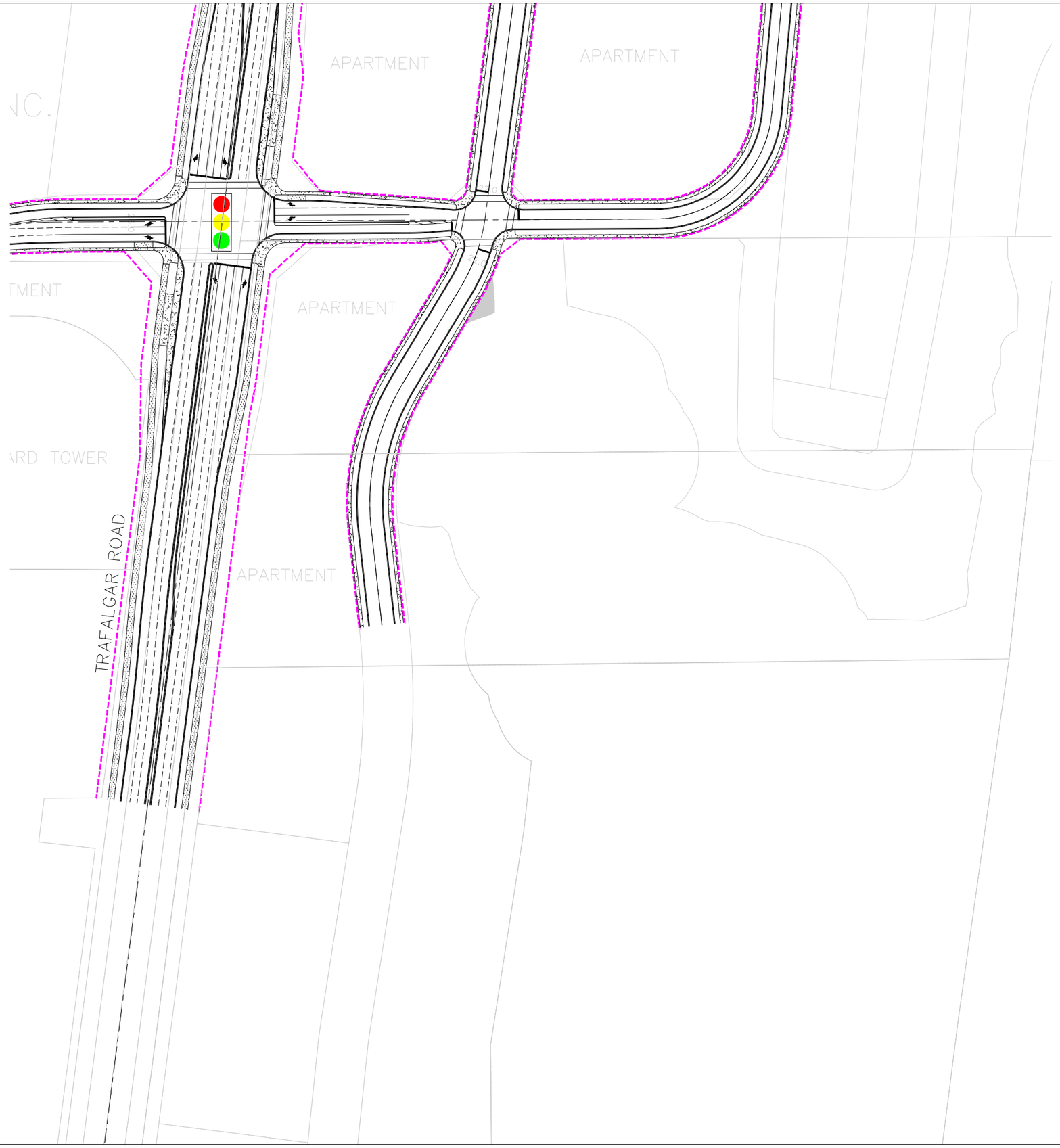

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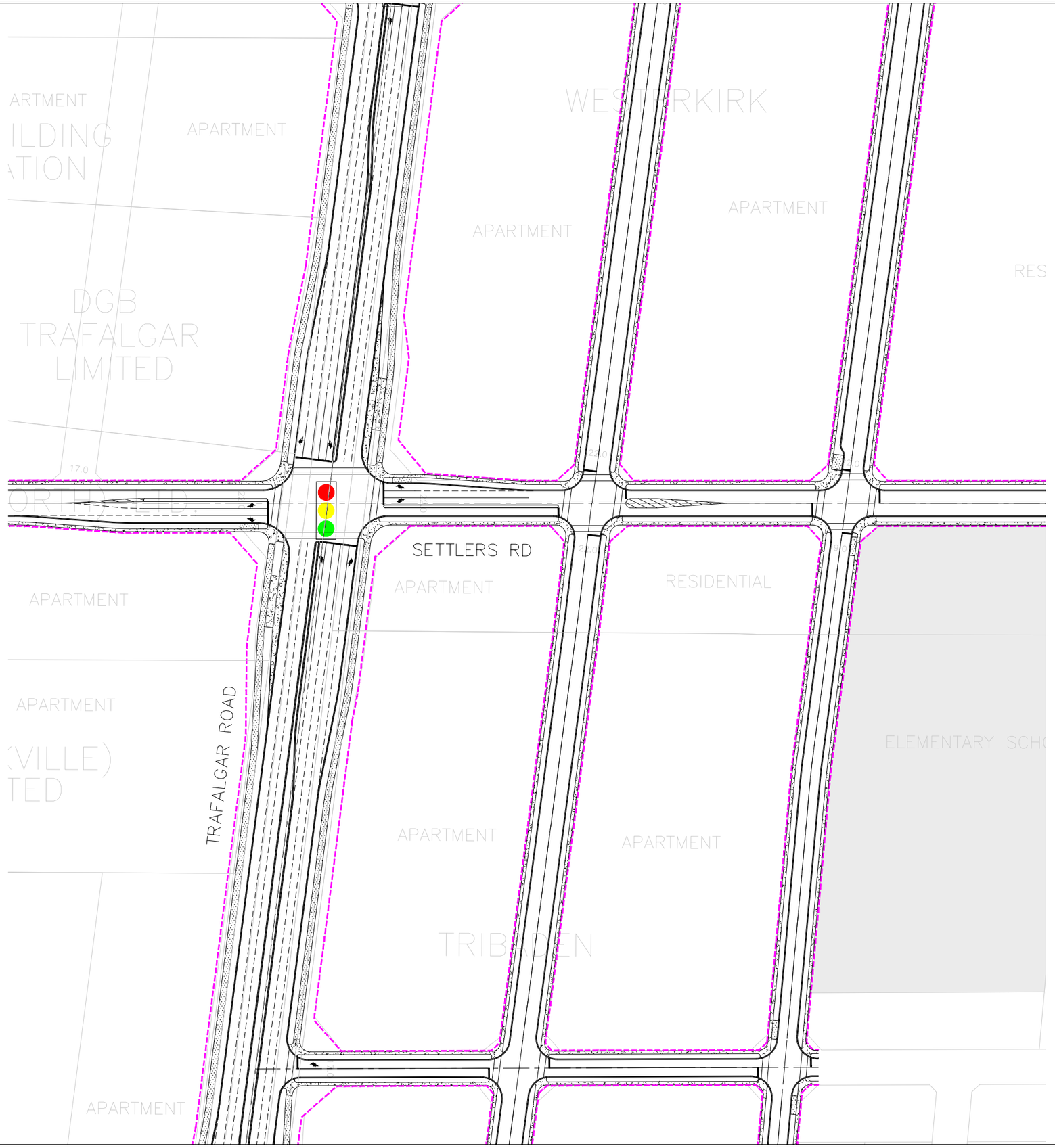

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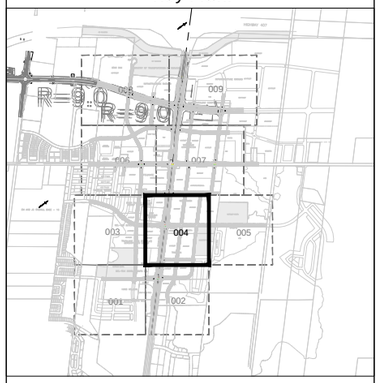

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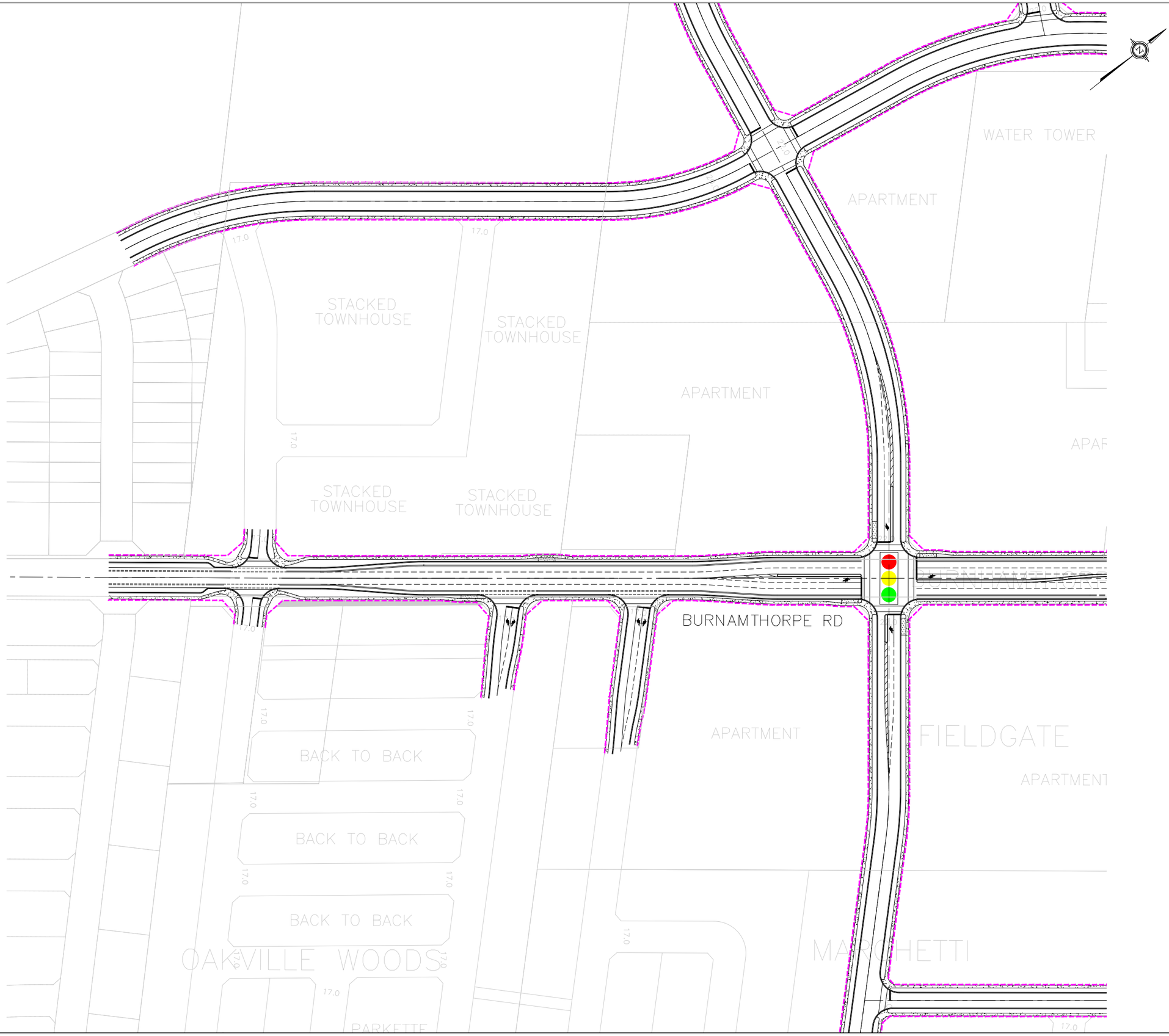

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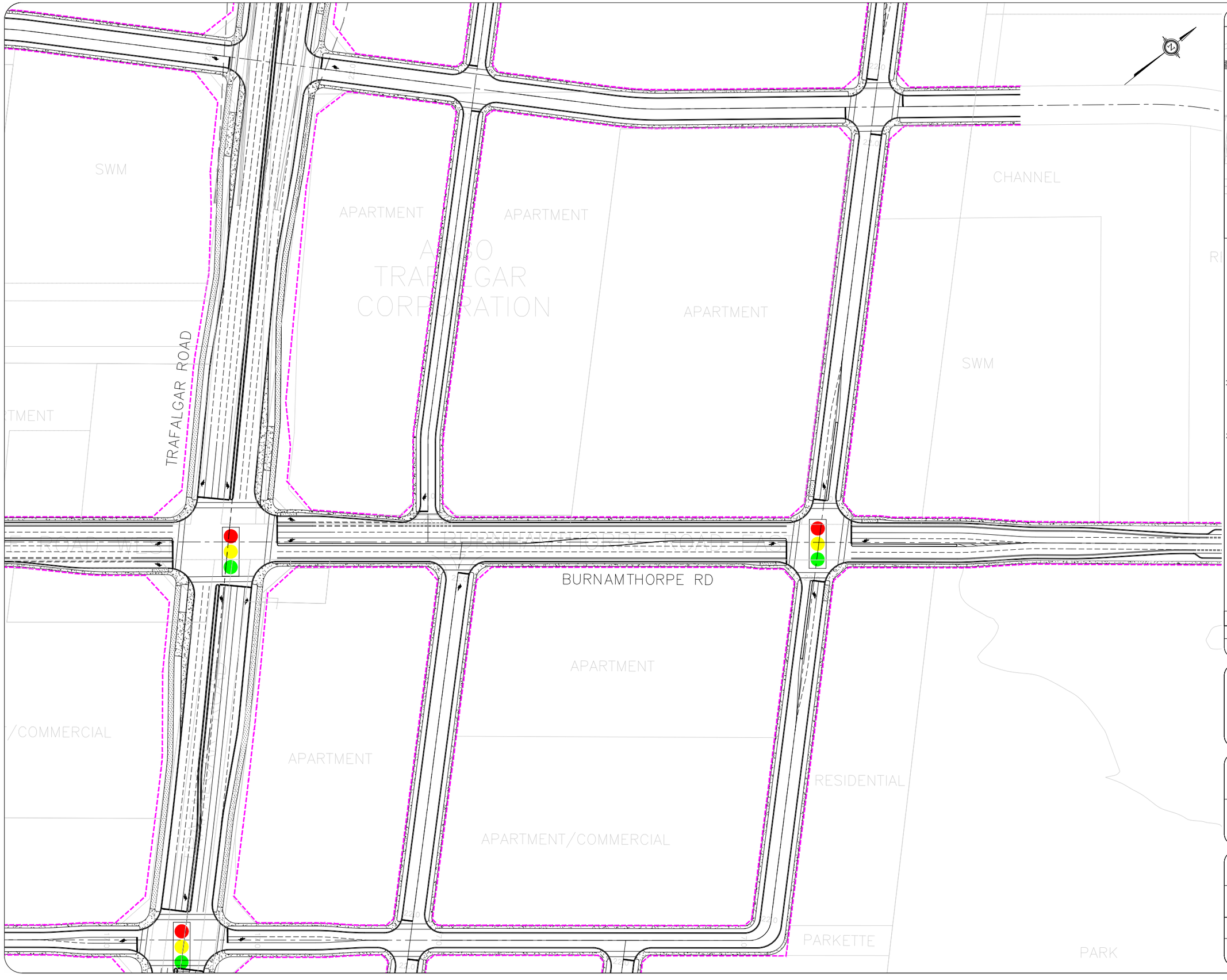

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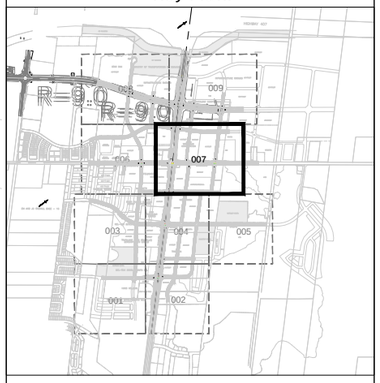

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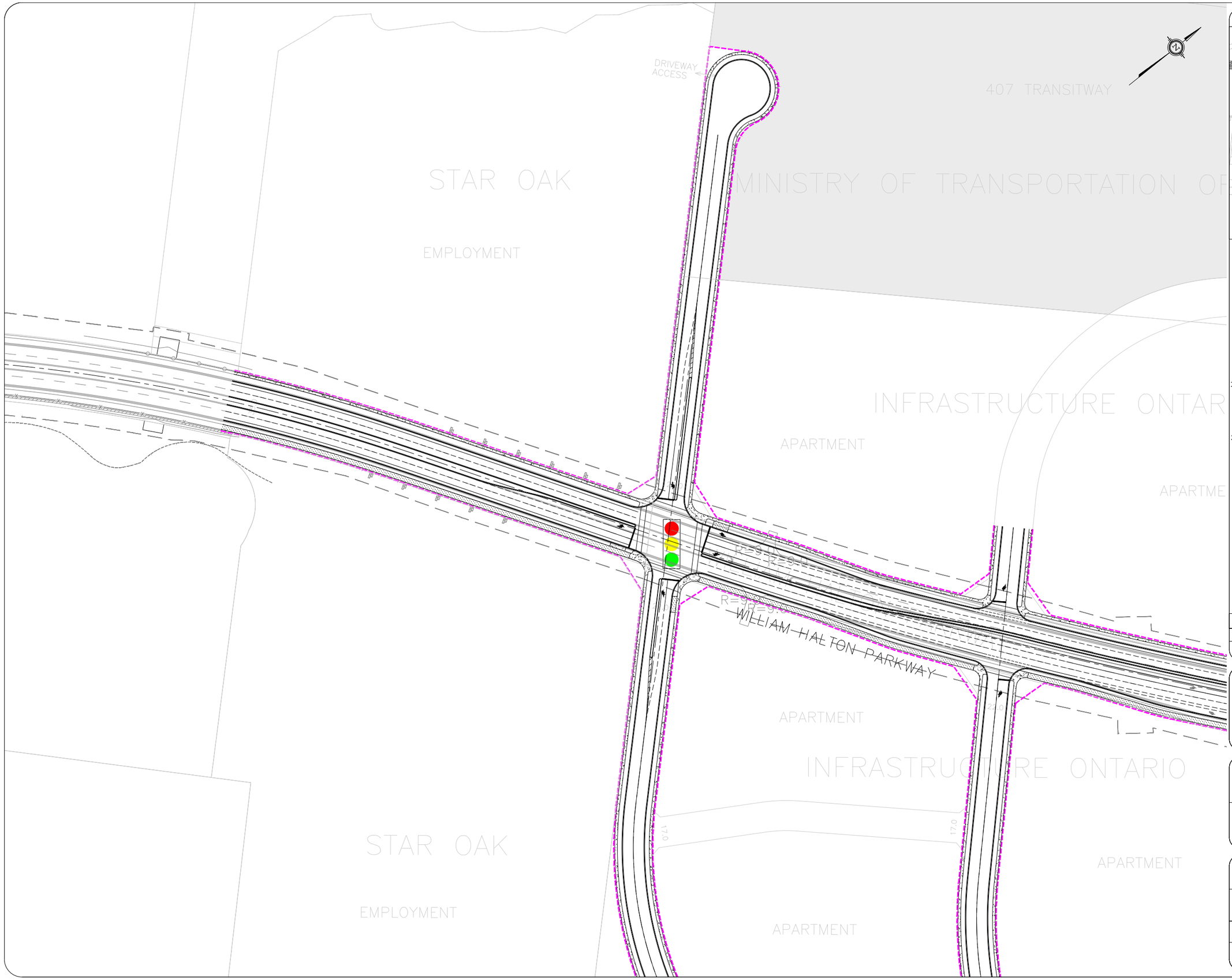

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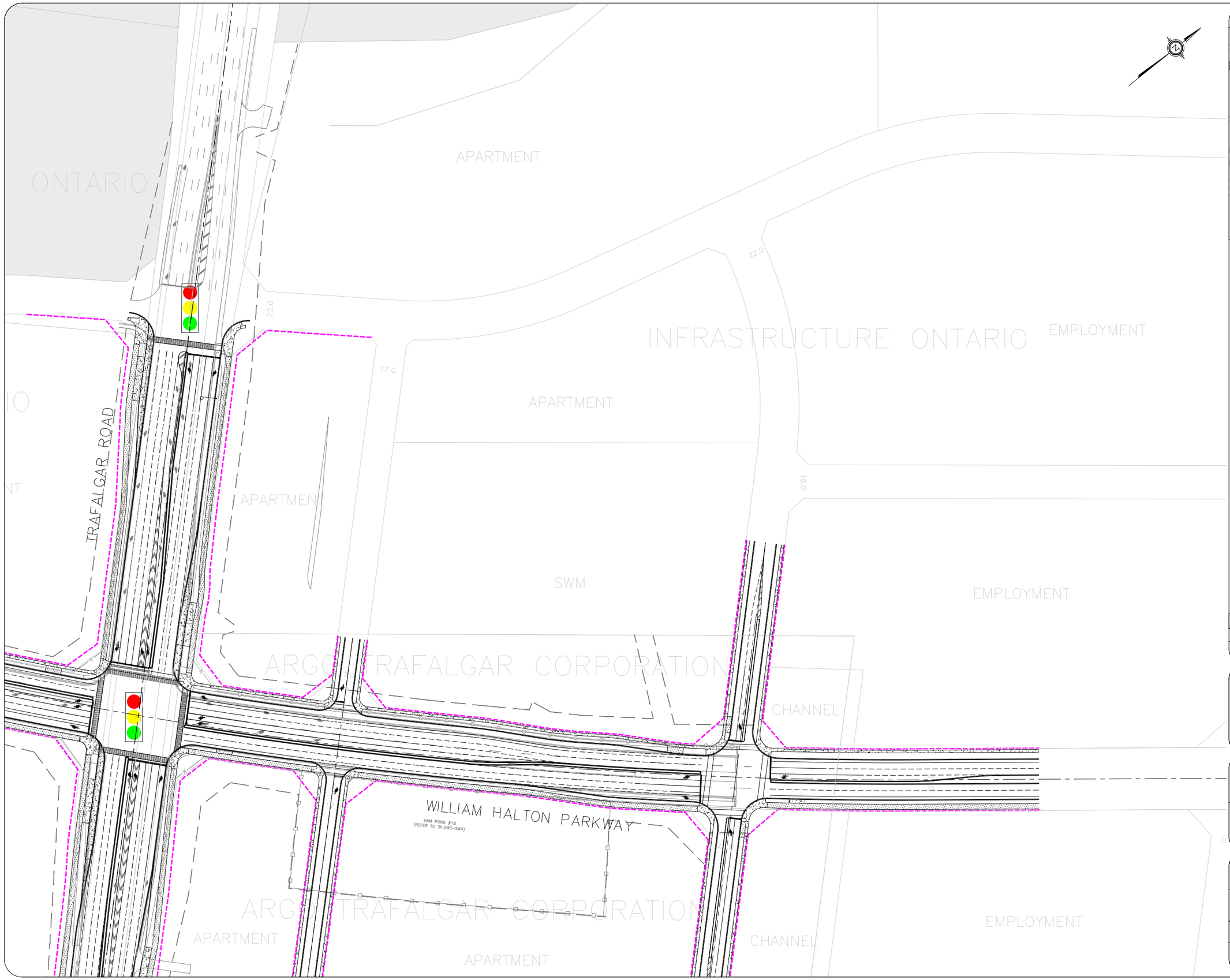

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