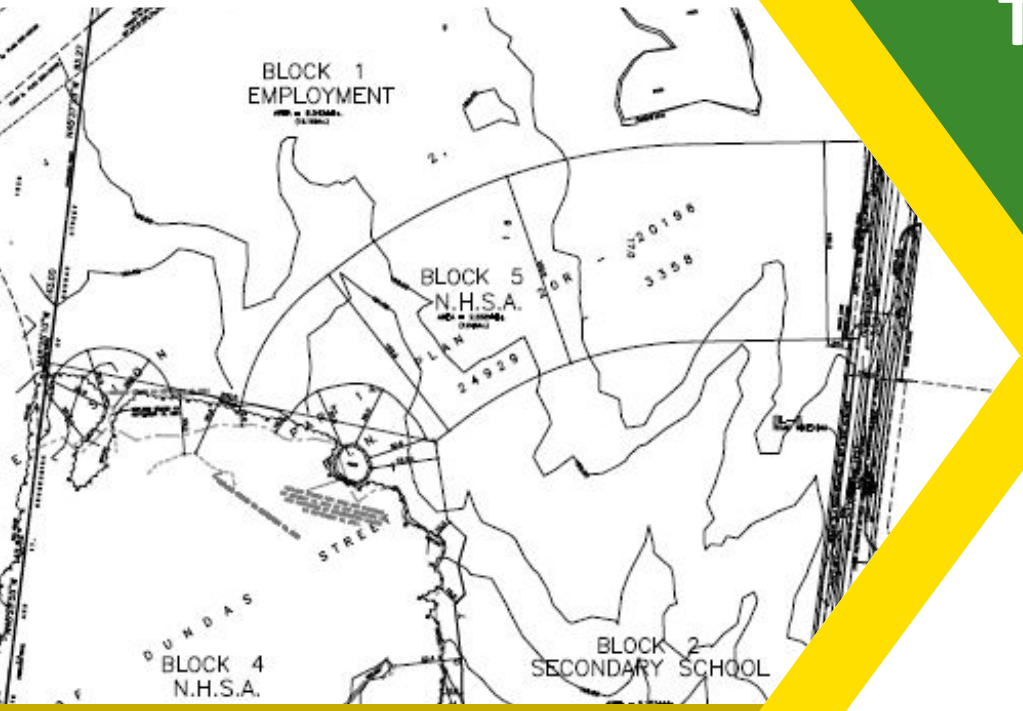
Sixth Oak Inc.

North Oakville School & Commercial Development



Transportation Impact Study

CGH TRANSPORTATION

Sixth Oak Inc. School and Employment Lands
Transportation Impact Study

Prepared for:

Sixth Oak Inc.
145 Reynolds Street, Suite 400
Oakville, ON L6J 0A7

Prepared by:

CGH TRANSPORTATION

628 Haines Road
Newmarket, ON L3Y 6V5

February 2022

PN: 2021-113

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1 Introduction

This Transportation Impact Study (TIS) has been prepared to support the official plan amendment, zoning by-law amendment and draft plan of subdivision applications for Sixth Oak Inc. properties in North Oakville. The proposed development includes two blocks and a large natural heritage area. Block 2 is proposed to include a secondary school. The secondary school is comprised of 80 classrooms sufficient to support 1200 students, a 100,000 square feet office, and an 8,000 square feet childcare facility. Block 1 is designated for employment lands. The site is anticipated to be able to accommodate one or more single storey employment buildings with a total gross floor area of 281,600 square feet.

The school and childcare centre will be located at the northwest corner of the intersection of Burnhamthorpe Road and Sixth Line and have accesses on both, while the single-storey employment lands will be located along the south side of William Halton Parkway. Access to the employment lands will be guided by the Halton Region Access Management Guidelines. The developments are surrounded by the residential developments proposed as part of Neighbourhood 9, 10, and 11. Figure 1 illustrates the site context. Figure 2 illustrates the proposed development demonstration plan. Please note that this demonstration plan has been prepared to support the official plan and zoning bylaw amendment and draft plan of subdivision process and that each of Block 1 and Block 2 would be subject to a subsequent site plan approval process that will further refine the plans for each site. The intent and goal of this study is to evaluate the access locations and network adequacy. Commentary will be provided on some site design aspects, but this is subject to change at a later stage of development approvals.

The site currently resides within an Existing Development (ED) zone. It is located next to other existing development zones to its west and south, and a neighbourhood Centre (NC), a general urban (GU), and a service area employment (SA) zone on the east side of Sixth Line.

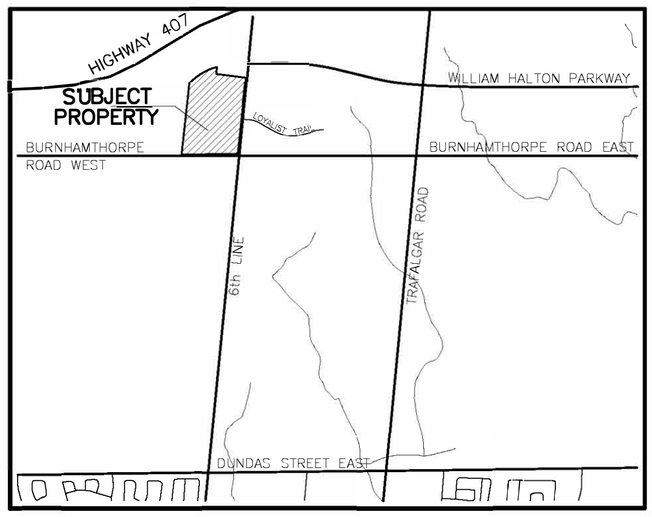
The scope of this TIS has been confirmed with transportation staff from the Town of Oakville and Halton Region. Email correspondence has been included in Appendix A.

Figure 1: Site Context

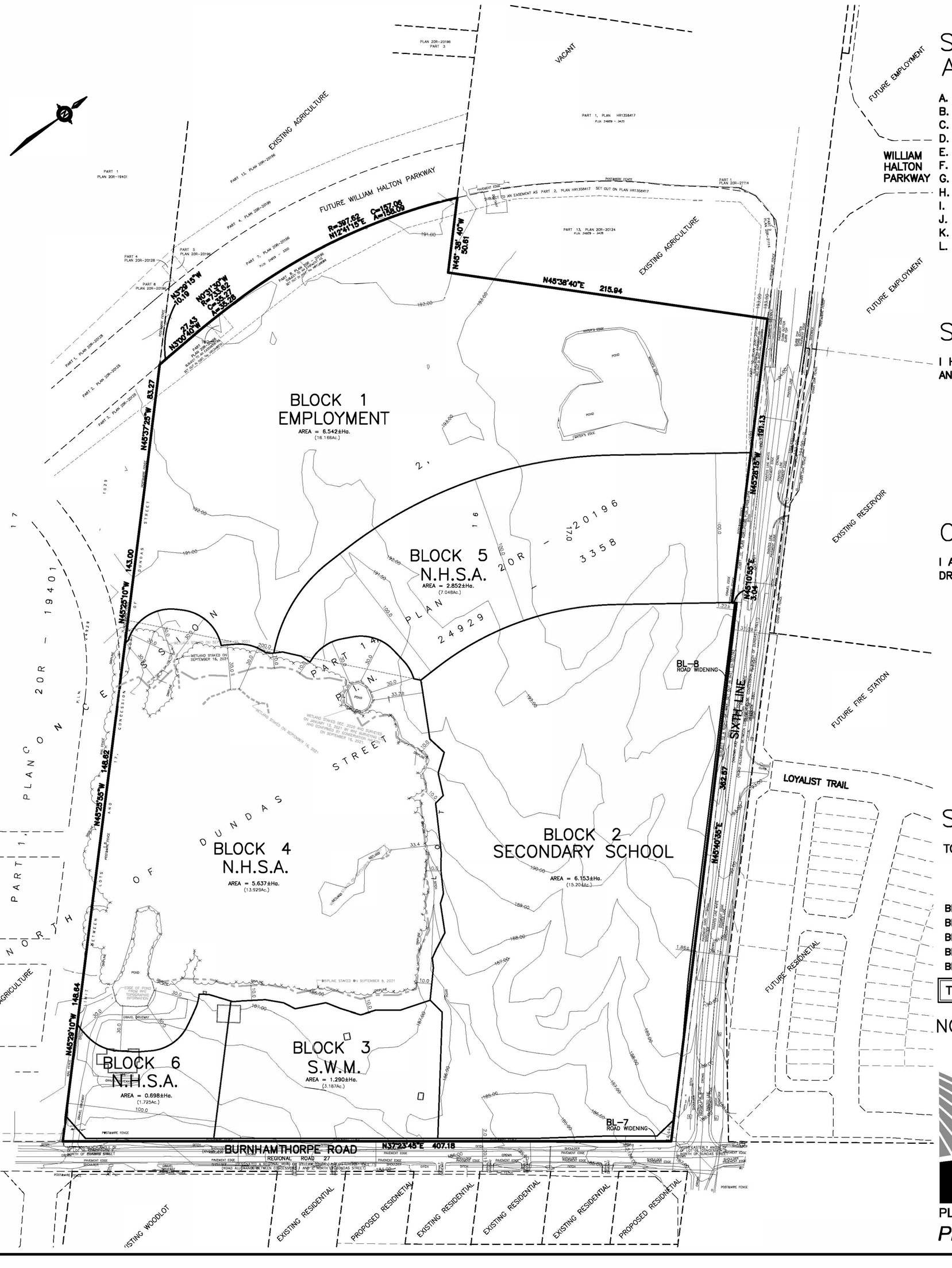
DRAFT PLAN OF SUBDIVISION
PART OF LOT 16, CONCESSION 2
NORTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

SCALE 1:1500

DRAFT PLAN T–



KEY PLAN



SECTION 51, PLANNING ACT, ADDITIONAL INFORMATION

A. AS SHOWN ON DRAFT PLAN
B. AS SHOWN ON DRAFT PLAN
C. AS SHOWN ON DRAFT PLAN
D. SEE SCHEDULE OF LAND USE
E. AS SHOWN ON DRAFT PLAN
F. AS SHOWN ON DRAFT PLAN
G. AS SHOWN ON DRAFT PLAN
H. MUNICIPAL PIPED WATER AVAILABLE AT TIME OF DEVELOPMENT
I. CLAY–LOAM
J. AS SHOWN ON DRAFT PLAN
K. SANITARY AND STORM SEWERS, GARBAGE COLLECTION, FIRE PROTECTION
L. AS SHOWN ON DRAFT PLAN

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

DATE JANUARY 4, 2022

ROSS DENBROEDER OLS

OWNER'S CERTIFICATE

I AUTHORIZE KLM PLANNING PARTNERS INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF OAKVILLE FOR APPROVAL.

OWNER

SIXTH OAK INC.

145 REYNOLDS STREET
SUITE 400
OAKVILLE, ONTARIO
L6J 0A7

SILVIO GUGLIETTI A.S.O.

SCHEDULE OF LAND USE

TOTAL AREA OF LAND TO BE SUBDIVIDED=23.324±Ha. (57.635±Acs.)

	BLOCKS	±Ha.	±Acs.
BLOCK 1 – EMPLOYMENT	1	6.542	16.166
BLOCK 2 – SECONDARY SCHOOL	1	6.153	15.204
BLOCK 3 – STORM WATER MANAGEMENT	1	1.290	3.187
BLOCKS 4–6 – NATURAL HERITAGE SYSTEM AREA	3	9.187	22.702
BLOCKS 7 & 8 – ROAD WIDENING	2	0.152	0.376
TOTAL	8	23.324	57.635

NOTE – ELEVATIONS RELATED TO CANADIAN GEODETIC DATUM

KLM PLANNING PARTNERS INC.
64 JARDIN DRIVE - UNIT 1B, CONCORD ONTARIO L4K 3P3
TEL: (905)669-4055 FAX: (905)669-0097 design@klmplanning.com
Planning • Design • Development

PROJECT No. P-3209
SCALE 1:1500 JANUARY 21, 2022
(3209DES7) X-REF: (3209MAS1 & 3209TOPO1)
DWG. No. - 22:1

2 Existing Conditions

2.1 Area Road Network

Burnhamthorpe Road

Burnhamthorpe Road within the study area is a Region of Halton arterial road with a two-lane rural cross-section with gravel shoulders. The Halton Region Official Plan protects for a 24-metre right of way for Burnhamthorpe Road. A 60 km/h posted speed limit applies. Upon completion of the William Halton Parkway extension, responsibility for this roadway will transfer from the 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.

Sixth Line

Sixth Line is classified as a minor arterial roadway in the Town of Oakville's Official Plan *Livable Oakville*. It has a two-lane divided 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. Sixth Line is anticipated to be widened from two to four-lanes and the right-of-way will be widened to 31 metres. Phase I of the widening has started in 2021 while the entire project is anticipated to be completed by 2024 in the original plan. The widening has been considered in the analysis herein.

William Halton Parkway

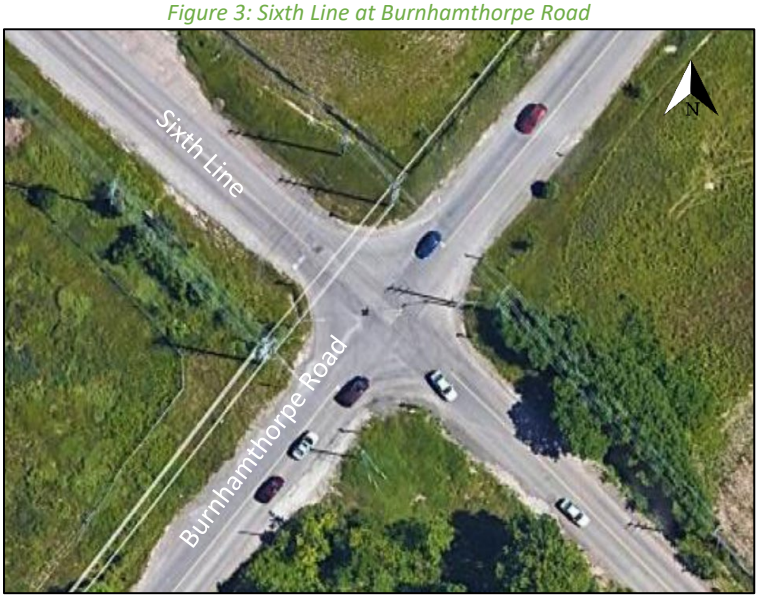
William Halton Parkway is a Region of Halton arterial road with a four-lane cross-section and a raised concrete median north of, and parallel to Burnhamthorpe Road. The Halton Region Transportation Master Plan (TMP) protects a 35-metre right-of-way for class C2 road. A 60 km/h posted speed limit applies. It currently runs between Sixth Line and Ninth Line, bike lanes are presented on both sides of the road, sidewalks are provided on the north side while multi-use paths are provided on the south side. The construction between Neyagawa Boulevard and Sixth Line is currently taking place.

2.2 Existing Intersections

Sixth Line at Burnhamthorpe Road

The intersection of Sixth Line at Burnhamthorpe Road is an all-way stop-controlled intersection. No auxiliary lanes or sidewalks are provided on any of the legs. An overhead flashing red beacon has been installed over the centre of the intersection. No turn restrictions are noted. Figure 3 illustrates the intersection of Sixth Line at Burnhamthorpe Road.

Figure 3: Sixth Line at Burnhamthorpe Road



Sixth Line at William Halton Parkway

The intersection of Sixth Line at William Halton Parkway functions as a three-legged two-lane roundabout despite having four constructed legs. While the west leg of the intersection has been constructed, it is currently blocked off as the extension of William Halton Parkway further west of Sixth Line has not yet been completed. Pedestrian crossovers are present on all intersection legs. Bike lanes and sidewalks are also provided on both sides of the road at all approaches. The northbound approach consists of a shared left-turn / through lane and an auxiliary shared through / right-turn lane, the westbound approach consists of a shared left-turn / through lane and a shared through/right-turn lane, and the southbound approach has a shared left-turn / through lane and an auxiliary shared through / right-turn lane. All approaches are noted to have yield signs. No turn restrictions are noted. Figure 4 illustrates the roundabout intersection at Sixth Line at William Halton Parkway.

Figure 4: Sixth Line at William Halton Parkway

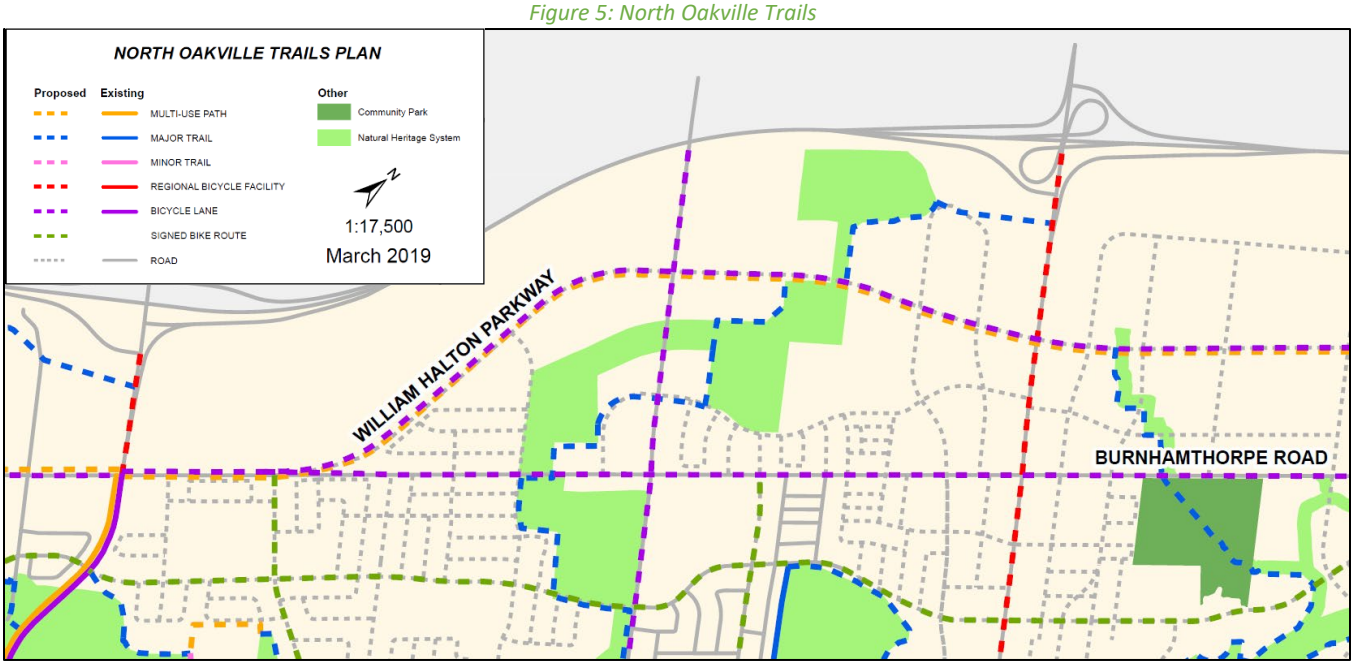
2.3 Cycling and Pedestrian Facilities

Bike lanes are presented on both sides along Willian Halton Parkway east of Sixth Line and at all approaches at the Sixth Line at William Halton Parkway roundabout.

Sidewalks are provided on the north side along Willian Halton Parkway east of Sixth Line and at all approaches at Sixth Line at William Halton Parkway roundabout. Pedestrian crossovers are implemented at all approaches at the William Halton Parkway roundabout.

According to the Town of Oakville Active Transportation Master Plan (ATMP), Burnhamthorpe Road, Sixth Line, William Halton Parkway are designated as spine routes, and bike lanes are proposed to be provided along Burnhamthorpe Road and Sixth Line which are represented by dashed purple lines in Figure 5 below. The William Halton Parkway Extension Project, which will be completed in 2024, is planned to include multi-use paths shown in orange. A major trail, indicated by a dashed blue line on the map, will be constructed along the western and northern edges of the secondary school site.

Figure 5: North Oakville Trails



2.4 Existing Transit

As of January 2022, there are no transit routes in the immediate vicinity of the site. The closest route operated by Oakville Transit is Route #1 which runs along Trafalgar Road. The closest stop is located at the intersection of Trafalgar Road at Burnhamthorpe Road, which is approximately 1.3 kilometres of walking distance to the east of the proposed secondary school and more than 2 kilometres away from the industrial employment lands. Routes #5 and #5A along Dundas Street are located to the south of the proposed development and are more than 2 kilometres away from the site.

There is a “park and ride” facility to the south of Highway 407 interchange at Trafalgar Road, approximately 2 kilometres of walking distance from the site. GO Bus Routes #40, #41, #47, and #56 all have a stop at this location, which will provide intercity transit services to the proposed developments. Route #40 runs along Highway 403 and Highway 407 between Hamilton GO and Richmond Hill Centre. 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 an extra stop near the Study Area at Trafalgar Road at Burnhamthorpe Road.

The existing Oakville Transit and GO Transit services close to the Study Area are presented in Figure 6 and Figure 7, respectively. The Trafalgar Road at Highway 407 Carpool / Park and Ride has been circled on both system maps.

Figure 6: Existing Oakville Transit

Source: www.oakvilletransit.ca/ Accessed: January 13, 2022

Figure 7: Existing GO Transit

Source: https://www.gotransit.com/en/trip-planning/system-and-route-map/ Accessed: January 26, 2022

2.5 Existing Peak Hour Travel Demand

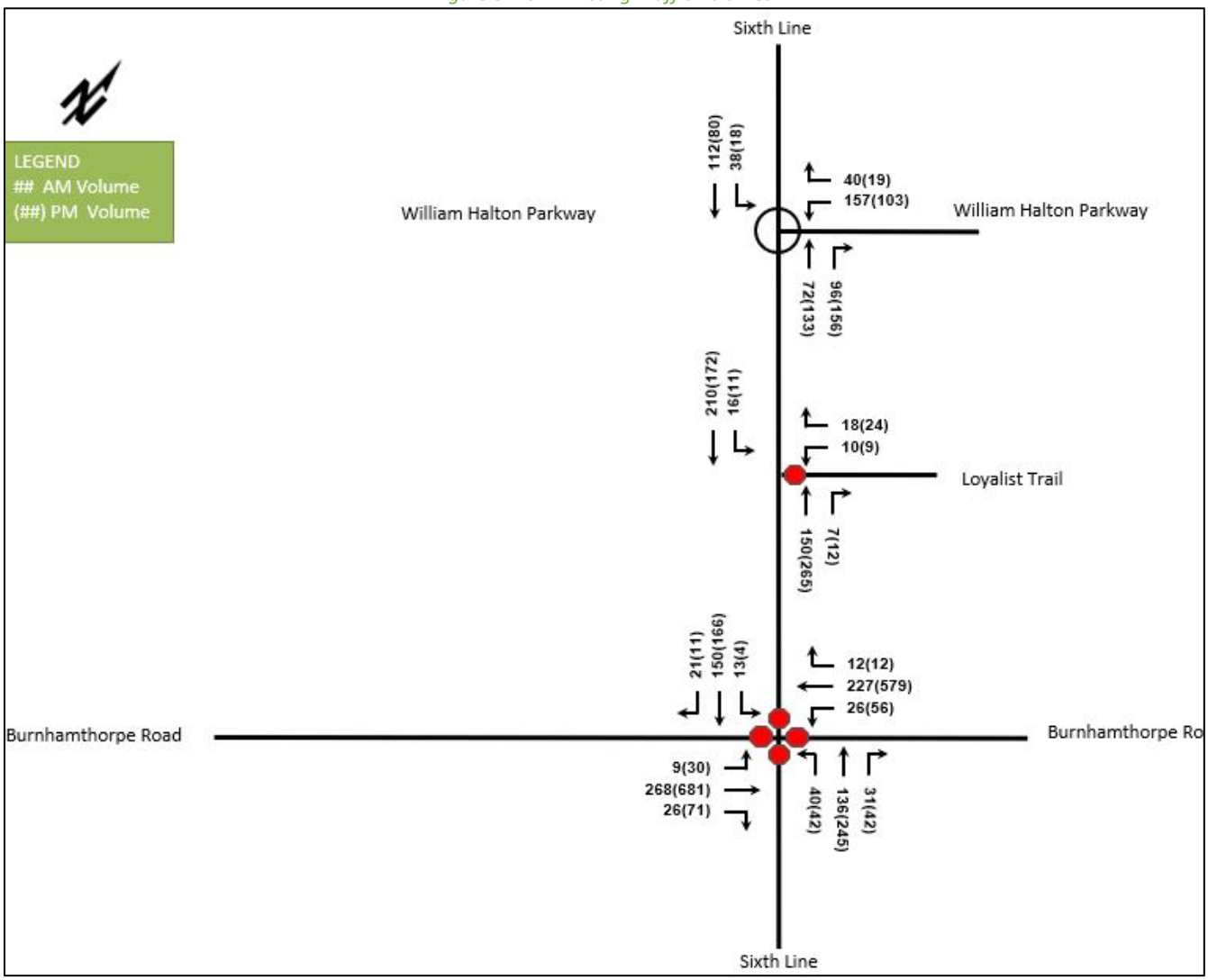
The analysis will cover the AM and PM peak hours due to the land uses being proposed are for secondary school and employment. To understand the existing AM and PM peak hour traffic volumes turning movement counts for the Study Area intersections have been acquired from Ontario Traffic Inc. Table 1 summarizes the date of the most recent turning movement count at each existing Study Area intersection.

Table 1: TMC Data Dates

Data Type	Location	Count Date
Turning Movement Counts (TMC)	Burnhamthorpe Road at Sixth Line	January 26, 2022
	William Halton Parkway at Sixth Line	January 26, 2022

The turning movement counts were undertaken in January 2022 in the study horizon year for the existing conditions. No modifications are needed to reflect growth inside of the Study Area. Turning movement count data is included in Appendix B. All the Study Area intersections are unsignalized. Figure 8 illustrates the existing 2022 vehicle traffic volumes. Very few pedestrian or bicycle trips are present in the existing conditions.

Figure 8: 2022 Existing Traffic Volumes



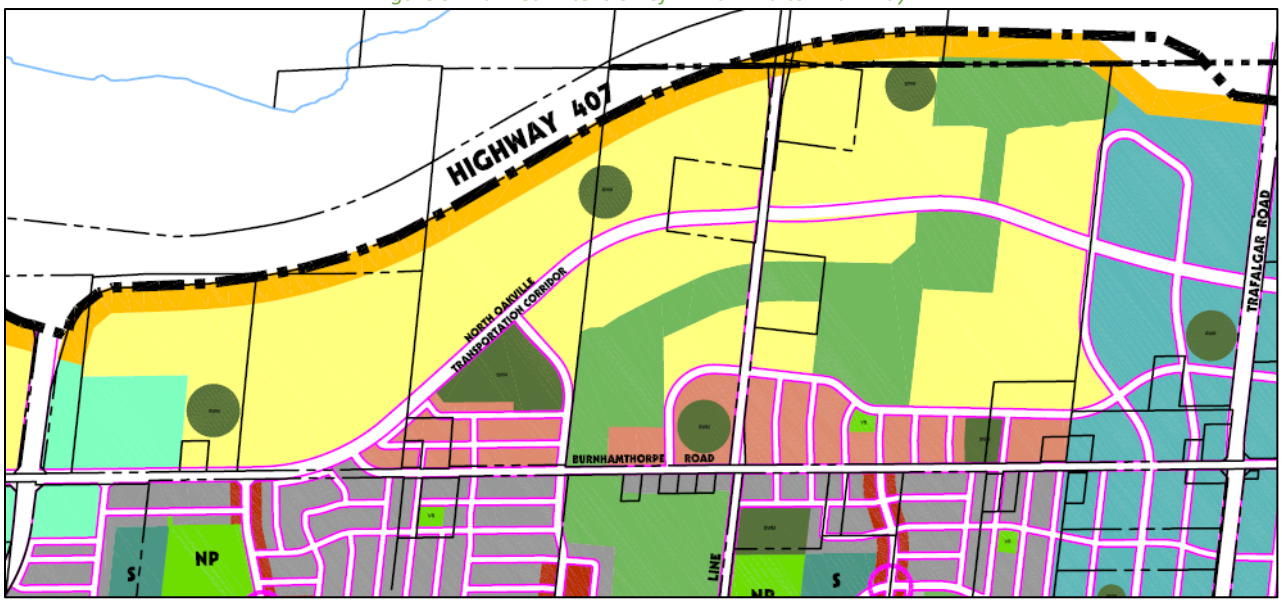
3 Future Background Conditions

3.1 Planned Conditions

3.1.1 William Halton Parkway Extension

As discussed in Section 2.1, William Halton Parkway is a Region of Halton arterial road with a four-lane cross-section. 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 and bike lanes east of Sixth Line. Phase 1 of the William Halton Parkway Extension Project, which is between Sixth Line and Ninth Line, was completed in November 2020. Phase 2 of the projects, which is between Third Line and Sixth Line, is anticipated to be completed by 2024, forming a new three-legged intersection with Burnhamthorpe Road about 1 kilometre to the west of Sixth Line as seen in Figure 9. The cross-section of the extended road can be seen in Figure 10. Based on the provided timing information for the William Halton Parkway Extension, the intersection of William Parkway and Sixth Line has been assumed to operate as a four-legged intersection in both the 2025 and 2030 future analysis horizons. Through the previously completed Neighborhood 9, 10, 11 TIS the Region of Halton has indicated that a peak hour volume of 2100 vehicles per hour in each direction in future conditions should be assumed for William Halton Parkway.

Figure 9: Planned Extension of William Halton Parkway



Source: North Oakville East Secondary Plan (2008)

Figure 10: Proposed William Halton Parkway Cross Section

Source: https://www.halton.ca/For-Residents/Roads-Construction/Construction-Projects/William-Halton-Parkway-Extension-Project
Accessed: January 15, 2022

3.1.2 Sixth Line Widening

Sixth Line is the main north-south corridor in the Study Area. This corridor 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 proposed cross-section includes the following elements (from left to right):

- 0.5 metre buffer
- 2.0 metre sidewalk
- 2.25 metre planting strip
- 1.55 metre bike lane
- 0.25 metre buffer strip
- Two 3.35 metre drive lanes
- 4.5 metre median (would accommodate left turn lanes where needed)
- Two 3.35 metre drive lanes
- 0.25 metre buffer strip

- 2.25 metre planting strip
- 2.0 metre sidewalk
- 0.5 metre buffer

According to the original plan, the widening will be completed in three phases: Phase 1 covers the section between Dundas and North Park Drive; Phase 2 covers the section north of North Park Drive and south of Burnhamthorpe Road; Phase 3 covers the section between Burnhamthorpe Road and Highway 407. The timeline of construction according to the original schedule is to have Phase 1 start in 2015, Phase 2 start in 2020 and Phase 3 start in 2023. However, the construction has been delayed and the updated schedule outlines that the section between Dundas Street and Threshing Mill Boulevard which is within Phase 1 was still under construction in 2021, and Phase 2 and 3 have yet to start. Therefore, it is reasonable to assume that the Sixth Line widening with the Study Area will not be completed before the 2025 horizon year. For the purposes of this study, it has been assumed that the widening of Sixth Line to four lanes within the study area will occur between 2025 and 2030.

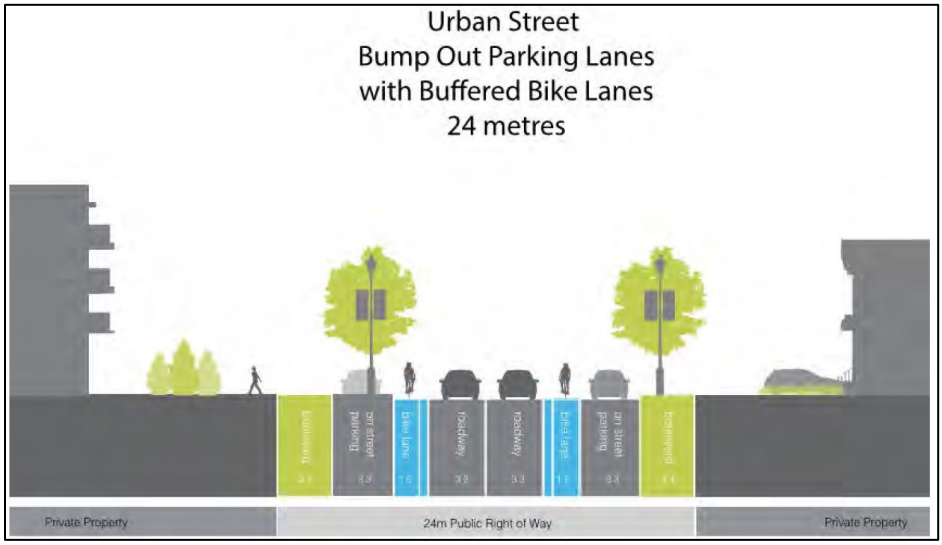
3.1.3 Burnhamthorpe Road

Burnhamthorpe Road is currently designated as a regional arterial road under the jurisdiction of Halton Region. However, its function as the north Oakville transportation corridor will be replaced by William Halton Parkway. A Class Environmental Assessment was conducted to develop a new road design for the section between Ninth Line

and Sixteen Mile Creek of Burnhamthorpe Road to better serve the needs of the north Oakville community once its responsibility is transferred to the Town.

The section of Burnhamthorpe Road within the Study Area is designated as the Transitional Area which provides interface/buffer from Employment District. The cross-section as illustrated in Figure 11 will be applied at Burnhamthorpe Road which includes concrete curb and gutter, two 3.30 m through lanes, two 1.5 m bike lanes, on-street parking on each side, hard surface and/or landscaped boulevards, and two 1.5 m concrete sidewalks.

Figure 11: Burnhamthorpe Road Transitional Area Cross Section

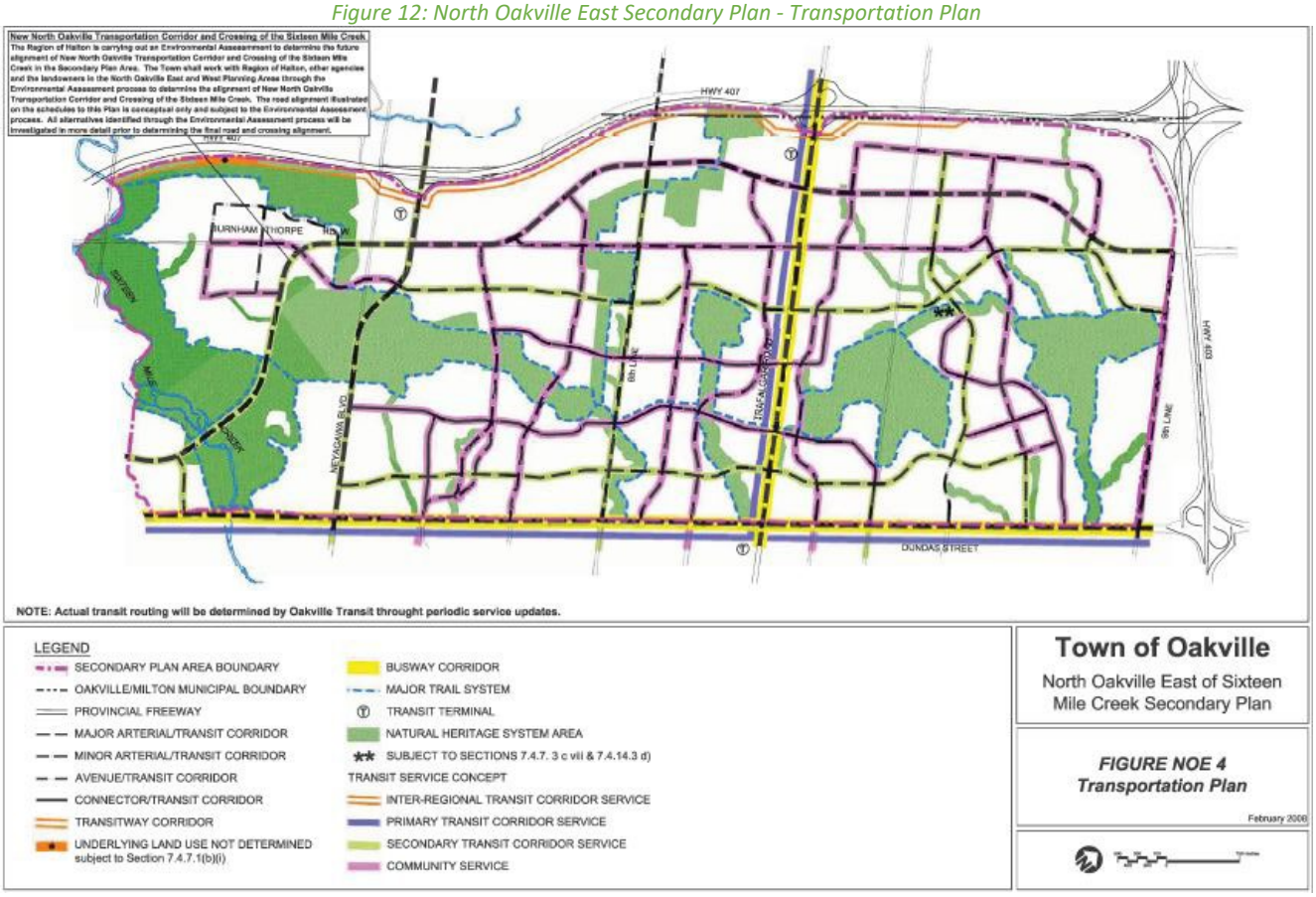


Source: Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014)

3.1.4 North Oakville East Secondary Plan – Transportation Plan

The North Oakville East Secondary Plan includes transit routes along key corridors within the proposed developments. Figure 12 illustrates the North Oakville East Secondary Plan Transportation Plan. Within the Study Area, Sixth Line is planned as a Secondary Transit Corridor, and William Halton Parkway and Burnhamthorpe Road are recognized as Community Service Transit corridors.

Figure 12: North Oakville East Secondary Plan - Transportation Plan



Source: North Oakville East Secondary Plan (2008)

3.1.5 Other Study Area Developments

In the proximity of the proposed Sixth Oak developments, there are background developments on its west, north, and south sides. The proposed full-movement access on Sixth Line will be aligned with the existing Loyalist Trail leading to the Star Oak Development.

3.1.5.1 Neighbourhood 9,10,11 Developments

The proposed Neighbourhood 9/10/11 developments in North Oakville surrounds 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 developments consist of:

- Timsin Holding Corp. – 22 single family detached units, and 36 townhouse units
- Docasa Group Ltd. – 114 single detached residential units, 168 townhouses, 128 mid-rise apartment units, and a small ground floor commercial area of 300 square metres for the apartment, as of the 2021 update.
- Star Oak Developments Ltd. – 68 single family detached units, and 141 townhouse units
- Diagram Developments Inc. – 154 townhouse units, and 360 apartment units
- ARGO (West Morrison Creek) Ltd. – 92 single family detached units, 86 townhouse units, and 124 apartment units
- Crosstrail Estates Inc. and TWKD Developments Inc. – 244 townhouse units

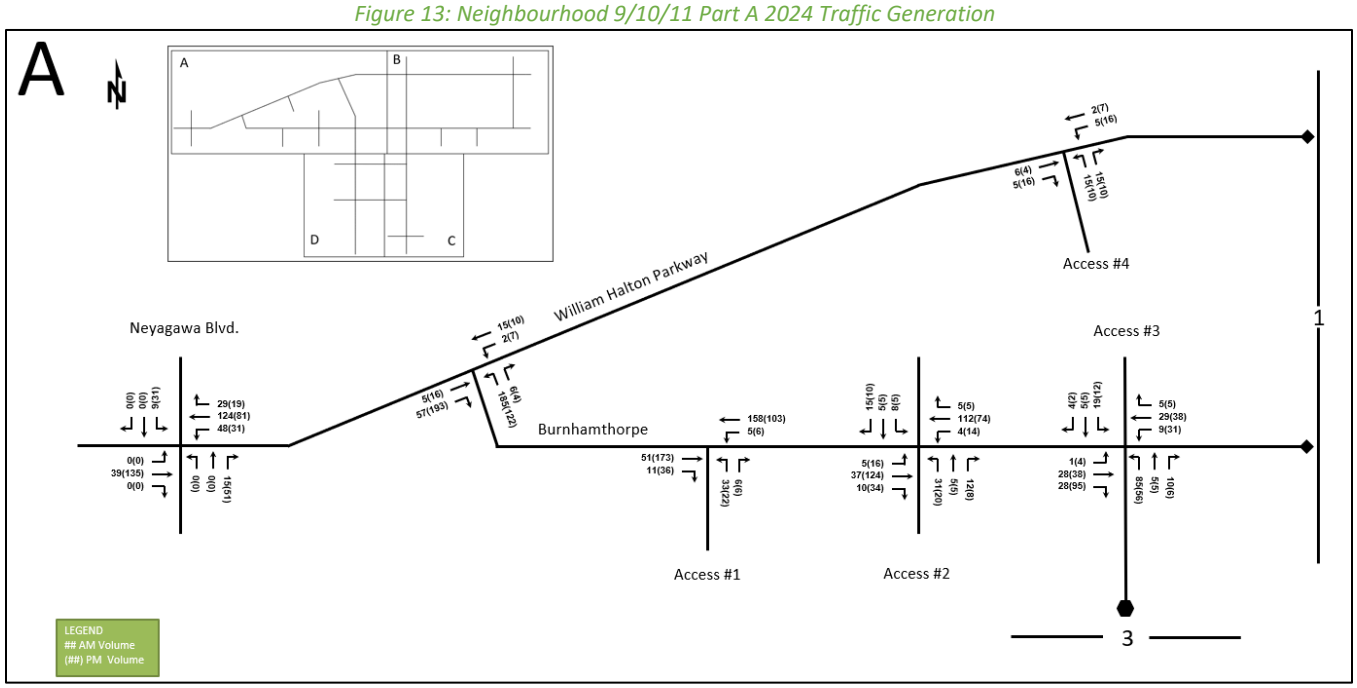
- Mattamy Homes / SGGC – 202 townhouse units, and 75 apartment units

- G.C. Family Investments – 13 townhouse units

The combined development includes a total of 665 single detached homes, 864 townhouses, and 687 mid-rise units in the most recent update of the study in 2021. The projected completion date is 2024, so it will be included in the background developments in both the 2025 and 2030 horizons. The development is anticipated to generate, in total, 1537 and 2018 two-way vehicle trips during the AM and PM peak hour.

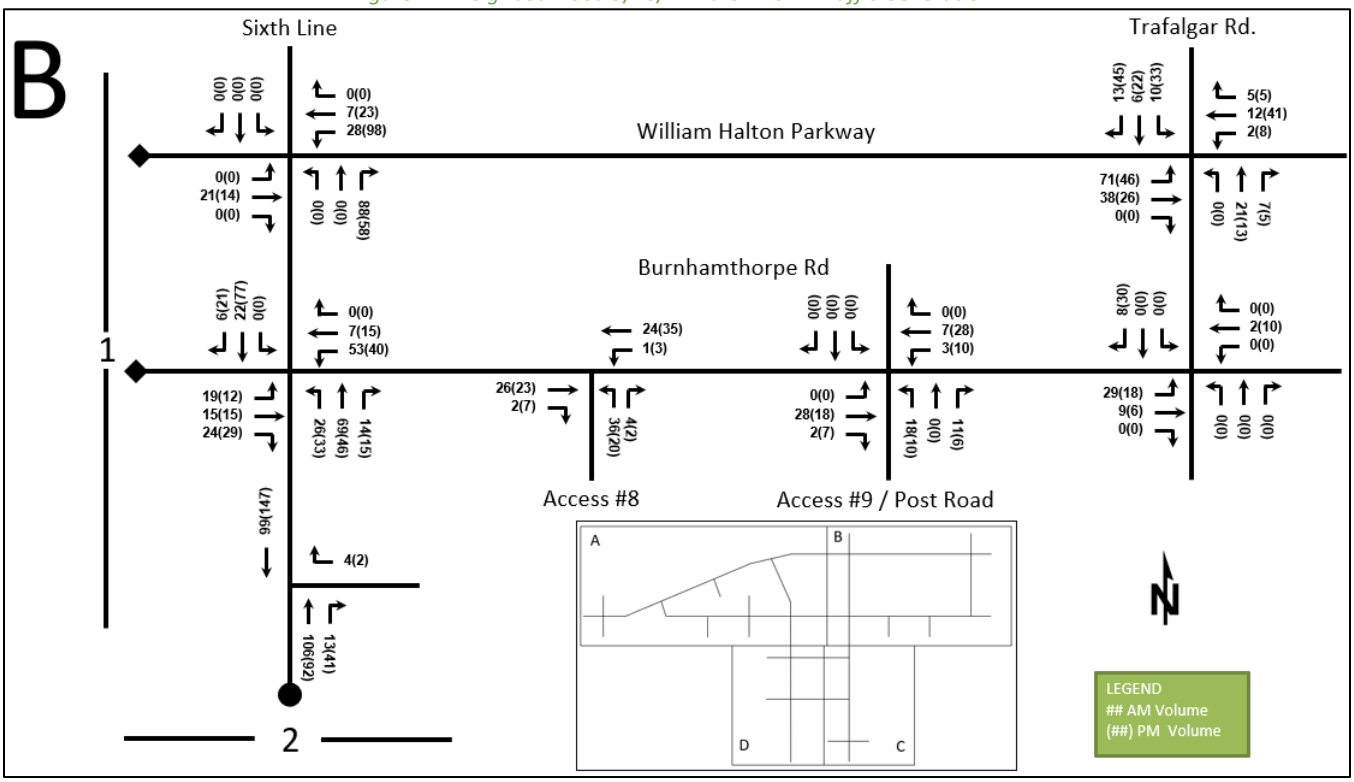
Figure 13 and Figure 14 illustrate part A of the projected 2024 site traffic generation of the Neighbourhood 9/10/11 Development in the update of the study. Figure 15 and Figure 16 illustrate the projected 2030 site traffic generation of the Neighbourhood 9/10/11 Development. The volumes below have been approved by the Town of Oakville.

Figure 13: Neighbourhood 9/10/11 Part A 2024 Traffic Generation



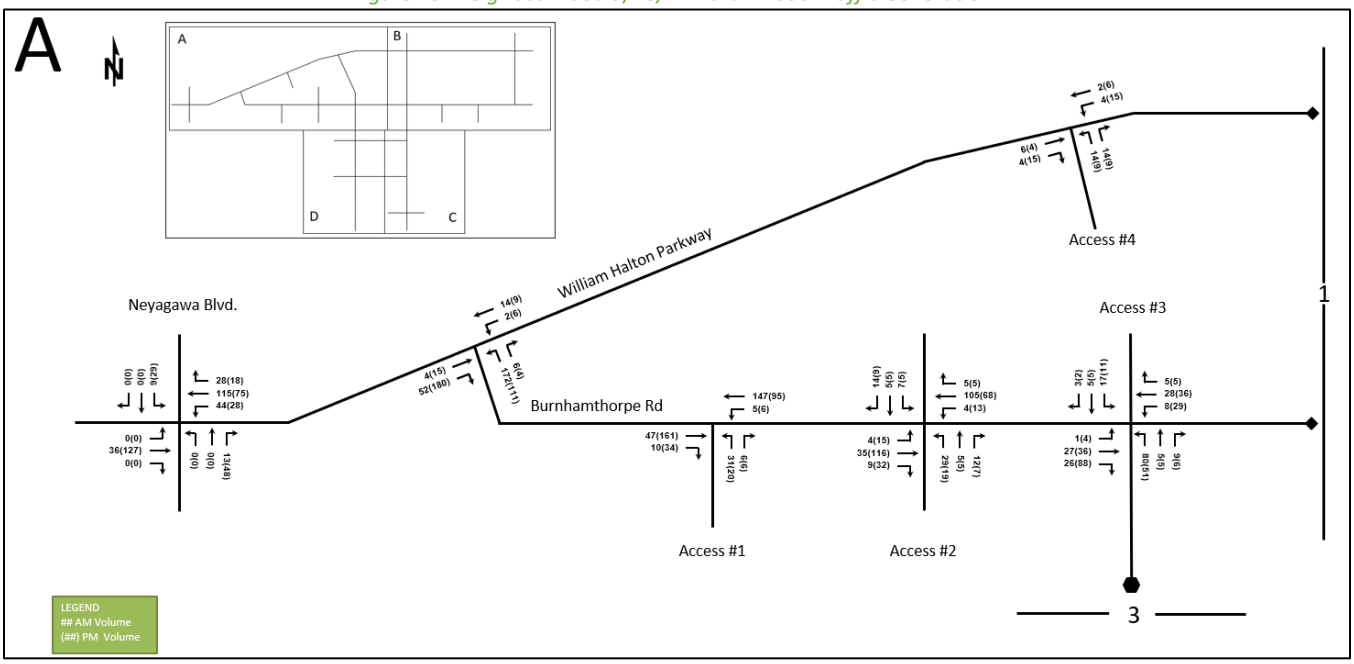
Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2021

Figure 14: Neighbourhood 9/10/11 Part B 2024 Traffic Generation



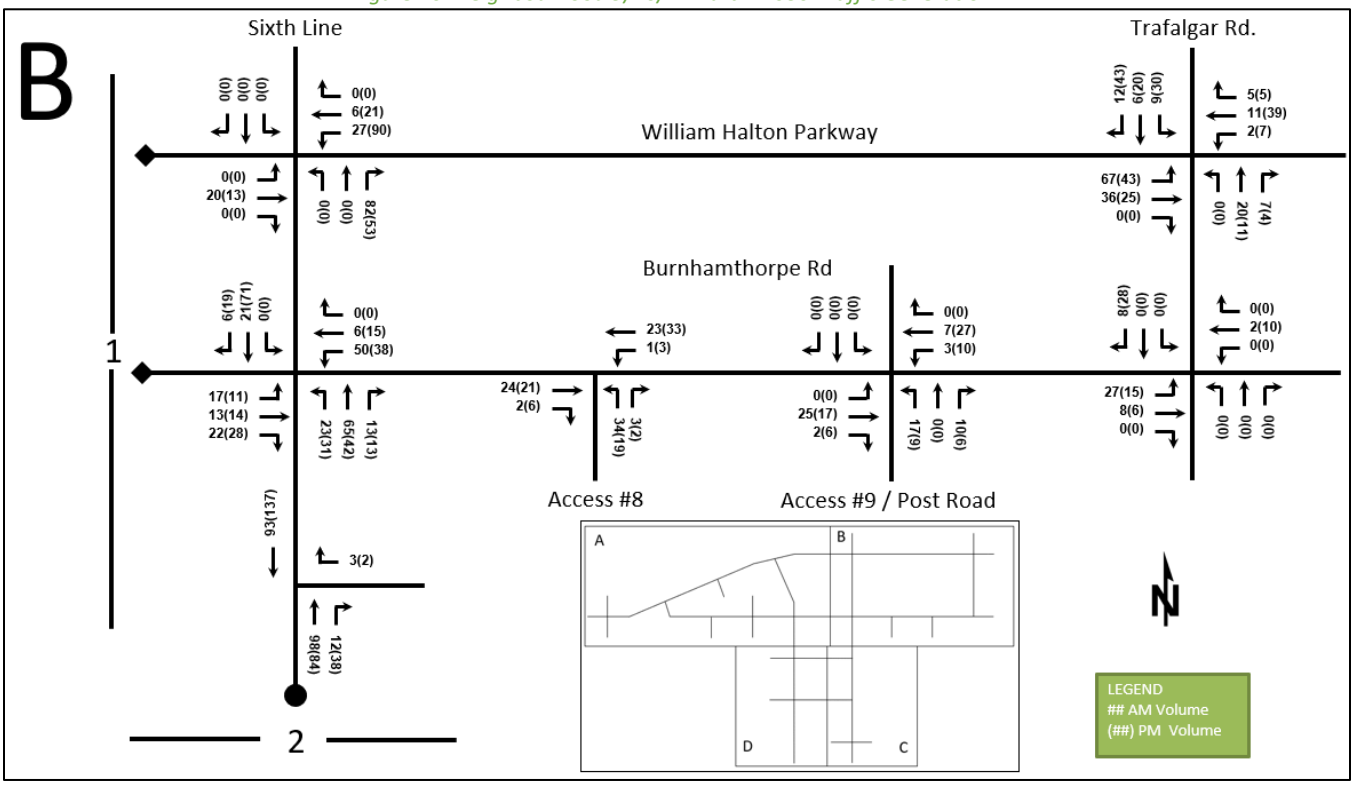
Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2021

Figure 15: Neighbourhood 9/10/11 Part A 2030 Traffic Generation



Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2021

Figure 16: Neighbourhood 9/10/11 Part B 2030 Traffic Generation

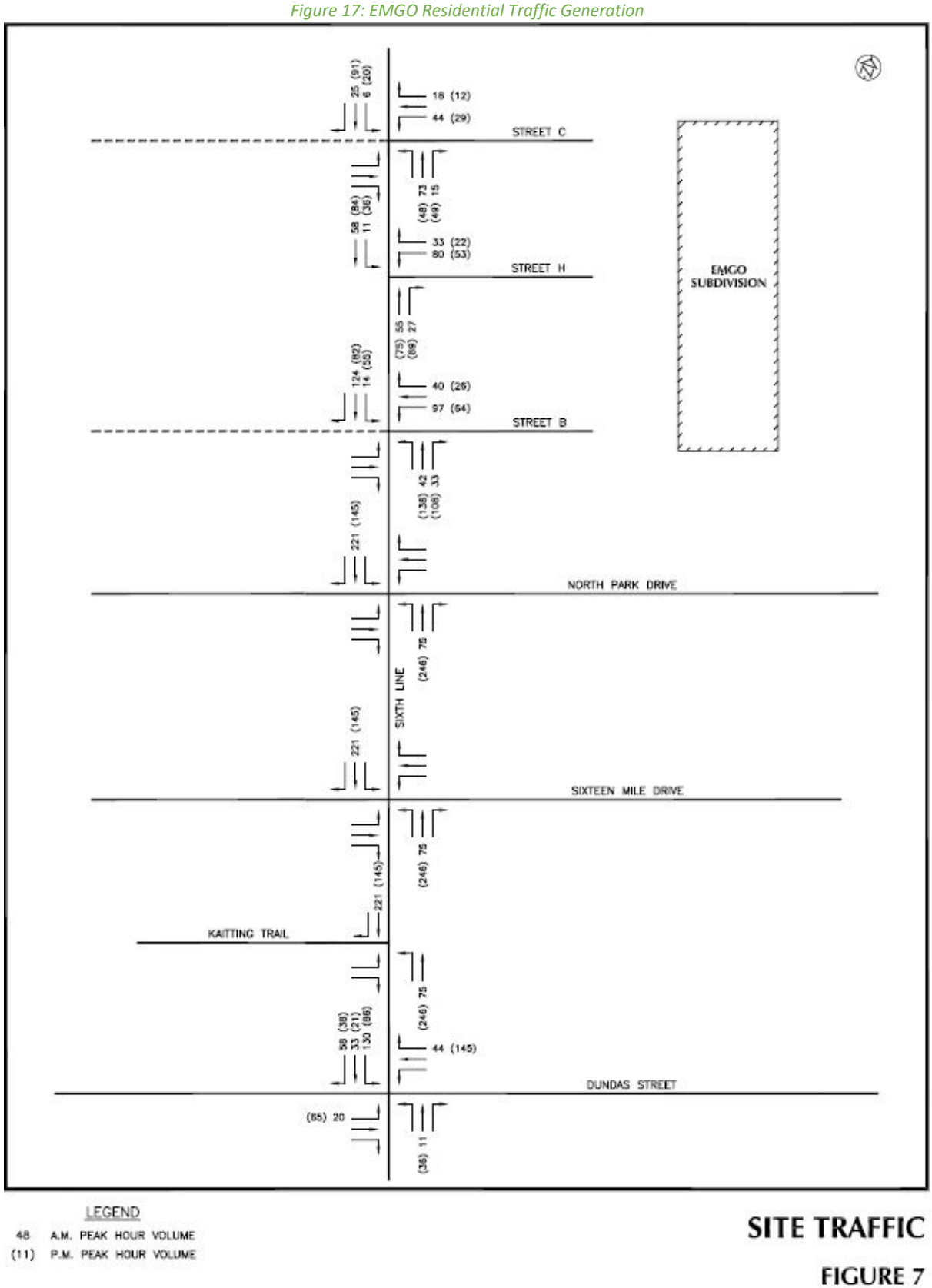


Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2021

3.1.5.2 EMGO North Oakville

The EMGO North Oakville development is located along the east side of Sixth Line between Dundas Street and Burnhamthorpe Road. This development includes 544 detached single-family residential units, and 74 townhouse units. Access to this development will be via three accesses on Sixth Line. The traffic generated by the EMGO development is summarized in Figure 17.

Figure 17: EMGO Residential Traffic Generation

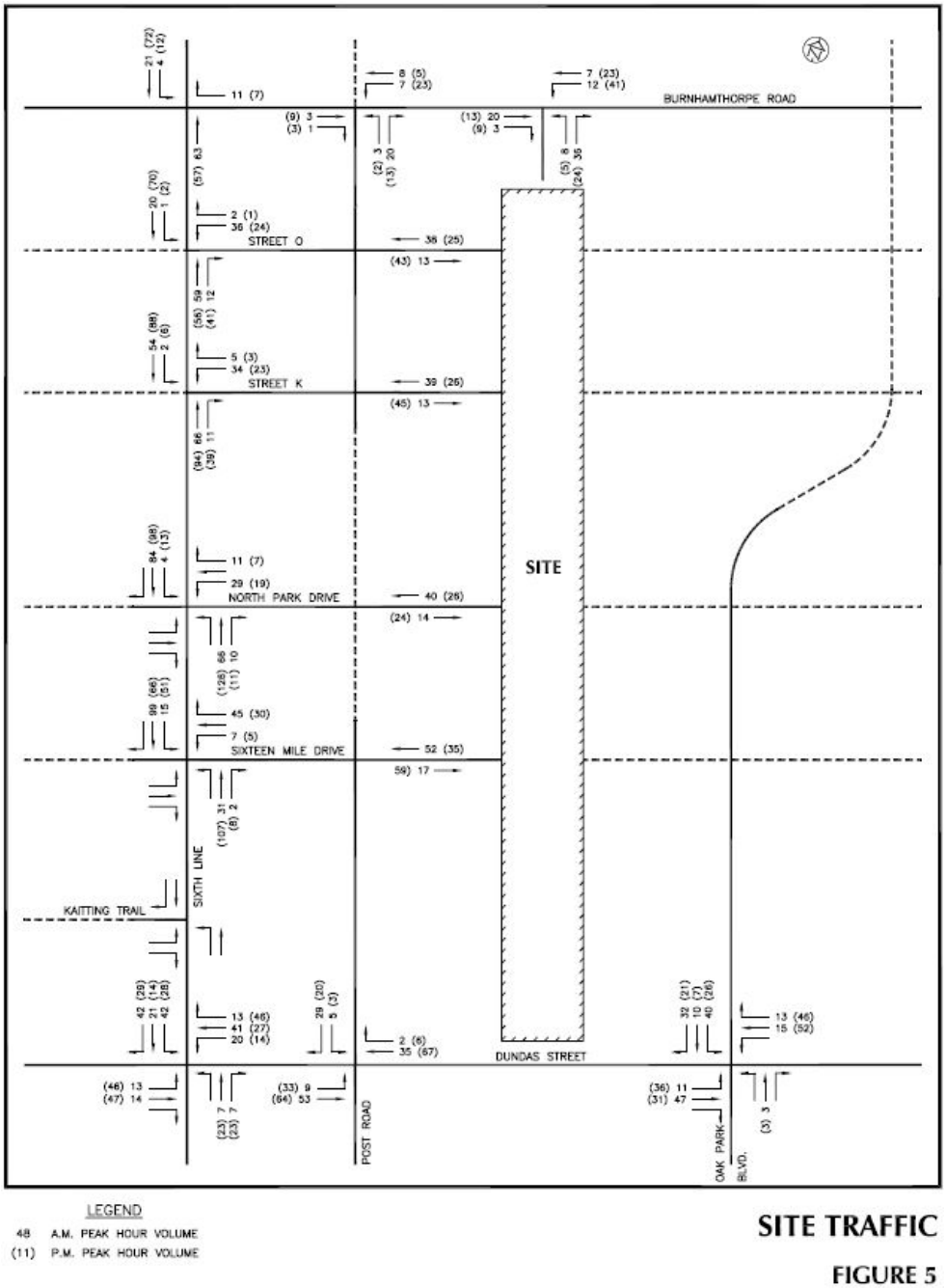


Source: Traffic Impact Study EMGO Draft Plan North Oakville; Reed, Voorhees & Associates; September 2012

3.1.5.3 Petgor

The Petgor Draft Plan North Oakville development is located to the east of Sixth Line, approximately halfway between Sixth Line and Trafalgar Road. This development includes 631 detached single-family units, and 149 townhouse units. Access to this development will be via roads through the adjacent developments to both Sixth Line and Trafalgar Road and direct access onto Burnhamthorpe Road. The traffic generated by the Petgor development is summarized in Figure 18.

Figure 18: Petgor Traffic Generation

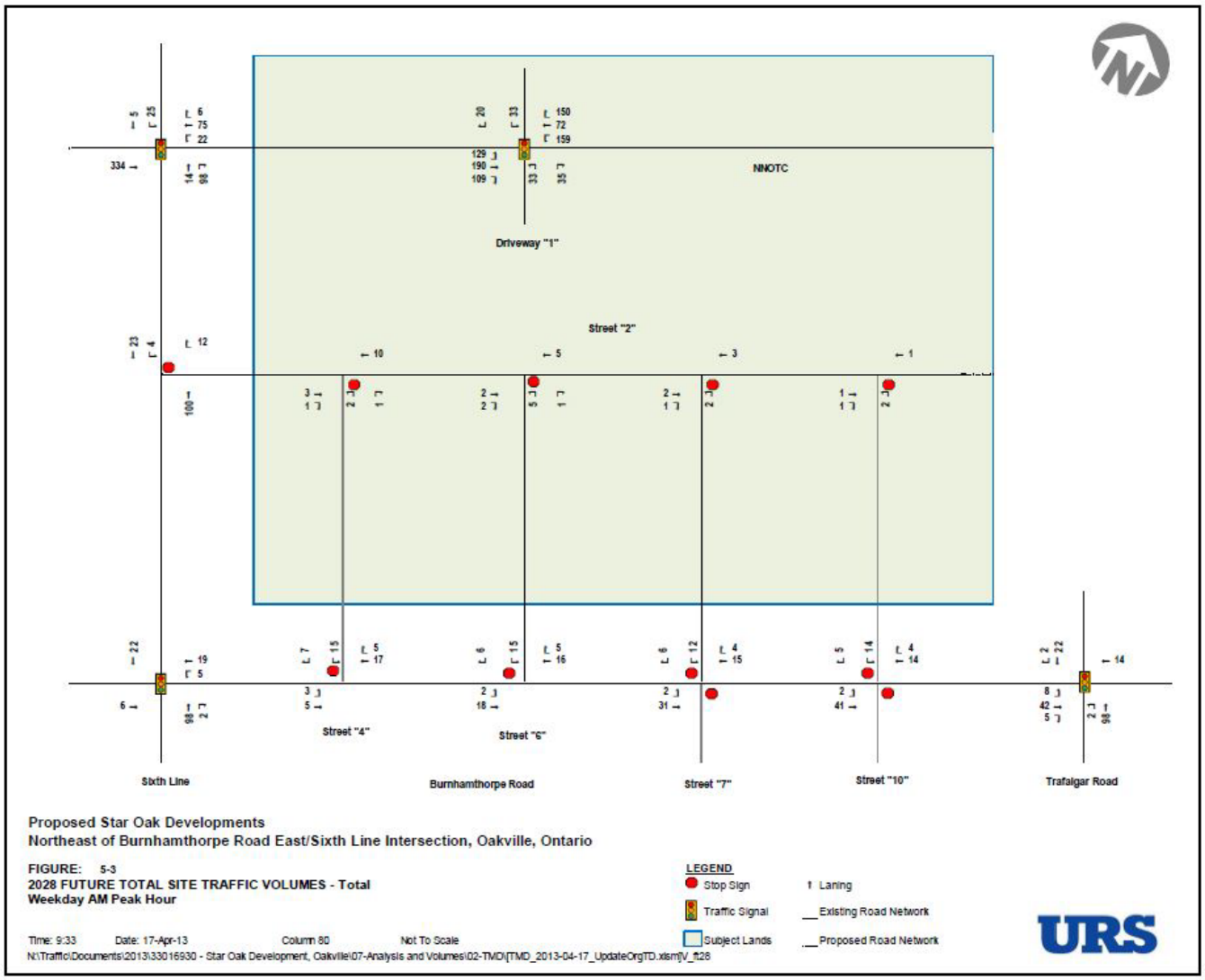


Source: Traffic Impact Study Petgor Draft Plan North Oakville; Reed, Voorhees & Associates; December 2012

3.1.5.4 Star Oak Development

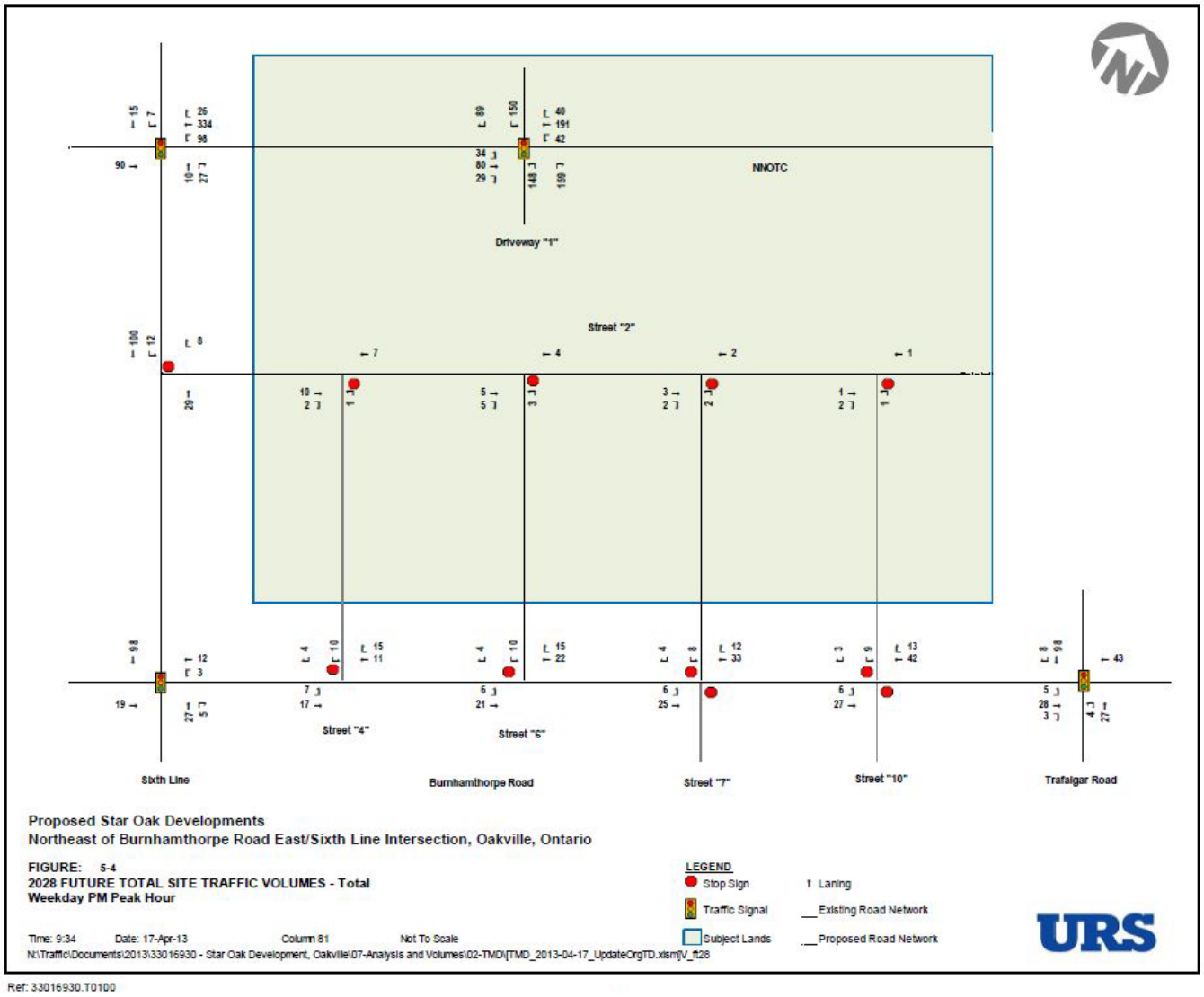
The Star Oak development is located at the northeast quadrant of Burnhamthorpe Road at Sixth Line. This development includes 217 residential units with a mix of detached single-family units, and townhouse type units and 154,000 square metres of employment uses. The construction will be completed in two phases. Phase I includes all the residential units and 10% of the employment buildings while Phase II consists of 90% of the employment development. The residential portion of the development is completed prior to the study date. The employment uses are not anticipated to be completed until 2028, prior to the 2030 horizon of this study. This development will connect to the road network via accesses on Sixth Line, Burnhamthorpe Road, and William Halton Parkway. The traffic generated by the Star Oak Development is summarized in Figure 12 and Figure 13.

Figure 19: Star Oak 2028 AM Peak Hour Site Trip Generation



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

Figure 20: Star Oak 2028 PM Peak Hour Site Trip Generation



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

3.1.6 Background Growth

Historical traffic counts have been reviewed to determine the historical growth rate. A 2% compound annual growth rate (CAGR) was selected for all existing streets within the Study Area. This rate has been confirmed with the Region.

3.1.7 Future Background Traffic Volumes

Combining the background development traffic, the background growth rate, and the existing traffic volumes, the Future Background traffic volumes were projected. To reflect that William Halton Parkway will replace the functionality of Burnhamthorpe Road, the eastbound and westbound traffic volumes on Burnhamthorpe Road have been reduced as the new facility will carry that traffic. This was done by assuming that traffic that is eastbound and westbound through Neyagawa Boulevard would utilize the new William Halton Parkway whereas most traffic that is turning at any of the intersections along Burnhamthorpe Road would remain on

Burnhamthorpe Road. Figure 21 illustrates the 2025 Future Background traffic volumes and Figure 22 illustrates the 2030 Future Background traffic volumes.

Figure 21: 2025 Future Background Traffic Volumes

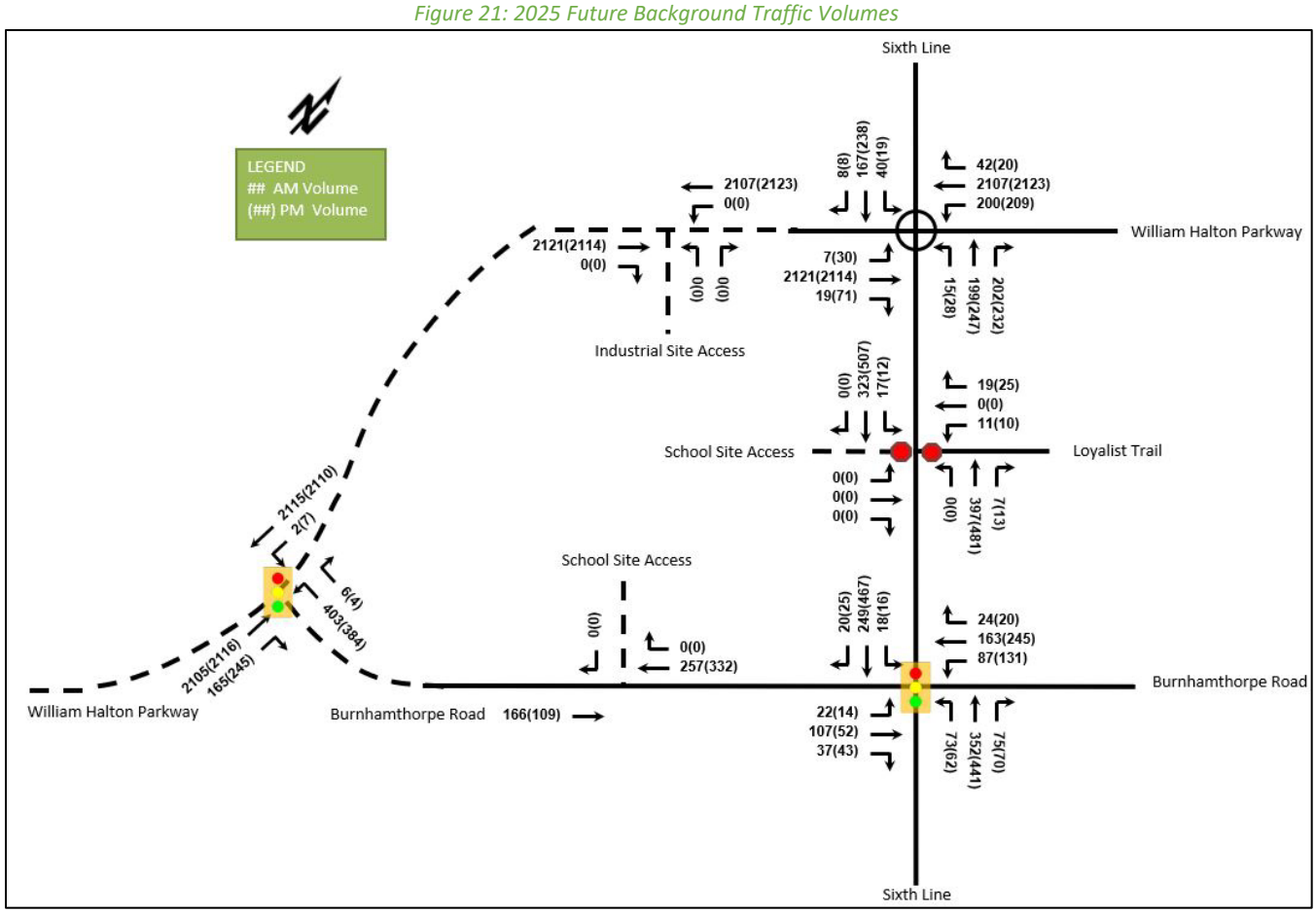
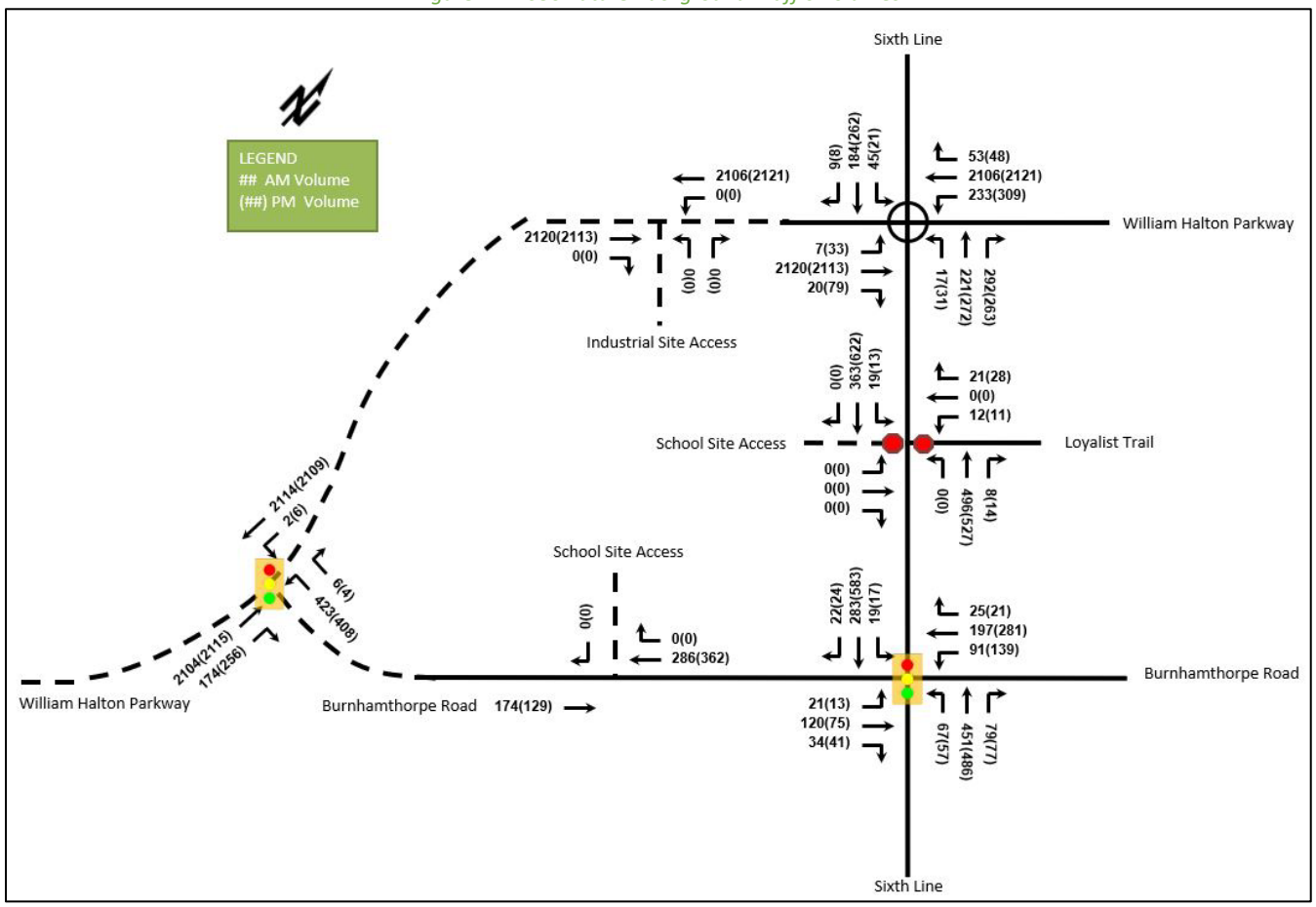


Figure 22: 2030 Future Background Traffic Volumes



4 Forecasting

4.1 Development-Generated Travel Demand

4.1.1 Trip Generation and Mode Shares

The proposed development contains four major land uses: secondary school, childcare, office, and industrial facilities. Trips of all modes are generated for each land use separately. Different methodologies of trip generation have been applied.

The ITE Trip Generation Manual 11th Edition has been reviewed for appropriate trip generation rates for the each of the proposed land uses. To estimate person trip generation, the calculated vehicle trip generation rates were multiplied by a factor of 1.28. Table 2 summarizes the person trip rates for the proposed land uses.

Table 2: ITE Trip Generation Person Trip Rates

Land Use	ITE Land Use Code	# of students / 1000 sq ft GFA	Peak Hour	Vehicle Trip Rate	Person Trip Rate	Directional Split		Method
Secondary School	525	1,200	AM	0.52	0.67	In	68%	Weighted Average
						Out	32%	
			PM	0.14	0.18	In	48%	Weighted Average
						Out	52%	
Day Care Centre	565	8	AM	11.00	14.08	In	47%	Weighted Average
						Out	53%	
			PM	11.12	14.23	In	53%	Weighted Average
						Out	47%	
General Office Building	710	100	AM	1.67	2.14	In	88%	Fitted Curve Equation
						Out	12%	
			PM	1.66	2.12	In	17%	Fitted Curve Equation
						Out	83%	
General Light Industrial	110	249	AM	0.74	0.95	In	88%	Weighted Average
						Out	12%	
			PM	0.65	0.83	In	14%	Weighted Average
						Out	86%	

The secondary school is projected to serve 1,200 pupils upon its completion before both the 2025 and 2030 horizons. The High School land use category (LUC 525) was used to estimate trips for the HDSB secondary school. The weighted average rate equations were used to determine appropriate vehicle trip generation rates. While there is a sufficient number of surveys included for each time period, the R^2 value is 0.56 for AM, less than 0.75, which suggests a poor fit with the data. and no fitted curve equation is available for PM. As recommended by ITE's guideline *Transportation Impact Analyses for Site Development*, the weighted average equations are chosen in this case.

The childcare adjacent to the secondary school was calculated using the Day Care Centre land use. The childcare facility has an estimated gross floor area of 8,000 square feet the size of this facility will be further refined through the site plan process and has only been estimated here for trip generation purposes. Only the weighted averages were provided in the ITE Trip Generation Manual. The size and projected trips may change when the detailed site plan becomes available.

The General Office Building land use category was used to estimate trips for the 100,000 square feet office building. The rate equations were applied because the regressions were calculated based on more than 200 studies and the criteria of R^2 values being greater than 0.75 were met.

The General Light Industrial land use category was used to estimate trips for the 281,600 square feet one-storey industrial employment buildings. The weighted averages were used because the R^2 values were around 0.6 for both cases.

Using the above person trip rates, the total person trip generation for the developments is summarized in Table 3. No synergy or pass-by trip reduction factors have been applied to the trip generation. The functions of the

proposed developments do not support great synergy effects. Location-wise, there is no interconnectivity between Block 1 which consists of the school, childcare and office land uses and Block 2 which contains the industrial employment land use since they are separated by Natural Heritage System Areas.

Table 3: Total Person Trip Generation - ITE

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Secondary School	547	257	804	104	112	216
Childcare	33	37	70	38	33	71
General Office Building	188	26	214	36	176	212
General Light Industrial	162	22	184	23	139	162
Total Person Trips	**930**	**342**	**1272**	**201**	**460**	**661**

However, the ITE Trip Generation Manual contains little data on the transit and active modes of trips for the secondary school category, which are major modes for this land use. It is not ideal to use the ITE rates as a basis for trip generation of transit and active modes. Therefore, the "first principles" methodology has been used to determine the total trips generated for the secondary school land use. The ITE rates were reserved for the other two land uses.

Using "first principles", the secondary school trip generation was estimated in two parts: the school trips by the students, and the work trips by the staff, with different mode share percentages. The conservative assumption of no carsharing was applied, thus each person would be making their own trips. It was also assumed that the drop-off/pick-up vehicles would leave the premise of school immediately, thus all the incoming auto passenger trips made by the students during the peak hour would be leaving within the same hour.

The mode share scenarios were determined for the secondary school students based on the existing data provided by the School Board as well as the 2016 Transportation Tomorrow Survey (TTS) data in nearby zones containing secondary schools. The data showed that most secondary school students get to school in active modes of walking and cycling, or by using transit services (including both the school bus services and the Oakville Transit School Specials routes services). Some students get dropped off by their parents. A few students in their senior years may drive to school themselves. The AM peak hour and PM peak hour mode share percentages differ from each other. The AM peak hour of school was assumed to coincide with the AM adjacent street peak hour as the start time of school generally corresponds to the start time of work. However, the PM peak hour of school was different from the PM peak hour on the streets since secondary schools generally end before 3 PM, earlier than typical PM commuter traffic would be expected to start. The number of students leaving school during the PM street peak hour was assumed to be around 25% of the total students, as the ITE trip rates also indicate in Table 3. The percentage of auto passenger trips increases during the PM street peak hour comparing to the school peak, because the school bus services are generally no longer available during this time. Both the PM street peak hour and PM school peak hour trips have been calculated. The school was anticipated to open by 2025. It was assumed that the school would be operating at capacity for both the 2025 and 2030 horizons. The mode share percentages and number of trips generated during peak hours are summarized in Table 4.

Table 4: 2025 and 2030 Trip Generation by Mode – Secondary School Students

Travel Mode	AM Peak Hour				PM Street Peak Hour				PM School Peak Hour			
	Mode Share	In	Out	Total	Mode Share	In	Out	Total	Mode Share	In	Out	Total
Auto Driver	1%	12	0	12	1%	0	3	3	1%	0	12	12
Auto Passenger	20%	240	240	480	25%	75	75	150	15%	180	180	360
School Bus	25%	300	0	300	0%	0	0	0	25%	0	300	300
Public Transit	5%	60	0	60	15%	0	45	45	5%	0	60	60
Cycle	24%	288	0	288	29%	0	87	87	24%	0	288	288
Walk	25%	300	0	300	30%	0	90	90	30%	0	360	360
Total	**100%**	**1200**	**240**	**1440**	**100%**	**75**	**300**	**375**	**100%**	**180**	**1200**	**1380**

The vehicle trip analyses would use the AM peak hour and PM street peak hour as the critical periods. The secondary school was estimated to generate 492 and 153 two-way auto driver and auto passenger trips during the AM and PM Street peak hour, respectively. The school was also estimated to generate 300 and 45 trips by bus during the AM and PM Street peak hours. The pedestrian and cycling analyses would use the AM peak hour and PM school peak hour as the critical periods since the school would be the major generator of walking and cycling trips within the Study Area transportation network. The two-way cycling trips generated during the peak hours are 288 and 288 while the two-way walking trips generated are 300 and 360.

HDSB estimated a total staff count of 110 to 130 on site at peak enrollment based on proxy school sites. A staff count of 130 was used in the calculations. It has been assumed that auto-passenger trips for staff would also be drop-off trips, as opposed to carpooling. While carpooling will occur, this method will produce a conservative estimate of the vehicle trips to and from the school. The mode shares used for 2025 and 2030, however, were the mode share targets outlined in Halton Region's Transportation Master Plan. The mode share percentages and number of trips generated during peak hours are summarized in Table 5 and Table 6. The staff will generate 125 two-way vehicle trips (the sum of the auto driver and auto passenger trips) during both the AM and PM peak hours in 2025, and similarly 118 two-way vehicle trips in 2030.

Table 5: 2025 Trip Generation by Mode – Secondary School Staff

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	65%	85	0	85	0	85	85
Auto Passenger	15%	20	20	40	20	20	40
Transit	15%	20	0	20	0	20	20
Cycle	3%	4	0	4	0	4	4
Walk	2%	3	0	3	0	3	3
Total	**100%**	**132**	**20**	**152**	**20**	**132**	**152**

Table 6: 2030 Trip Generation by Mode – Secondary School Staff

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	60%	78	0	78	0	78	78
Auto Passenger	15%	20	20	40	20	20	40
Transit	20%	26	0	26	0	26	26
Cycle	3%	4	0	4	0	4	4
Walk	2%	3	0	3	0	3	3
Total	**100%**	**131**	**20**	**151**	**20**	**131**	**151**

Similar to the staff at the secondary school, the mode share for the office building in 2025 and 2030 were the mode share targets outlined in Halton Region's Transportation Master Plan. The mode share percentages and number of trips generated during peak hours are summarized in Table 7 and Table 8. The staff will generate 139 and 138 two-way vehicle trips during the AM and PM peak hours in 2025, and 128 and 127 two-way vehicle trips in 2030.

Table 7: 2025 Trip Generation by Mode – Office

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	65%	122	17	139	23	114	138
Auto Passenger	15%	28	4	32	5	26	32
Transit	15%	28	4	32	5	26	32
Cycle	3%	6	1	6	1	5	6
Walk	2%	4	1	4	1	4	4
Total	**100%**	**188**	**26**	**214**	**36**	**176**	**212**

Table 8: 2030 Trip Generation by Mode – Office

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	60%	113	16	128	22	106	127
Auto Passenger	15%	28	4	32	5	26	32
Transit	20%	38	5	43	7	35	42
Cycle	3%	6	1	6	1	5	6
Walk	2%	4	1	4	1	4	4
Total	**100%**	**188**	**26**	**214**	**36**	**176**	**212**

The mode share for the childcare centre attached to the secondary school is determined based on the TTS data for all childcare facilities in Oakville. The current mode share percentages are 85% auto driver, 5% auto passenger, 5% transit and 5% walking. The percentages of transit and walking modes are expected to rise with the transit corridor improvement in the future horizons. However, other factors should be considered for childcare-destined trips including safety concerns, convenience as well as the components of linked trips. Therefore, the same mode share percentages were maintained in the 2025 and 2030 horizons to be conservative. Due to the low volumes of trips generated by the childcare facility, such assumptions will not have discernible impact on the traffic analysis

in the Study Area. The mode share percentages and number of trips generated during peak hours are summarized in Table 9. The childcare facility will generate 97 and 98 two-way vehicle trips during the AM and PM peak hour.

Table 9: 2025 and 2030 Trip Generation by Mode – Childcare

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	85%	46	51	97	52	46	98
Auto Passenger	5%	3	3	6	3	3	6
Transit	5%	3	3	6	3	3	6
Cycle	0%	0	0	0	0	0	0
Walk	5%	3	3	6	3	3	6
Total	**100%**	**54**	**60**	**114**	**61**	**54**	**115**

Similar to the school staff, the mode share used for the industrial lands in 2025 and 2030 were the mode share targets outlined in Halton Region's Transportation Master Plan. The Study Area and its surroundings have not been fully developed and TTS data cannot be pulled from these zones. The data in all industrial areas in Oakville were pulled from TTS which indicates that about 90% of the work trips are made in auto driver mode. Although transit corridor improvements will be made in the following years and the proximity to the GO Bus stops will encourage travellers to use the transit mode, it is unknown how effective this will be in reducing the auto driver in order to reach the projected future transit mode share of 15% in 2025 and 20% in 2030 from the 2016 level of 4% even with the mode shift towards transit in the future horizons. The existing active mode share of 1% also would need to increase to the Regional active mode share projections of 5%, which could potentially be achieved with the installation of multi-use paths and bicycle lanes along William Halton Parkway. To remain conservative, the regional mode share projections have been adjusted to reflect a higher auto mode share for the 2025 and 2030 horizons. The existing and projected mode shares are summarized in Table 10.

Table 10: Mode Share Assumptions

Travel Mode	2016 Industrial Lands TTS Mode Share	2025 Regional Projection Mode Share	2030 Regional Projection Mode Share	2025 Mode Share	2030 Mode Share
Auto Driver	90%	65%	60%	80%	70%
Auto Passenger	5%	15%	15%	10%	13%
Transit	4%	15%	20%	7%	12%
Active Modes	1%	5%	5%	3%	5%
Total	100%	100%	100%	100%	100%

Using the above mode shares and person trip rates, the person trips by mode have been projected. Table 11 summarizes the 2025 trip generation by mode.

Table 11: 2025 Trip Generation by Mode – Industrial

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	80%	189	26	214	26	161	187
Auto Passenger	10%	24	3	27	3	20	23
Transit	7%	17	2	19	2	14	16
Active Modes	3%	7	1	8	1	6	7
Total	**100%**	**236**	**32**	**268**	**33**	**201**	**234**

Table 12 summarizes the 2030 trip generation by mode.

Table 12: 2030 Trip Generation by Mode – Industrial

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	70%	165	22	188	23	141	164
Auto Passenger	13%	31	4	35	4	26	30
Transit	12%	28	4	32	4	24	28
Active Modes	5%	12	2	13	2	10	12
Total	**100%**	**236**	**32**	**268**	**33**	**201**	**234**

As shown above, the site is projected to generate 214 AM and 187 PM peak hour two-way auto trips during the 2025 horizon. With the shift in mode share, it will generate 188 AM and 164 PM peak hour two-way vehicle trips in 2030.

The total site trip generation of all three land uses in 2025 and 2030 are summarized in Table 13 and Table 14.

Table 13: 2025 Trip Generation by Mode – Total

Travel Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto Driver	454	94	547	101	409	511
Auto Passenger	315	270	585	106	144	251
School Bus	300	0	300	0	0	0
Transit	128	9	137	10	108	119
Cycle	303	2	303	2	100	102
Walk	312	4	316	4	102	105
Total	**1810**	**378**	**2188**	**225**	**863**	**1088**

Table 14: 2030 Trip Generation by Mode – Total

Travel Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto Driver	414	89	503	97	374	470
Auto Passenger	322	271	593	107	150	258
School Bus	300	0	300	0	0	0
Transit	155	12	167	14	133	147
Cycle	305	2	306	2	102	104
Walk	315	5	318	5	104	108
Total	**1809**	**378**	**2187**	**225**	**862**	**1087**

4.1.2 Trip Distribution

To understand the travel patterns of the secondary school, information has been obtained from the Halton District School Board (HDSB) on the catchment area. The boundary map, scatter map, and walking distance map are attached in Appendix C. Most of the residential units where students come from are located to the south of the school.

Table 15 below summarizes the distribution.

Table 15: Proposed School Catchment Area Trip Distribution

To/From	2025 Percent of Trips	2030 Percent of Trips
North	3%	3%
South	57%	55%
East	20%	17%
West	20%	25%
Total	100%	100%

The 2030 percentage of trips to the west increases slightly since the background developments to the south of Burnhamthorpe Road and to the west of Sixth Line consist of mostly residential units will be completed in that horizon. The development in the northeast corner of Sixth Line at Burnhamthorpe Road is mostly commercial, thus it generates few trips to the school. The childcare facility was assumed to have similar trip distribution pattern as the secondary school.

To understand the travel patterns of the office and industrial developments, the Transportation Tomorrow Survey (TTS) data for work purpose trips in Oakville has been used as a reference. Table 16 summarizes the distribution.

Table 16: 2016 TTS Oakville Work Purpose Trip Distribution

To/From	Percent of Trips
North	15%
South	35%
East	25%
West	25%
Total	100%

4.1.3 Trip Assignment

Using the distribution outlined above, turning movement splits, intersection turning restrictions, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. Based on the number of parking spaces provided in the latest school site plan, the access on Sixth Line is assumed to be the main entrance to the secondary school while the access on Burnhamthorpe Road is assumed to be the minor entry point. The childcare facility will be sharing the access with the secondary school on Burnhamthorpe Road. The office will be sharing the same accesses, but the trips to/from the office will utilize the access on Burnhamthorpe Road as the main entrance because the office building is closer to this access. The turning restriction at the access on Burnhamthorpe Road will also cause some people to reroute. All trips to the industrial development will access the site from the access on the extended portion of William Halton Parkway. The 2025 and 2030 site trip generation at the secondary school, based on the auto driver volumes in Table 4, Table 5, and Table 6, are illustrated in Figure 23 and Figure 24, respectively. The site trip generation at the childcare centre, based on the auto driver volumes in Table 9, is illustrated in Figure 25. The projected office trip generation for 2025 and 2030, based on the auto driver volumes in Table 7 and Table 8, are illustrated in Figure 26 and Figure 27, respectively. The projected 2025 and 2030 industrial trip generation, based on the auto driver volumes in Table 11 and Table 12,are illustrated in Figure 28 and Figure 29.

Figure 23: 2025 Secondary School Site Trip Generation

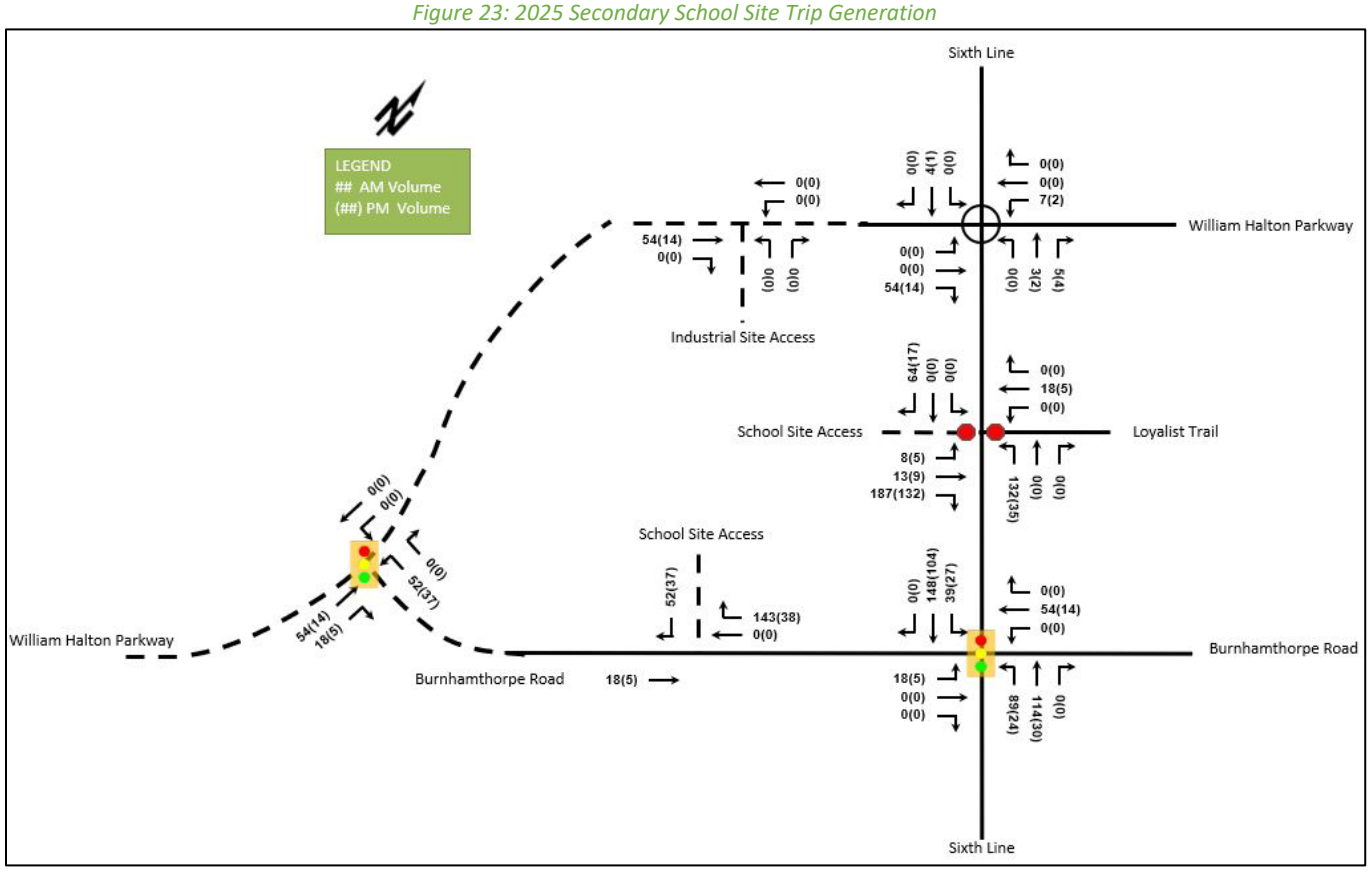


Figure 24: 2030 Secondary School Site Trip Generation

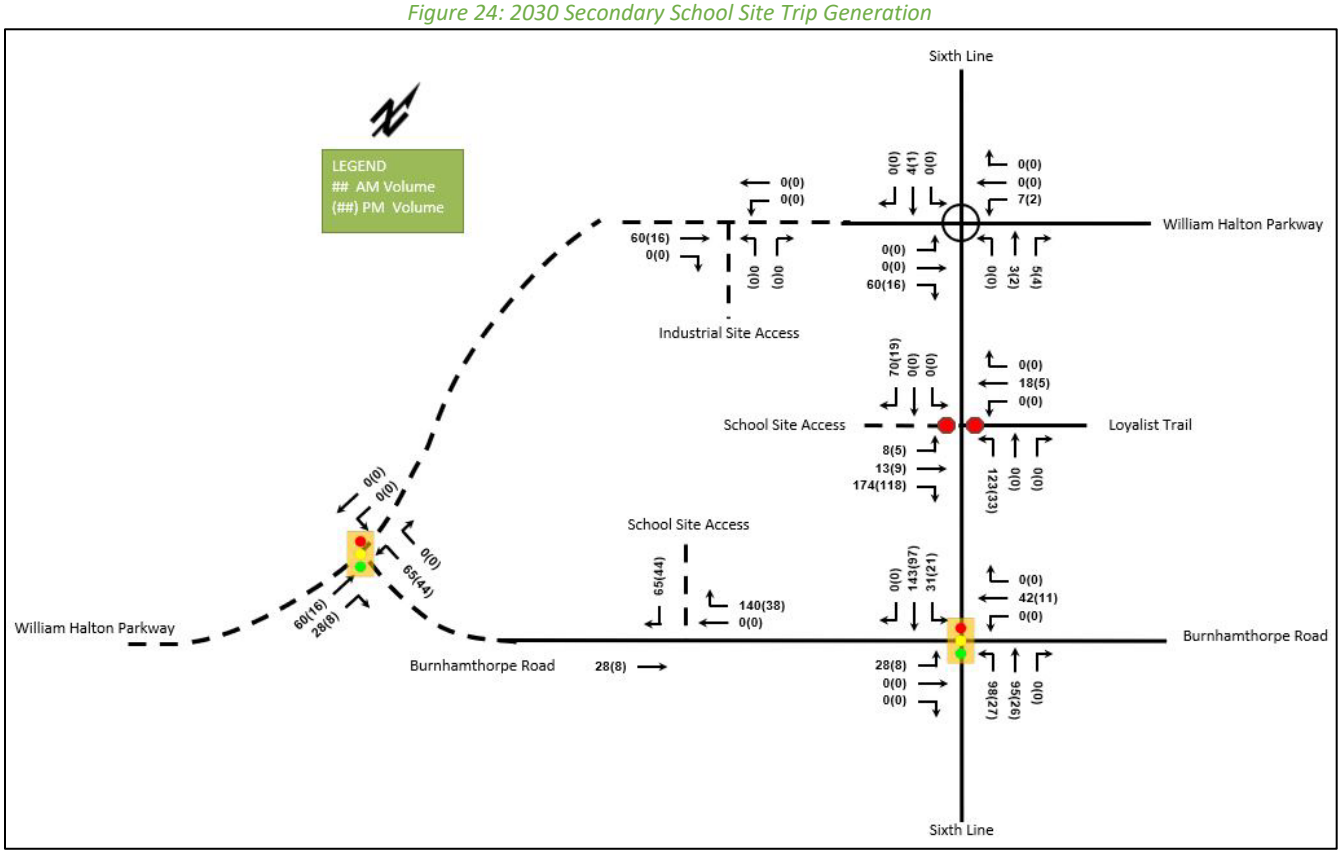


Figure 25: Childcare 2025 and 2030 Site Trip Generation

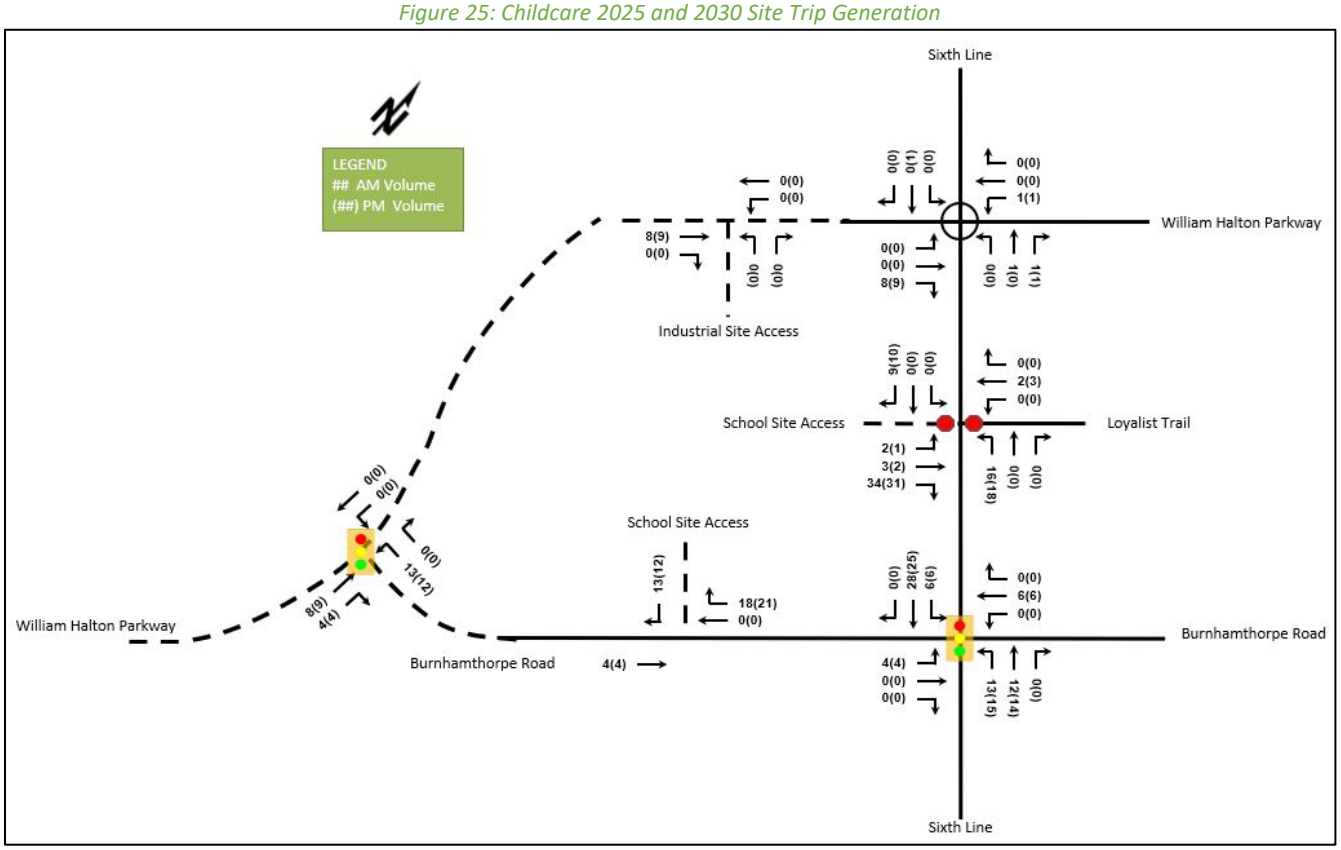


Figure 26: 2025 Office Site Trip Generation

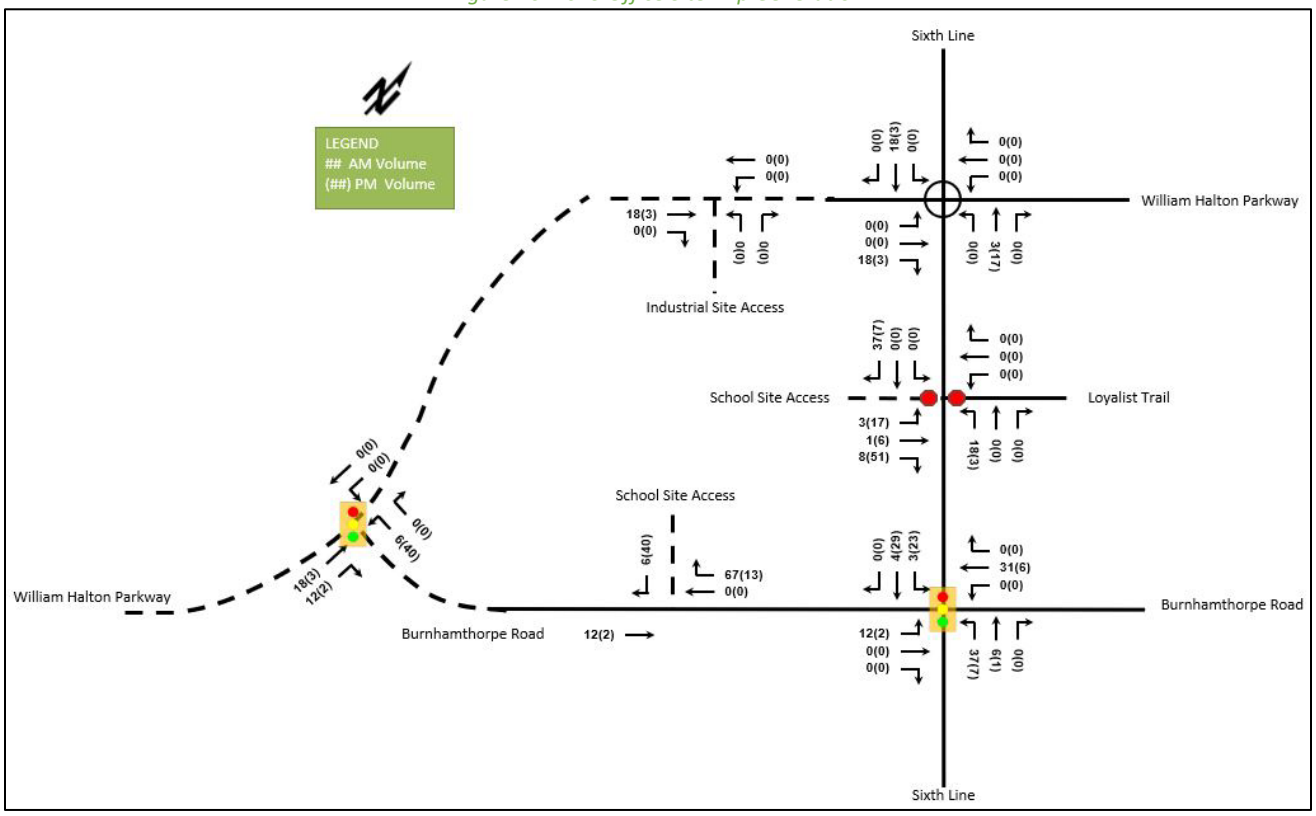


Figure 27: 2030 Office Site Trip Generation

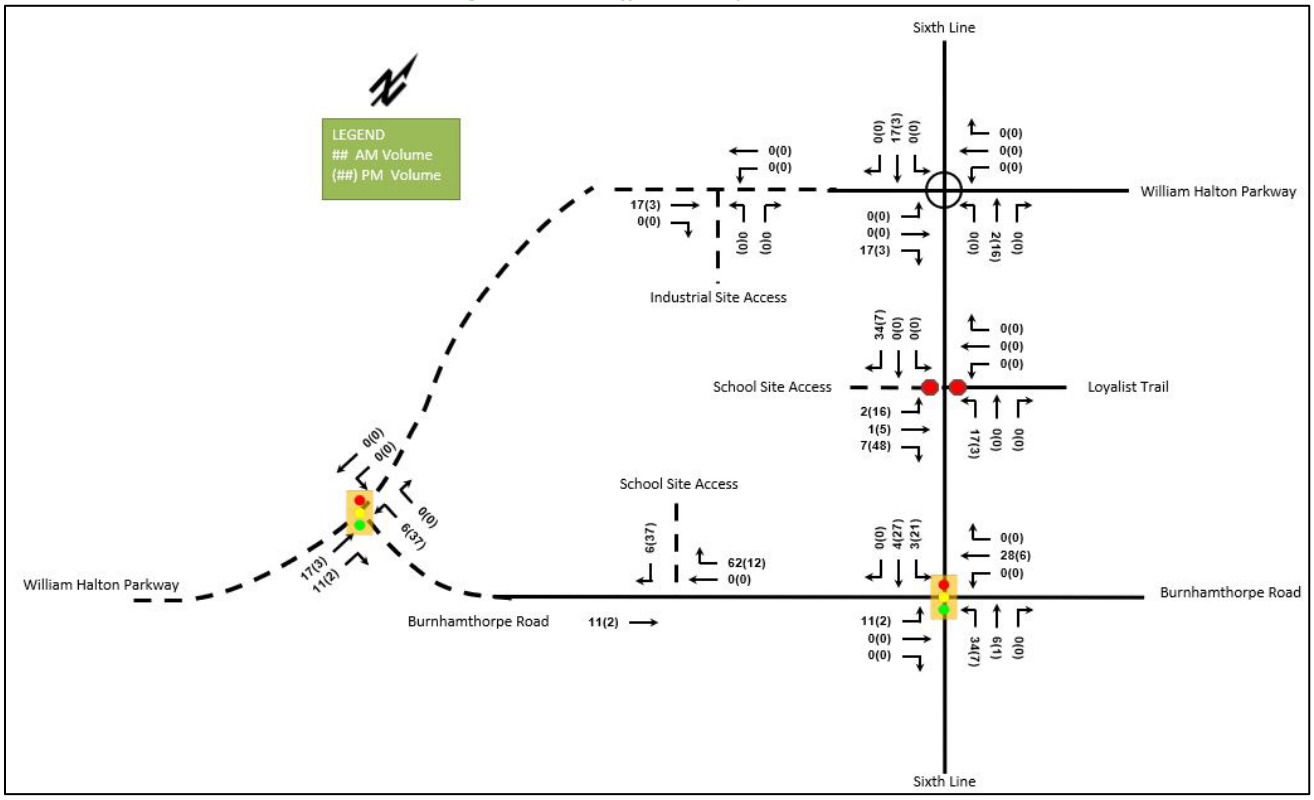


Figure 28: 2025 Industrial Site Trip Generation

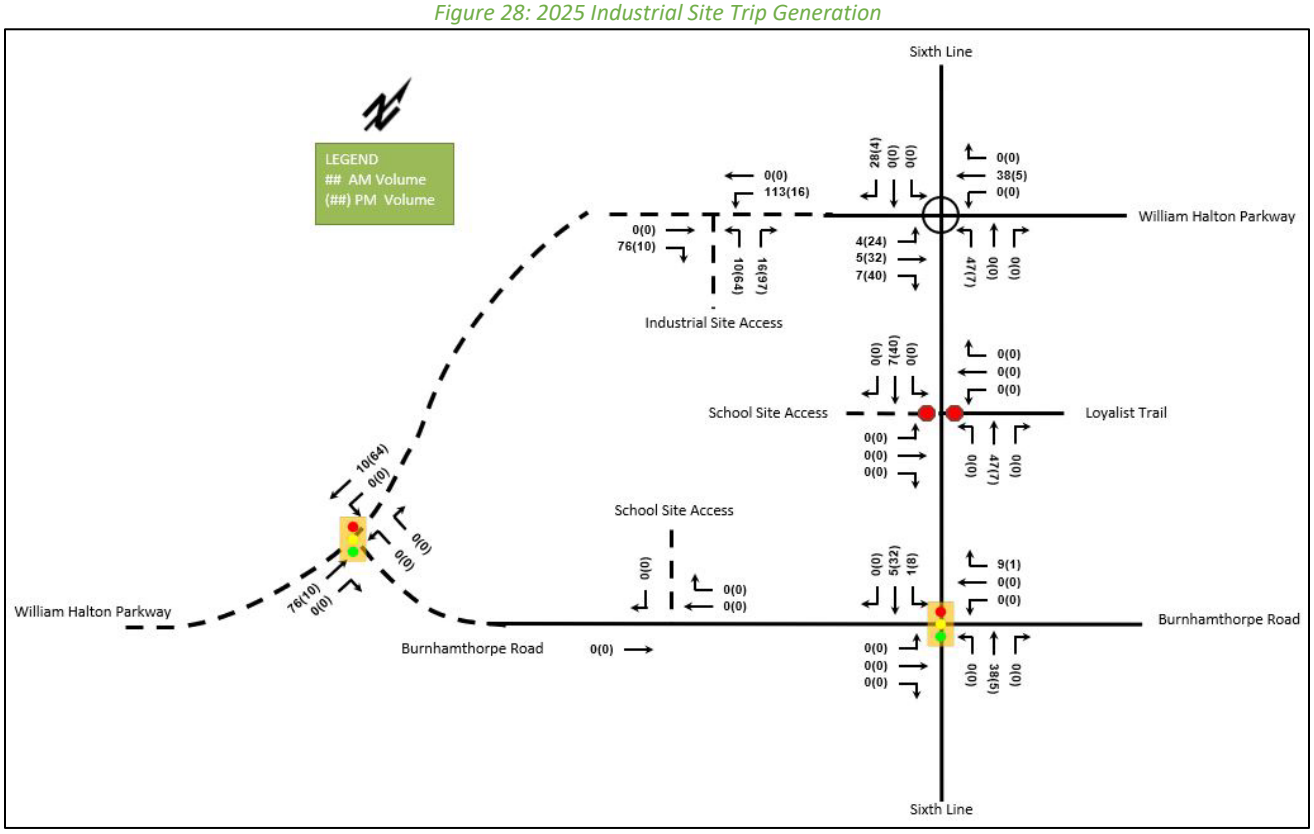
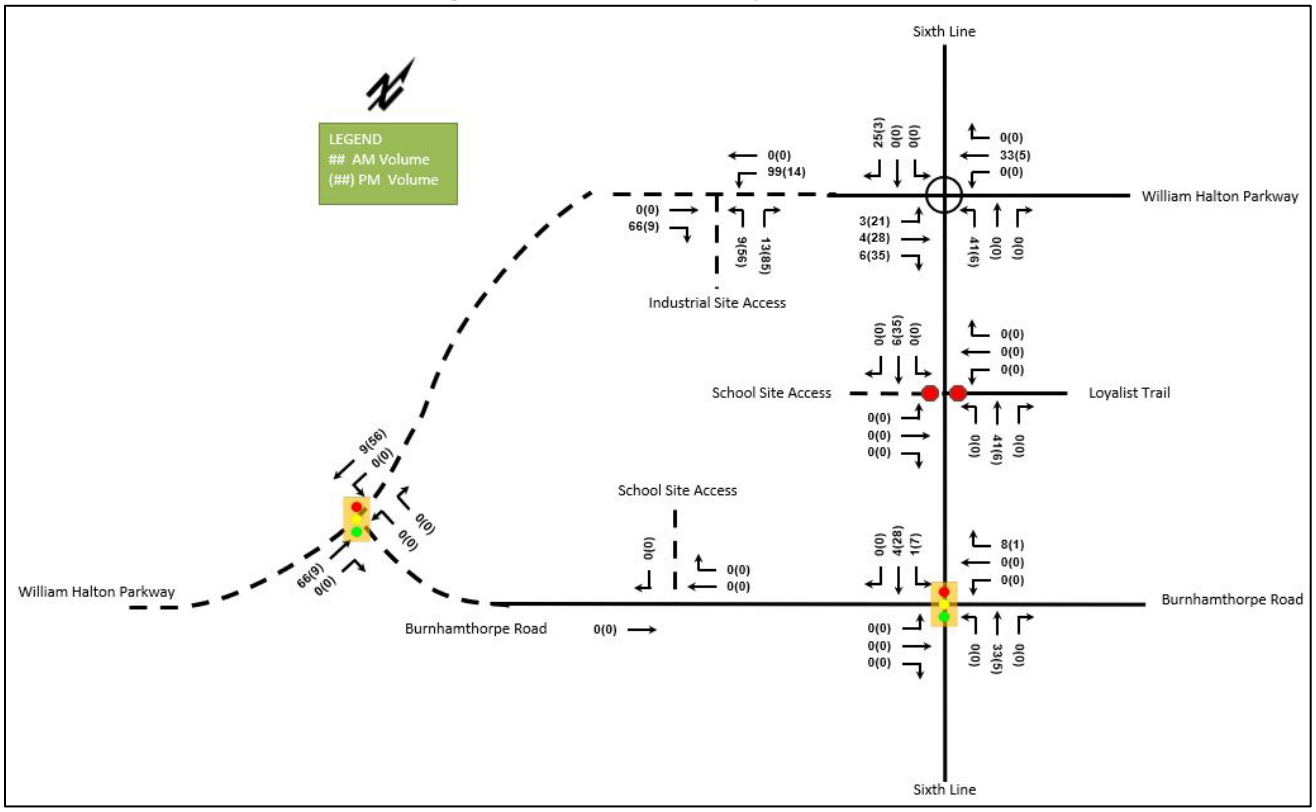


Figure 29: 2030 Industrial Site Trip Generation



4.1.4 Pedestrian and Cyclist Trip Assignment

Since one of the land uses in the proposed development is a secondary school, the active modes of walking and cycling account for a large portion of total trip generation. The pedestrian and cyclist trips have been distributed in similar manner as the vehicle trips, with further consideration in the distance. The pedestrians from the transit were not considered in this case given that the school bus would stop within the school site, instead of by the street, and few trips would be generated by public transit. Figure 30 and Figure 31 illustrate the pedestrian and cyclist trips generated by the secondary school in 2025 and 2030.

Figure 30: 2025 and 2030 Secondary School Pedestrian Site Trips

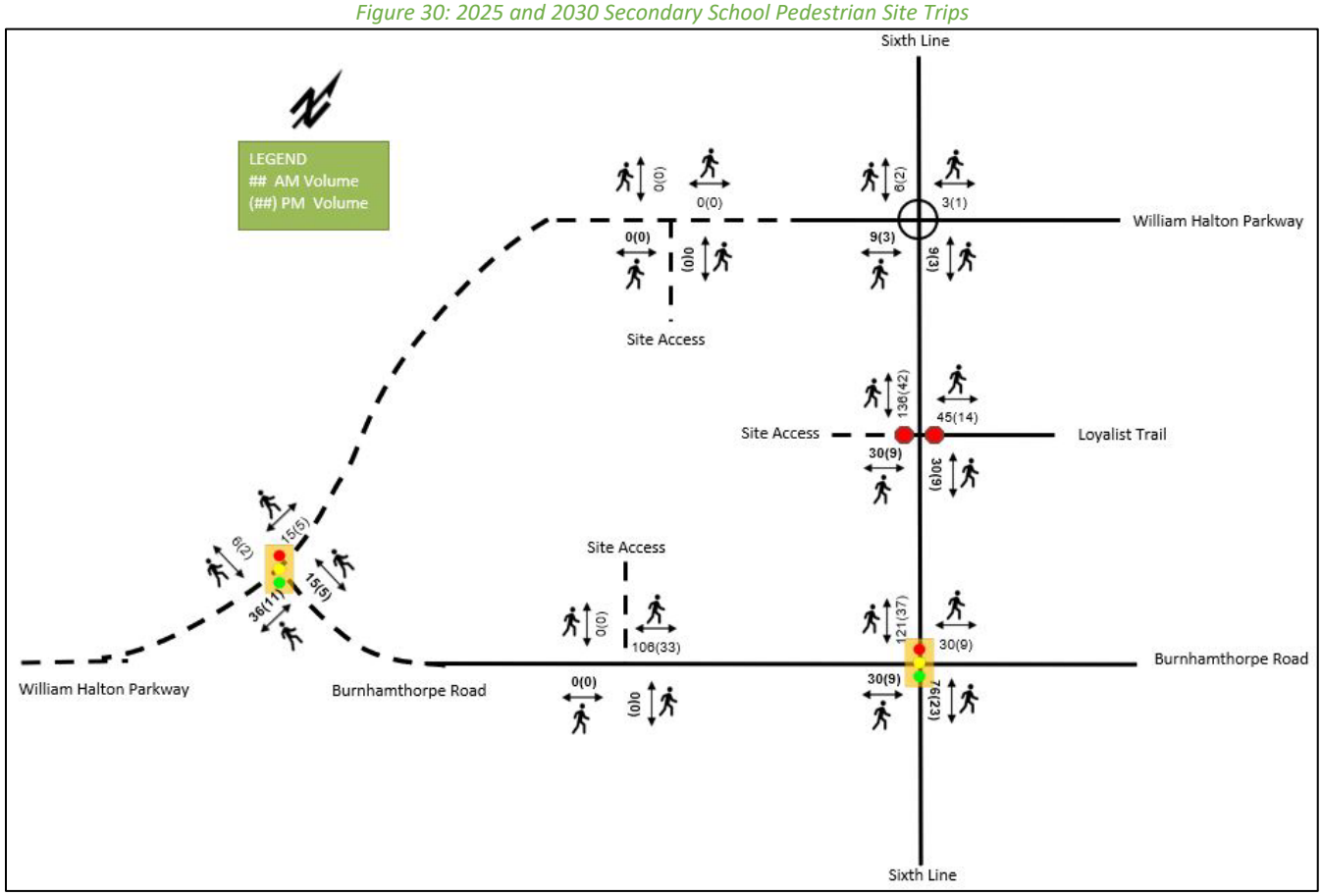
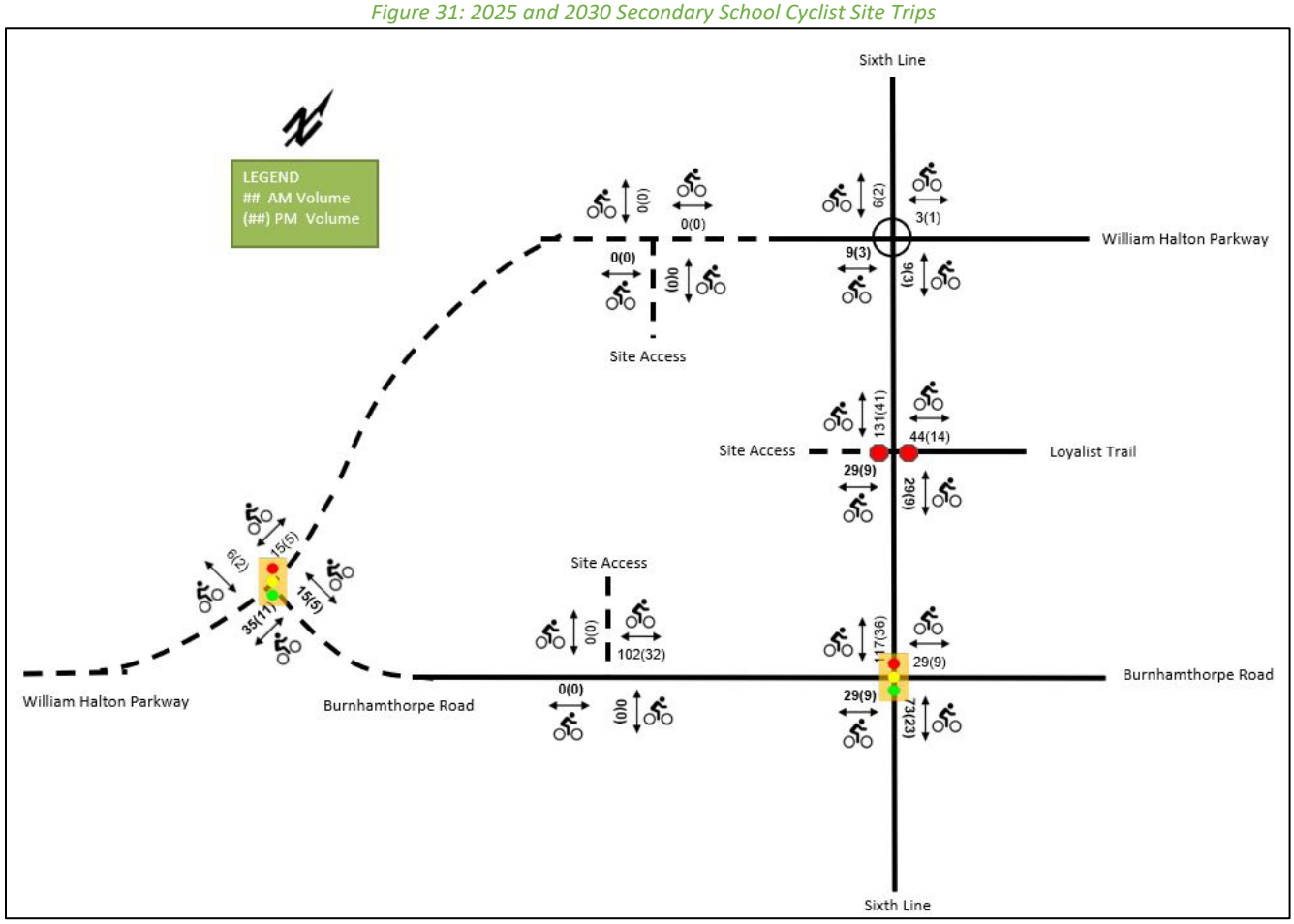


Figure 31: 2025 and 2030 Secondary School Cyclist Site Trips



4.1.5 Future Total Travel Demands

The site generated vehicle traffic has been combined with the 2025 and 2030 Future Background traffic volumes to estimate the Future Total traffic volumes. Figure 31 illustrates the 2025 Total Future traffic volumes and Figure 32 illustrates the 2030 Total Future traffic volumes.

Figure 32: 2025 Future Total Traffic Volumes

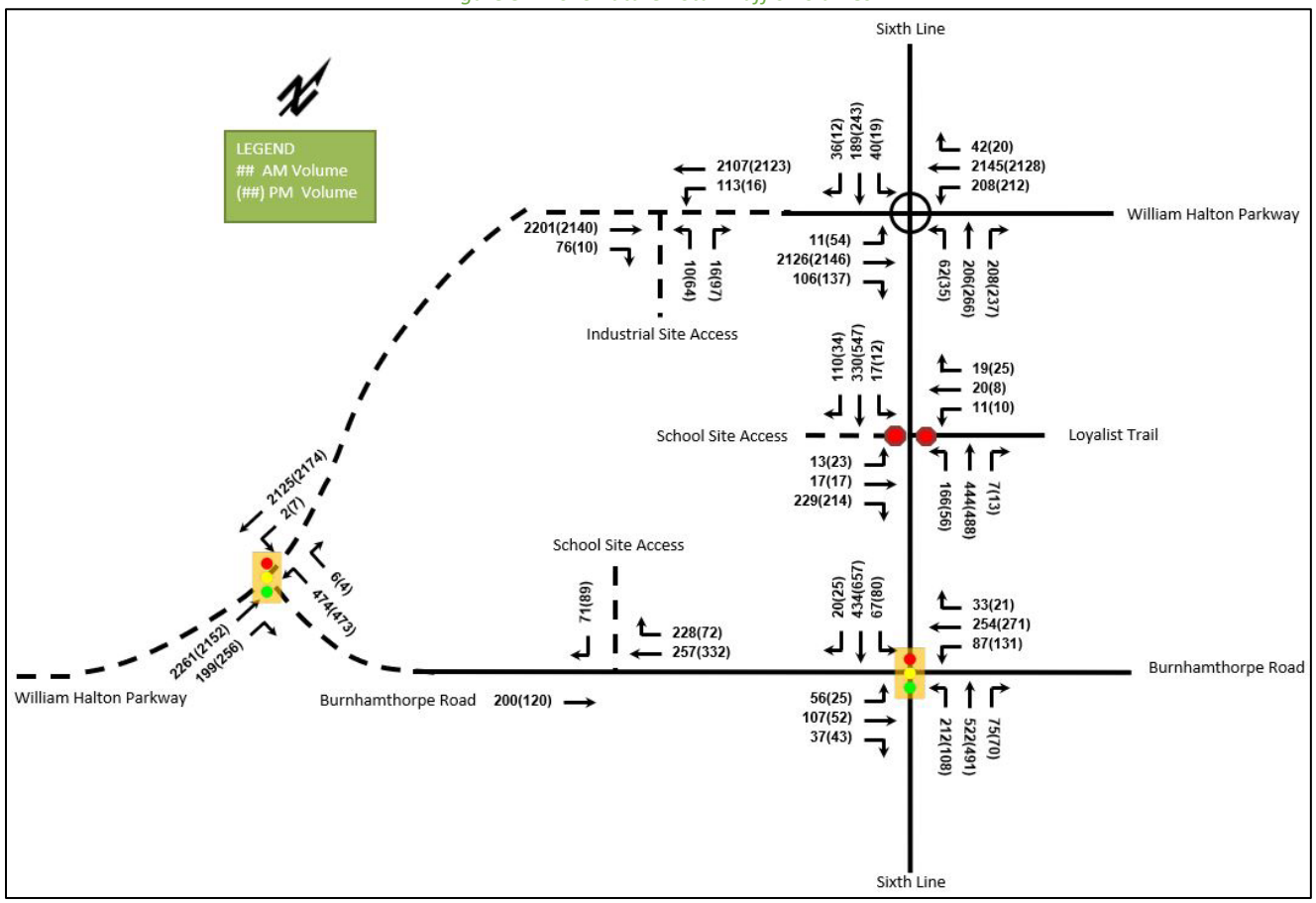
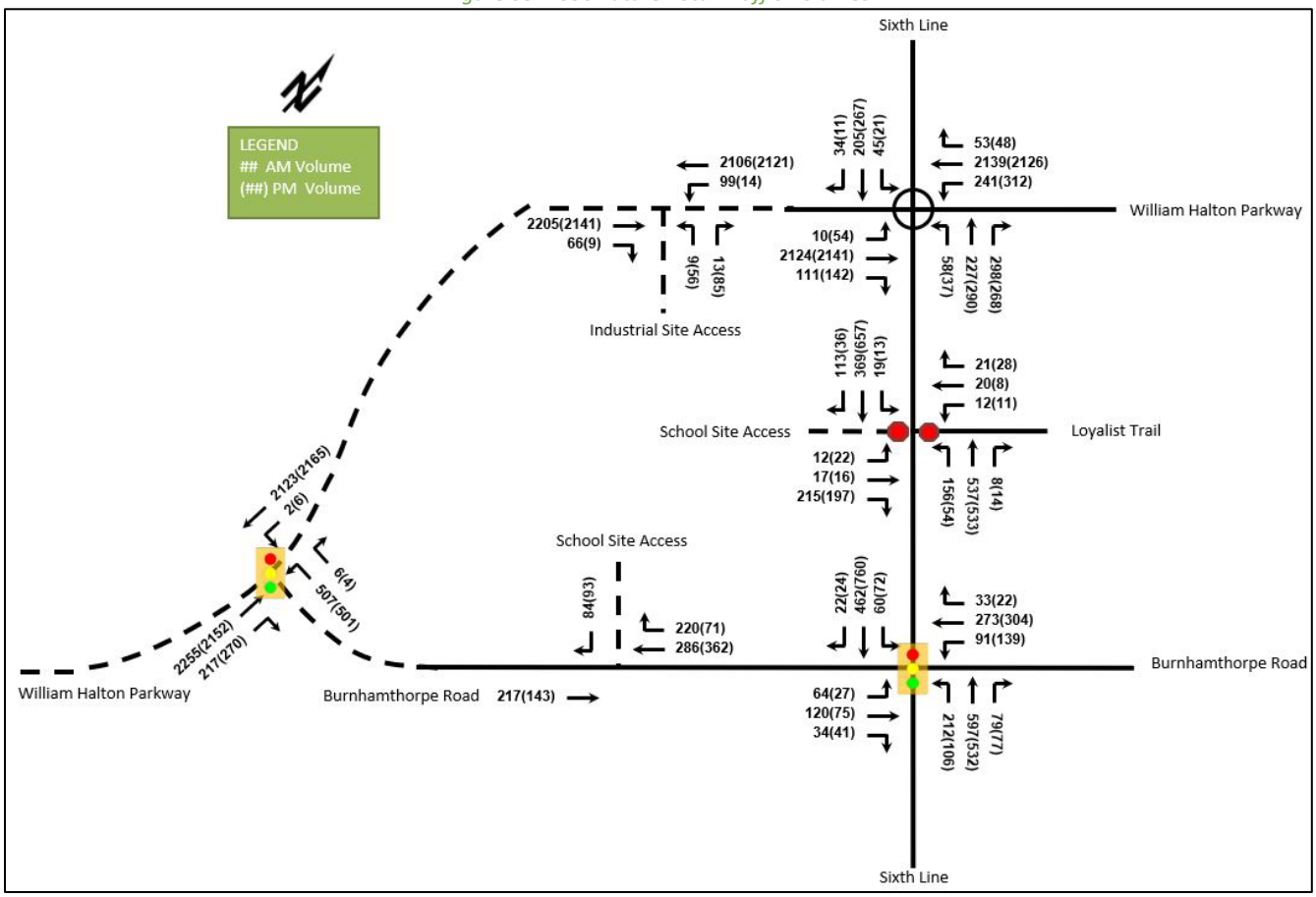


Figure 33: 2030 Future Total Traffic Volumes



5 Development Design

5.1.1 Transportation Demand Management

The proposed development includes a secondary school, a childcare centre, an office building, and industrial facilities. In these types of development, one of the most effective Transportation Demand Management (TDM) measures address access and usability of transit, cycling, and pedestrian facilities. To this end, the following plans have been created to illustrate the appropriate cycling (Figure 21), transit (Figure 22), and pedestrian (Figure 23) facilities. Transit stops have been assumed at all intersections of collector and arterial roads. As a result, the entire development is within a 400-metre walking distance to transit facilities.

The following TDM Measures are anticipated to be provided, but the details will be confirmed through the final design and implementation of the site:

- Provide excessive bicycle parking spaces at the secondary school
- Design a school bus route to cover the catchment area of the school
- Provide a multimodal travel option information package to new employees at the industrial and office land uses, and for secondary school staff

Figure 34: Cycling Concept Plan

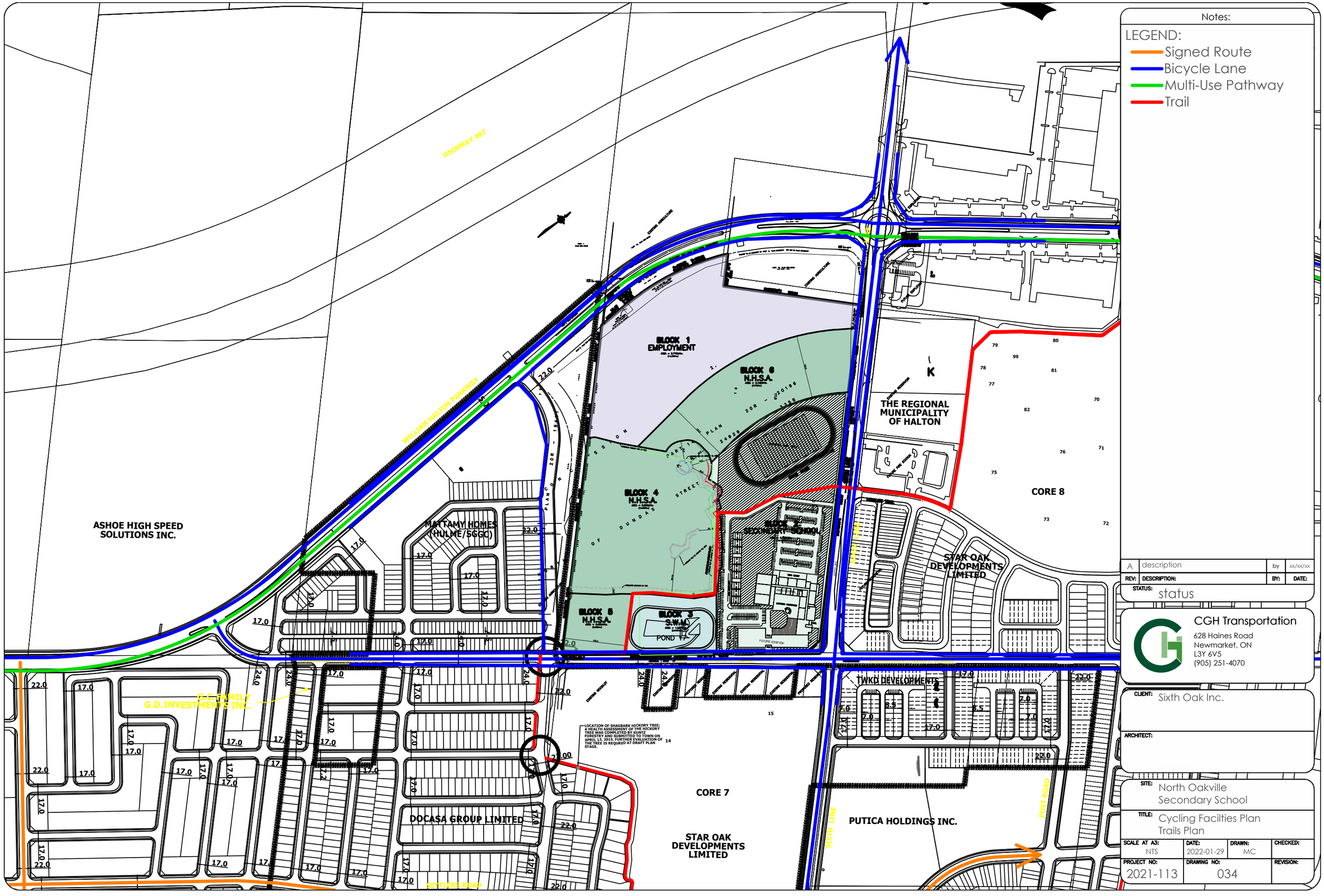
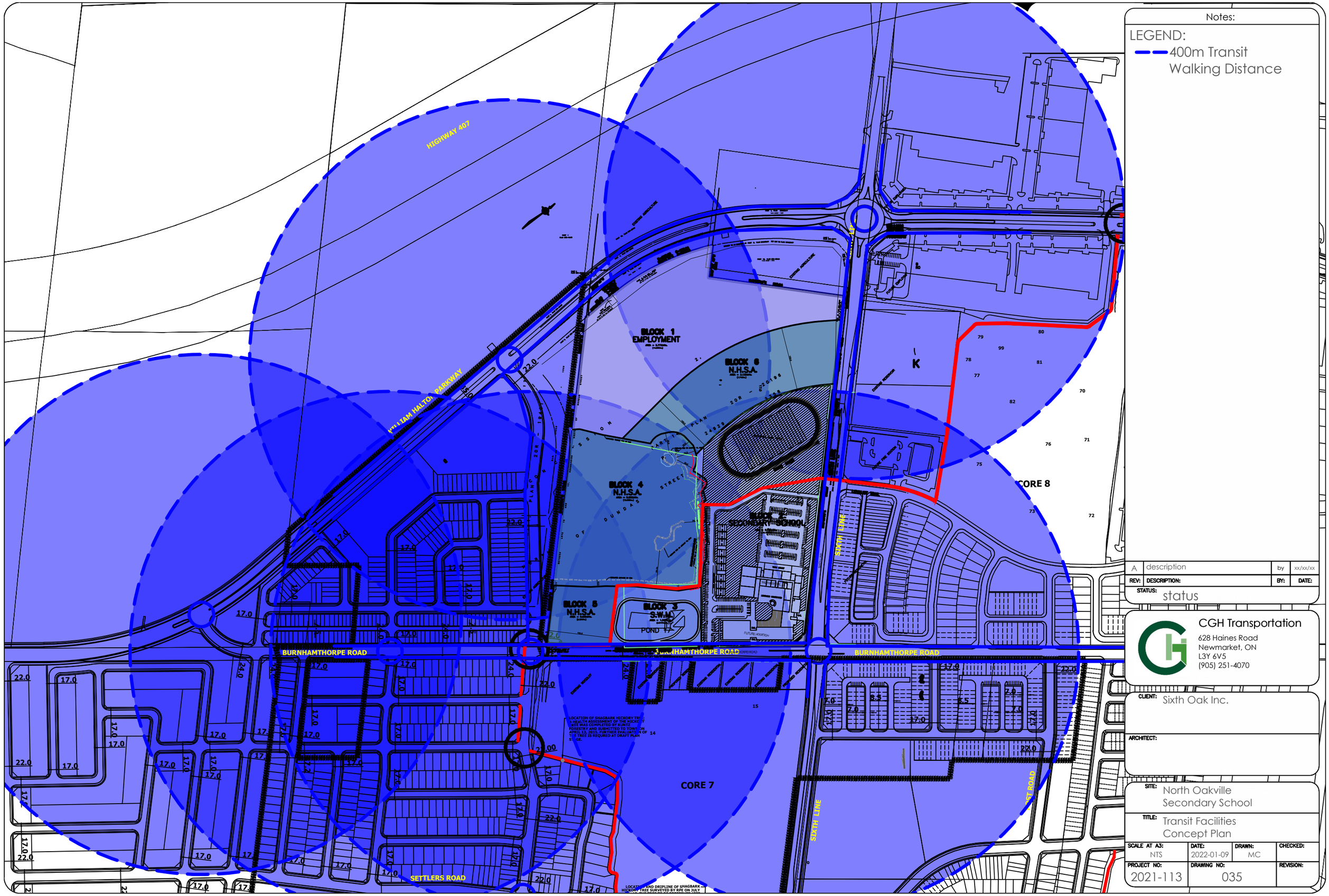


Figure 35: Transit Concept Plan



Notes:

LEGEND:

400m Transit Walking Distance

REV:	DESCRIPTION:	BY:	DATE:
A	description	by	xx/xx/xx

STATUS: status

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

CLIENT: Sixth Oak Inc.

ARCHITECT:

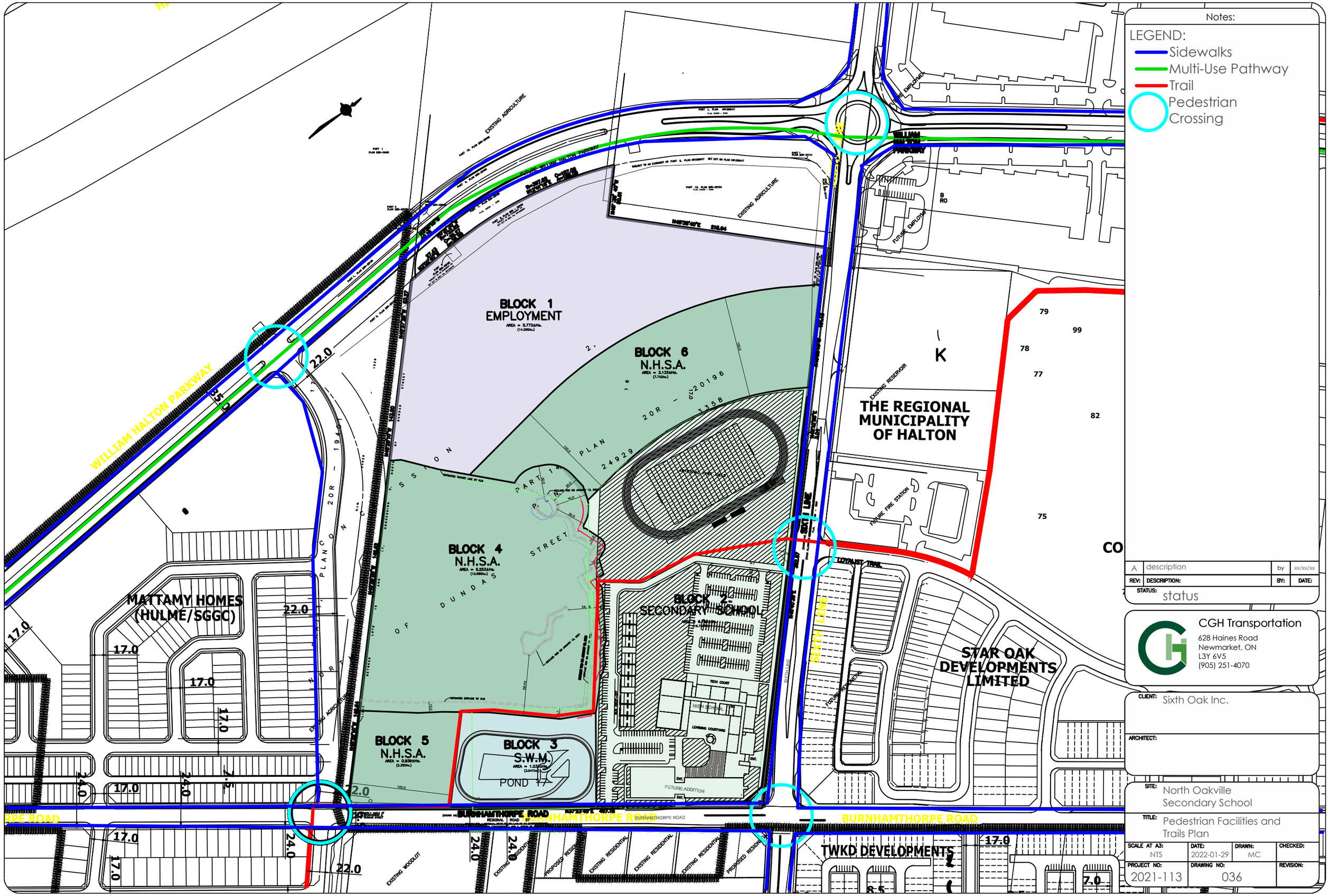
SITE: North Oakville Secondary School

TITLE: Transit Facilities Concept Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2022-01-09	MC	

PROJECT NO:	DRAWING NO:	REVISION:
2021-113	035	

Figure 36: Pedestrian Concept Plan



5.1.2 Parking

The parking provisions for the proposed development have been reviewed using the North Oakville Zoning By-law 2009-189. Table 17 documents the required parking along with the parking provisions.

Table 17: Vehicle Parking Requirements

Land Use Type	Classrooms / GFA (m^2)	Minimum Parking Rate	Maximum Parking Rate	Minimum Spaces Required	Maximum Spaces Permitted	Parking Spaces Provided
Public School, Secondary	80	*1 parking spaces per classroom*	*3 parking spaces per classroom*	80	240	80
Day Care Centre	750	*1 parking space per 40 square metres of leasable floor area*	*1 parking space per 30 square metres of leasable floor area*	19	25	19
Office use, General	9,290	*1 parking space per 37 square metres of leasable floor area*	*1 parking space per 30 square metres of leasable floor area*	251	310	251
			Block 2 Total	350	575	350
Industrial use (Light or General)	26,165	*1 parking space per 200 square metres of leasable floor area*	NA	131	NA	131
			Block 1 Total	**131**	**NA**	**131**

As shown in the table above based on the by-law requirements, a total of 80 parking stalls are required for the secondary school with 80 classrooms and 116 parking stalls are required for the one-storey industrial lands with a total GFA of 26,165 square metres. The parking spaces provided meet the zoning by-law requirements.

The number of accessible parking spaces are calculated based on the total number of parking spaces required. Table 18 summarizes the required parking along with the parking provisions for each land use.

Table 18: Accessible Vehicle Parking Requirements

Land Use Type	Number of Parking Spaces Required	Range	Minimum Spaces Required	Accessible Parking Spaces Provided
Public School, Secondary	80	*76-100*	4	4
Day Care Centre	19	*11-25*	1	1
Office use, General	251	*201-300*	7	7
Block 2 Total			**12**	**12**
Industrial use (Light or General)	116	*101-150*	5	5
Block 1 Total			**5**	**5**

The bicycle parking provisions for the proposed development have been reviewed using the North Oakville Zoning By-law 2009-189. Table 19 documents the required parking along with the parking provisions. The bicycle parking spaces shall not exceed the maximum requirement of 200.

Table 19: Bicycle Parking Requirements

Land Use	Vehicle Parking Spaces	Minimum Parking Rate	Minimum Spaces Required	Bicycle Parking Spaces Provided
Non-Residential uses that require 15 or more non-residential parking spaces	80	*Bicycle Parking Spaces required at a rate of 7% of automobile parking spaces, as required by the Zoning Bylaw, including a minimum of 5 Bicycle Parking Spaces-Visitor*	6	6
	19		2	2
	251		18	18
	Block 2 Total		**26**	**26**
	116		9	9
	Block 1 Total		**9**	**9**

Based on the by-law requirements, a minimum of 6 bicycle parking spaces is required for the secondary school, 2 for the childcare centre, 18 for the office building, and 9 for the industrial buildings. The parking spaces will be provided in the detailed site plan conforming with the zoning by-law requirements.

5.1.3 Development Access

Access to the proposed school and childcare facility will be accommodated via one driveway on Sixth Line and a second on Burnhamthorpe Road. The access on the Sixth Line allows full movement and aligns with the existing intersection of Loyalist Trail with Sixth Line, which leads to the Star Oak residential development on the east side of Sixth Line. The main parking lot of the secondary school and the childcare centre can be accessed via this driveway. This future four-legged intersection was modelled as a two-way stop intersection. Using OTM Book 12 Justification 7, and the volume projections herein, the traffic control signal warrant for this intersection has been assessed in Appendix D for the 2025 Future Total horizon. A signal is not warranted for this intersection using Justification 7. In the future, it has been proposed to make it an all-way stop to address high delays in the east-west direction. A Left Turn Lane warrant has also been assessed for the access, which can be found in Appendix E. It has been found that a northbound left lane is warranted. The northbound left turning lane was not modelled in the analysis because it provided minimal improvements to the traffic movements at this intersection – either such improvements being unnecessary or not reducing the eastbound and westbound delays.

The access on Burnhamthorpe Road is right-in right-out only due to the current designation of Burnhamthorpe Road as a Regional road. Upon completion of the extension on William Halton Parkway, Burnhamthorpe Road's function as an east-west corridor will be replaced as discussed in Section 2.1. However, the transfer of the Regional road status may or may not be complete before the 2025 horizon. Therefore, the access was modelled as right-in right-out only in the 2025 scenarios. The school bus lay-by area can be reached via this access.

Access to the industrial employment lands will be accommodated via driveways on William Halton Parkway. The access is currently assumed to be 300 metres to the west of the roundabout of William Halton Parkway at Sixth Line, which is also 350 metres away to one of the accesses to background development of Neighbourhood 9/10/11. More details of the access design will become available in subsequent iterations of the plan. The configuration and spacing will be designed adhering to Halton Region's Access Management Guideline. A signal is not warranted for this intersection using Justification 7. However, it has been proposed to signalize the access to address the high delays due to large traffic volumes on William Halton Parkway. A Left Turn Lane warrant has also been assessed for the access, which can be found in Appendix E, and the westbound left turning lane is warranted. The northbound left turning lane is not warranted, but it has also been proposed at the intersection to reduce the long delays and queues at the northbound movements.

5.1.4 Site Design

A preliminary demonstration plan has been created to illustrate the potential site layout and configuration. This site design will be refined through the Site Plan Application. It is recommended, based on preliminary feedback from Town of Oakville staff, that the York Region School Sites Design Guidelines be used as a reference document to inform the site design.

This site includes a circulation driveway around the outside edge of the parking and school building areas of the property. Included along this driveway is a bus drop off loop that is approximately 45 metres long. It is recommended that in subsequent iterations of the plan (through SPA) that this bus loop be extended along the entire length of the circulating road. The portion closest to the school should be signed and reserved for bus loading, approximately 150 metres, to accommodate the projected 10 school buses HDSB has indicated may be required in the fullness of time. The remainder should be allowed for use by parents for staging area for evening pickups. There is also a drop off layby for passenger vehicles adjacent to the school that is approximately 45 metres. While this will facilitate drop-offs and some pick-ups, it is anticipated that this may not be sufficient to store all of the required vehicles in the PM pick up period. By extending the drop off loop around the circulating

road additional on-site stacking space would be provided. This would prevent blocking by stacked vehicles along the circulation road and ensure that buses and passenger vehicles can navigate the site during the busy PM pickup peak.

6 Operational Analysis

To understand the operational characteristics of the Study Area intersections, Synchro (Version 11), and Sidra (Version 8.0) have been used to model the Study Area intersections. The vehicle LOS for roundabouts modelled in Sidra has been based on the HCM 2010 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. 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. These calculations are shown in Appendix F.

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

LOS has been defined using HCM 2010 definition for LOS at signalized intersections (Table 20) and unsignalized intersections (Table 21).

Table 20: 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 21: 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

6.1 2022 Existing Conditions

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. Table 10 summarizes the operational analysis of the 2021 existing conditions. Appendix G contains the 2022 Existing Conditions Synchro and Sidra worksheets.

Table 22: 2022 Existing Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Burnhamthorpe Road *(Unsignalized)*	EBL/T/R	B	0.06	14	2	F	1.79	385	47
	WBL/T/R	B	0.20	14	3	F	1.50	256	31
	NBL/T/R	B	0.08	13	2	E	0.80	37	7
	SBL/T/R	B	0.05	12	1	C	0.49	20	2
	Overall	**B**	**-**	**13**	**-**	**F**	**-**	**249**	**-**
Sixth Line at Loyalist Trail *(Unsignalized)*	WBL/R	B	0.04	10	1	B	0.06	11	1
	NBT/R	-	0.10	0	0	-	0.18	0	0
	SBL/T	A	0.01	0	<1	A	0.01	1	<1
	Overall	**A**	**-**	**1**	**-**	**A**	**-**	**1**	**-**
William Halton Parkway at Sixth Line *(Roundabout)*	East Leg	A	0.19	5	4	A	0.11	4	2
	North Leg	A	0.10	5	2	A	0.05	4	1
	South Leg	A	0.11	4	2	A	0.15	5	3
	Overall	**A**	**0.19**	**5**	**-**	**A**	**0.15**	**4**	**-**
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal								

The above table summarizes the intersection operational analysis of the 2022 volumes. Generally, the Study Area intersections are operating with good overall LOS of A or B and low delays under 15 seconds. The exception to this is the traffic condition at the intersection of Sixth Line at Burnhamthorpe Road where the are high v/c ratios of 1.79 and 1.50 and long delays for the east and west approaches during the PM peak hour. These operational constraints will not impact the future horizons because mitigation strategies have already been proposed for this intersection as part of the Sixth Line Widening Project as discussed in Section 3.1.2. The intersection will be signalized in the future conditions which will improve the traffic operations along Burnhamthorpe Road.

6.2 2025 Future Background Conditions

The 2025 Future Background conditions have been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network. Since the widening of Sixth Line within the Study Area is not anticipated to be completed by the 2025 horizon, it was modelled as one lane each way. The intersection of Sixth Line at Burnhamthorpe Road, however, will be signalized for the 2025 horizon to address operational constraints that were shown to occur in the existing conditions.

In the 2025 future analysis horizons, the intersection of William Halton Parkway has been modelled as a two-lane, four-legged roundabout with yield control on each approach. Both the east and west intersection legs consist of shared left-turn / through lane and a shared through/right-turn lane, and both the north and south intersection legs consist of a shared left-turn / through lane and an auxiliary shared through / right-turn lane. On the north leg, the northbound lanes taper from two to one lane approximately 100 metres north of the intersections and on the south leg, the southbound lanes taper from two to one lane approximately 140 metres south of the intersection.

Table 11 summarizes the operational analysis of 2025 Future Background conditions. Synchro and Sidra worksheets have been included in Appendix H.

Table 23: 2025 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL/T/R	C	0.41	33	40	C	0.16	24	22
	WBL/T/R	D	0.83	52	74	D	0.78	37	#115
	NBL/T/R	B	0.48	10	83	B	0.65	19	111

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
	SBL/T/R	A	0.26	7	41	B	0.52	14	87
	Overall	***C***	***0.63***	***22***	-	***C***	***0.77***	***22***	-
William Halton Parkway at Sixth Line *(Roundabout)*	East Leg	F	1.60	290	1501	F	1.39	198	1009
	West Leg	F	1.63	303	1339	F	1.43	216	955
	North Leg	C	0.46	25	11	C	0.47	25	11
	South Leg	E	0.80	47	4	E	0.77	42	30
	Overall	F	1.63	265	-	F	1.43	216	-
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT	D	1.02	45	#347	D	1.01	43	#350
	EBR	A	0.13	9	12	A	0.19	9	16
	WBL	A	0.03	9	1	B	0.13	12	4
	WBT	D	1.02	46	#350	D	1.01	42	#348
	NBL	E	0.93	67	#155	E	0.91	64	#144
	NBR	C	0.00	32	4	C	0.00	33	3
	Overall	***D***	***0.99***	***46***	-	***D***	***0.98***	***42***	-
Sixth Line at Loyalist Trail *(Unsignalized)*	EBL/T/R	A	0.00	0	0	A	0.00	0	0
	WBL/T/R	B	0.07	14	2	C	0.11	16	3
	NBL/T/R	-	0.00	0	0	-	0.00	0	0
	SBL/T/R	A	0.02	1	<1	A	0.01	0	<1
	Overall	***A***	-	***1***	-	***A***	-	***1***	-
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, the Study Area intersections are still operating with good overall LOS of D or lower except for the roundabout at William Halton Parkway at Sixth Line and the intersection of the William Halton Parkway at Burnhamthorpe Road. The signalization at Sixth Line at Burnhamthorpe Road is sufficient for reducing delays and improving the level of service. At the roundabout, the traffic approaching from east and west legs (William Halton Parkway) experiences V/C ratios of 1.60 and 1.63 during the AM peak hour and 1.39 and 1.43 during the PM peak hour. Long queues that exceed the storage lengths are also observed at the eastbound through, westbound through, and northbound left movements at the intersection of William Halton Parkway at Burnhamthorpe Road.

Given that the volumes used on William Halton Parkway provided by the Region are higher than 2000 vehicles per hour, high v/c ratios and delays are expected. The intersections along William Halton Parkway are projected to operate over capacity. Since the traffic projections provided by the Region are likely overly conservative and are not likely to be realized in the fullness of time, no mitigation measures have been proposed.

6.3 2025 Future Total Conditions

The analysis parameters used to analyze the 2025 Future Background conditions have been carried forward as part of the analysis of 2025 Total Future conditions. The 2025 site-generated volumes have been added. Table 12 summarizes the results of the operational analysis for 2025 Future Total conditions. Synchro and Sidra worksheets have been included in Appendix I.

Table 24: 2025 Total Future Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL/T/R	C	0.53	33	63	C	0.22	26	24
	WBL/T/R	E	0.87	56	#140	D	0.85	49	#153
	NBL/T/R	F	1.11	89	#300	D	0.96	50	#239
	SBL/T/R	B	0.59	15	104	D	0.92	38	#255

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
	Overall	***E***	***1.11***	***56***	-	***D***	***0.99***	***44***	-
William Halton Parkway at Sixth Line *(Roundabout)*	East Leg	F	1.72	342	1621	F	1.44	220	1053
	West Leg	F	1.73	348	1500	F	1.51	251	1102
	North Leg	D	0.55	29	14	C	0.47	24	11
	South Leg	F	0.85	53	41	E	0.79	43	32
	Overall	F	1.73	304	-	F	1.51	206	-
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT	F	1.11	81	#390	E	1.06	60	#360
	EBR	A	0.19	10	15	B	0.22	10	17
	WBL	A	0.03	9	1	B	0.13	13	4
	WBT	E	1.05	55	#352	E	1.07	64	#366
	NBL	F	1.05	95	m#171	F	1.04	95	m#176
	NBR	C	0.01	33	m2	D	0.00	39	m1
	Overall	***E***	***1.09***	***69***	-	***E***	***1.06***	***62***	-
Sixth Line at Loyalist Trail/Access on Sixth Line *(Unsignalized)*	EBL/T/R	F	1.34	225	119	F	1.04	108	83
	WBL/T/R	F	1.34	414	42	F	0.58	99	20
	NBL/T/R	A	0.22	5	6	A	0.07	2	2
	SBL/T/R	A	0.02	0	<1	A	0.01	0	<1
	Overall	***E***	-	***60***	-	***D***	-	***23***	-
Access at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0.13	0	0	-	0.08	0	0
	WBT/R	-	0.31	0	0	-	0.26	0	0
	SBR	B	0.14	13	4	B	0.15	11	4
	Overall	***A***	-	***1***	-	***A***	-	***2***	-
Access at William Halton Parkway *(Unsignalized)*	EBT/R	-	0.94	0	0	-	0.91	0	0
	WBL	F	0.67	57	30	C	0.08	24	2
	WBT	-	0.67	0	0	-	0.68	0	0
	NBL	F	12.18	Err	Err	F	16.81	Err	Err
	NBR	D	0.10	29	2	E	0.56	47	23
	Overall	***E***	-	***24***	-	***C***	-	***146***	-
	Mitigation Measure: Signalization								
	EBT/R	D	1.02	43	#393	C	0.96	24	#257
	WBL	E	0.84	78	#51	A	0.21	6	4
	WBT	B	0.84	11	199	C	0.95	22	#251
	NBL	D	0.04	48	8	C	0.19	30	21
	NBR	D	0.01	47	7	C	0.30	32	28
	Overall	***C***	***0.86***	***29***	-	***C***	***0.81***	***23***	-
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal								

The projected 2025 Total Future conditions are similar to those projected for the 2025 Future Background conditions, with the east-west volumes on William Halton Parkway projected to operate over capacity. At Sixth Line and Burnhamthorpe Road in the AM peak period, the northbound shared left/through/right movement operates with a V/C slightly above 1. Given that the traffic from the west approach is also close to the capacity at a v/c ratio 0.87, providing more green time to one movement to reduce its V/C ratio will increase the other movement's V/C ratio and will not achieve an ideal overall reduction. In the future 2030 horizon, the operational constraints will be resolved with the widening of Sixth Line. The two-way stop intersection of Sixth Line at Loyalist Trail and School Site Access experiences high delay at the eastbound and westbound shared left/through/right movements during the AM and PM peak hours due to traffic demand of vehicles entering the school site. With the widening of Sixth Line in the 2030 horizon, more options will be explored to improve the conditions at this intersection.

The intersection of William Halton Parkway at Burnhamthorpe Road will operate with v/c ratios higher than 1.0 on the eastbound through, westbound through, and northbound left movements. The roundabout at Sixth Line will have heavier operational constraints with v/c ratios of 1.72 and 1.73 during AM peak hour and 1.44 and 1.51 during PM peak. The maximum 95th percentile queue will reach 1621 metres for the east leg due to the high volumes on William Halton Parkway. Since the roundabout is over capacity, minor mitigation strategies will nor solve the issue. However, conditions are expected to improve as the traffic volume on William Halton Parkway will likely be smaller than that provided by the Region. At the access to the industrial buildings on William Halton Parkway, the northbound left movement will be constrained by the high volumes on the major road as the left-turning vehicles will have hard time getting onto William Halton Parkway. Signalizing the intersection could be a mitigation strategy to improve the traffic at the access, which would allow all movements to operate under or at capacity.

6.4 2030 Future Background Conditions

The 2030 Future Background horizon has been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network. In the 2030 future analysis horizons, the intersection of William Halton Parkway at Sixth Line has been modelled as a two-lane, four-legged roundabout with yield control on each approach. All intersection approaches consist of shared left-turn / through lane and a shared through/right-turn lane. By 2030, it is also anticipated that the widening of Sixth Line to Highway 407 will be completed, and the intersection of Sixth Line at Burnhamthorpe Road will have auxiliary left turning lanes at all approaches. The configuration has been coded into Synchro to be generally consistent with the Sixth Line Widening EA Preliminary Design. The signal timing has been optimized for the new configuration. Table 13 summarizes the operational analysis of 2030 Future Background conditions. Synchro and Sidra worksheets are included as Appendix J.

Table 25: 2030 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	D	0.13	37	10	D	0.11	42	8
	EBT/R	D	0.35	37	43	D	0.22	40	34
	WBL	D	0.44	38	30	D	0.55	37	44
	WBT/R	D	0.70	46	61	D	0.81	50	#89
	NBL	A	0.11	9	16	B	0.15	11	15
	NBT/R	B	0.26	10	46	B	0.31	12	51
	SBL	A	0.04	6	5	A	0.04	7	4
	SBT/R	A	0.14	7	20	A	0.29	9	44
	Overall	***C***	***0.36***	***20***	-	***C***	***0.45***	***21***	-
William Halton Parkway at Sixth Line *(Roundabout)*	East Leg	F	1.67	319	1584	F	1.50	245	1182
	West Leg	F	1.68	328	1386	F	1.53	261	1054
	North Leg	D	0.49	25	12	C	0.49	25	12
	South Leg	F	1.04	81	102	E	0.80	42	34
	Overall	F	1.68	286	-	F	1.53	219	-
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT	C	0.98	30	#280	E	1.09	69	#323
	EBR	A	0.12	6	7	A	0.21	10	18
	WBL	A	0.03	6	1	B	0.10	11	3
	WBT	C	0.98	31	#283	E	1.09	67	#322
	NBL	F	1.11	119	#165	D	0.87	51	#122
	NBR	C	0.00	32	m2	C	0.00	29	m1
	Overall	***D***	***1.01***	***38***	-	***E***	***1.02***	***64***	-
	EBL/T/R	A	0.00	0	0	A	0.00	0	0
	WBL/T/R	B	0.07	13	2	B	0.09	13	2

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Loyalist Trail *(Unsignalized)*	NBL/T/R	-	0.16	0	0	-	0.18	0	0
	SBL/T/R	A	0.12	1	<1	A	0.20	0	<1
	Overall	***A***	**-**	***1***	**-**	***A***	**-**	***1***	**-**
Notes:	# - 95% percentile exceeds capacity; m - volume for the 95th percentile queue is metered by an upstream signal								

The addition of background traffic growth to the 2030 horizon as well as additional nearby background developments reaching full build-out and occupancy is projected to increase the background traffic, thus the overall operational performance of the Study Area intersections is slightly worse than the 2025 Future Background horizon. The operational performance at the Sixth Line and Burnhamthorpe Road intersection is projected to improve due to the widening of Sixth Line to two lanes each direction and the re-configuration of the intersection. All movements have lower delays and shorter queues at this intersection and the V/C ratios are lower than 1.0. The stop-controlled intersection of Sixth Line at Loyalist Trail is also projected to operate with good LOS and minimal delays at all approaches. The main operational constraints still occur along William Halton Parkway, examples being the east and west legs of the roundabout with LOS of F and high delays on the eastbound through, westbound through, and northbound left movements at the intersection at Burnhamthorpe Road with V/C ratios approaching 1.0.

6.5 2030 Future Total Conditions

The analysis parameters used to analyze the 2030 Future Background conditions have been carried forward as part of the analysis of 2030 Total Future conditions. The 2030 site-generated volumes were added. Table 14 summarizes the results of the operational analysis for 2030 Future Total conditions. Synchro and Sidra worksheets have been included in Appendix K.

Table 26: 2030 Total Future Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Burnhamthorpe Road *(Signalized)*	EBL	D	0.36	37	22	D	0.19	35	12
	EBT/R	D	0.28	35	44	C	0.20	34	32
	WBL	C	0.38	35	30	D	0.54	37	44
	WBT/R	D	0.82	51	#85	D	0.85	54	#104
	NBL	C	0.55	23	60	B	0.37	19	31
	NBT/R	B	0.40	16	64	B	0.38	16	59
	SBL	A	0.15	9	11	A	0.18	9	13
	SBT/R	A	0.24	10	33	B	0.40	11	60
	Overall	***C***	***0.59***	***23***	**-**	***C***	***0.54***	***22***	**-**
William Halton Parkway at Sixth Line *(Roundabout)*	East Leg	F	1.77	365	1692	F	1.54	266	1227
	West Leg	F	1.79	375	1549	F	1.61	295	1189
	North Leg	D	0.58	29	15	C	0.49	24	12
	South Leg	F	1.01	84	94	E	0.81	44	37
	Overall	F	1.79	322	-	F	1.61	242	-
William Halton Parkway at Burnhamthorpe Road *(Signalized)*	EBT	E	1.12	78	#330	D	1.03	46	#300
	EBR	A	0.19	9	12	A	0.21	8	11
	WBL	A	0.03	8	1	A	0.10	9	2
	WBT	D	1.05	53	#300	D	1.04	48	#303
	NBL	F	1.15	122	#190	F	1.25	168	m#197
	NBR	C	0.01	26	m3	C	0.00	29	m1
	Overall	***E***	***1.12***	***69***	**-**	***E***	***1.10***	***57***	**-**

Intersection	Mvmnt	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Del (s)	Q (95th)	LOS	V/C	Del. (s)	Q (95th)
Sixth Line at Loyalist Trail/Access on Sixth Line *(Unsignalized)*	EBL/T/R	F	0.95	82	69	E	0.75	42	44
	WBL/T/R	F	0.78	144	29	E	0.31	36	9
	NBL/T/R	A	0.21	6	6	A	0.18	2	2
	SBL/T/R	A	0.19	1	<1	A	0.23	0	<1
	Overall	***B***	-	***20***	-	***B***	-	***8***	-
	Mitigation Measure: Two-way stop to all-way stop								
	EBL/T/R	B	0.47	15	3	B	0.46	15	2
	WBL/T/R	B	0.12	12	<1	B	0.11	11	<1
	NBL/T/R	D	0.86	38	10	C	0.67	21	5
	SBL/T/R	C	0.59	18	4	C	0.73	24	6
	Overall	***C***	-	***22***	-	***C***	-	***20***	-
Access at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0.14	0	0	-	0.09	0	0
	WBT/R	-	0.32	0	0	-	0.28	0	0
	SBR	B	0.17	13	5	B	0.16	12	4
	Overall	***A***	-	***1***	-	***A***	-	***2***	-
Access at William Halton Parkway *(Unsignalized)*	EBT/R	-	0.94	0	0	-	0.91	0	0
	WBL	E	0.58	49	24	C	0.07	24	2
	WBT	-	0.67	0	0	-	0.68	0	0
	NBL	F	8.36	Err	Err	F	14.38	Err	Err
	NBR	D	0.08	28	2	E	0.49	42	18
	Overall	***D***	-	***22***	-	***C***	-	***128***	-
	Mitigation Measure: Signalization								
	EBT/R	D	1.02	42	#365	C	0.96	24	#257
	WBL	E	0.76	58	#39	A	0.18	6	4
	WBT	B	0.84	11	190	C	0.95	22	#250
	NBL	D	0.04	43	7	C	0.17	30	19
	NBR	D	0.01	43	6	C	0.26	32	25
	Overall	***C***	***0.85***	***28***	-	***C***	***0.80***	***23***	-
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal								

The addition of the site generated traffic to the 2030 Future Background volumes at the Study Area intersections generally does not change the traffic conditions comparing to the Background scenario. The site vehicle traffic volumes have been slightly reduced from the level in the 2025 horizon with increased usage of transit and active modes.

The projected 2030 Total Future conditions project operational constraints at the intersections along William Halton Parkway. The intersection of William Halton Parkway at Burnhamthorpe Road is projected to operate with v/c ratios above 1.0 on the eastbound through, westbound through, and northbound left movements. The roundabout at Sixth Line is projected to have heavier operational constraints with v/c ratios of 1.77 and 1.79 during the AM peak and 1.54 and 1.61 during the PM peak. The 95th percentile queue are more than 1.5 kilometres for the east and west legs. Similar to the 2025 Future Total horizon, it is anticipated that these volumes may not be realized as the traffic volume on William Halton Parkway may be less than those provided by the Region. At the access to the industrial buildings on William Halton Parkway, the northbound left movement will be constrained by the high volumes on the major road where the left-turning vehicles are not able to find the interval to complete the turn. Signalizing the intersection was shown to improve the traffic at the access to reduce the V/C ratios and allow all movements to operate under or at the capacity.

The Sixth Line and Burnhamthorpe Road intersection operates with good V/C ratios and low delays due to the widening. The eastbound and westbound shared left/through/right movements at the two-way stop intersection of Sixth Line at Loyalist Trail and School Site Access was shown to have improved from the 2025 Future Total conditions but still experience LOS F due to the high delay during the AM peak hour. This is due to the priority given to the north-south traffic along Sixth Line. Implementing an all-way stop at the intersection is proposed to mitigate these delays. As a result, the delays at the school site access and Loyalist trail will be largely reduced. While the delays at the north and south approaches increase with this change, the v/c ratios and delays are still at acceptable levels. This change can also improve the efficiency and safety of the pedestrian traffic from the school.

7 Recommendations

The proposed development will fit into the existing road network. The three accesses will support the proposed development as well as the surrounding background developments. The bus loop in the school site is recommended to be extended along the entire length of the circulating driveway. In this way, the portion closest to the school could be reserved for bus loading while the remainder could be allowed for parent pickups in the evening. By extending the drop off loop around the circulating road additional on-site stacking space would also be provided to supplement the drop off layby for passenger vehicles adjacent to the school and prevent blocking by stacked vehicles along the circulation road.

It is noted that, due to the large peak hour volumes on William Halton Parkway provided by the Region, the intersections and driveways along William Halton Parkway are projected to operate with capacity constraints. Further studies will be required along William Halton Parkway to determine whether changes need to be made to the intersections. The access on William Halton Parkway is proposed to be signalized to accommodate the vehicles turning onto the major streets. The intersection formed by the access and Loyalist Trail on Sixth Line is proposed to be either changed to an all-way stop or a signalized intersection to ensure the school-bound vehicles can access the school without high delays.

8 Conclusions

This Transportation Impact Study has examined the trip generation, access requirements, and Study Area road network impact of the proposed Sixth Oak's school and industrial employment development. The TIS has shown the following:

a) The proposed development analyzed herein will include a secondary school with a capacity of 1,200 pupils, an 8,000 square feet childcare facility, a 100,000 square feet office space, and 281,600 square feet one-storey industrial buildings separated from the rest by natural heritage service areas.
b) The proposed development will have one stop-controlled full-movement access on Sixth Line and one right-in right-out access on Burnhamthorpe Road for Block 2 containing the secondary school, the childcare facility, and the office area. The proposed industrial buildings will share one full-movement access on the extended William Halton Parkway.
c) The adjacent developments by the landowners' group in Neighbourhood 9,10,11, the EMGO, the Star Oak with direct connections between the developments, have been included in the background traffic projections.
d) The proposed Block 2 development, including the secondary school, office, and daycare uses, will include 350 vehicle parking spaces, including 12 accessible parking stalls. This will meet the zoning bylaw requirements for the proposed development and no reductions are requested.
e) The proposed Block 1 industrial buildings include 131 parking spaces in total, 5 of which are accessible spaces. This will meet the zoning bylaw requirements for the proposed development and no reductions are requested.
f) With respect to bike parking, 26 parking spaces are provided for the combined school, childcare centre, (Block 2) and office land uses and 9 are provided for the industrial buildings (Block 1).
g) The Region of Halton proposed a compound annual growth rate of 2% along Sixth Line, Burnhamthorpe Road, William Halton Parkway, and Loyalist Trail. This conservative estimate of traffic growth was applied to the Study Area turning movement counts and traffic volumes. To reflect the functional change of William Halton Parkway and Burnhamthorpe Road, some east-west through trips were shifted from Burnhamthorpe Road to William Halton Parkway in the 2025 and 2030 horizons.
h) To estimate the impact of the subject development on the Study Area, a person trip generation exercise has been undertaken for each land use. The trip generation of the secondary school used the "first principles" method, while the trip generation of the childcare centre, office, and industrial buildings used the corresponding ITE rates. The mode shares have been determined using information from the school board, 2016 TTS mode share, and the Halton Region's Transportation Master Plan. The subject development is anticipated to generate 1067 AM and 701 PM peak hour two-way auto trips combined during the 2025 horizon. With the shift in mode share projected to occur by 2031, the development will generate 1022 AM and 660 PM peak hour two-way auto trips in 2030.
i) Using the existing traffic volumes in 2022, an operational analysis of existing conditions was undertaken. Through this analysis, it was determined that the Study Area intersections generally operate with acceptable overall LOS except for the intersection of Sixth Line at Burnhamthorpe during the PM peak hour. Several movements experienced V/C ratios above one and the overall delay reaches almost 250 seconds. No mitigation measures were proposed in this TIS because the widening of Sixth Line and signalization of Sixth Line at Burnhamthorpe Road has been planned for the future horizons, which will improve traffic conditions for the eastbound and westbound critical movements.
j) The 2025 Future Background traffic volumes, including background growth and the nearby background developments, were analysed. It was found that traffic volumes exceeded theoretical capacity for many

movements at the intersections along William Halton Parkway. The east and west legs of the roundabout at the Sixth Line experienced delays and queues. The east-west through traffic and the northbound left movement at the intersection at Burnhamthorpe Road were also above capacity. These results were expected due to the high peak hour volumes along William Halton Parkway given by the Region.

k) The 2025 Future Total horizon operates similarly to the 2025 Future Background horizon. The intersections along William Halton Parkway were still operating with constraints. The V/C ratios and delays for the eastbound and westbound through movements at the intersection at Burnhamthorpe Road could not be reduced with optimized signal timing plan. The roundabout was also operating over capacity. The signalized Burnhamthorpe Road and Sixth Line intersection operated close to the capacity. The school access on Sixth Line experienced constraints at the minor streets of Loyalist Trail and the access driveway due to the saturated volume in the opposing north-south direction. The road widening at Sixth Line to be completed for the 2030 horizon is anticipated to provide extra capacity to relieve the experienced congestion along this corridor.

l) The traffic operations within the Study Area in the 2030 Future Background horizon were similar to that in the 2025 Future Background horizon. The conditions were improved along Sixth Line with the additional capacity from the one lane widening in each direction while it becomes slightly worse along William Halton Parkway due to the additional background traffic on top of the already congested roadway. The level of service of F was observed at the roundabout and the intersection of William Halton Parkway at Burnhamthorpe Road. The eastbound and westbound movements at these intersections still experienced capacity constraints that could not be improved without significant mitigation measures. With a less conservative projection of the volumes along William Halton Parkway, the traffic conditions would be improved.

m) In the 2031 Future Total horizon, the traffic conditions at Study Area intersections were similar to those in the 2030 Future Background horizon. The traffic constraints at the roundabout and Burnhamthorpe intersection on William Halton Parkway persisted. The site traffic from the school and industrial lands created new operational constraints at the access on Sixth Line and the access on William Halton Parkway. The traffic from the east and west approaches at the school access on Sixth Line experienced high delay during the peak hours due to the traffic on the major street. The proposed mitigation measure was to change the two-way stop control to an all-way stop control which was shown to improve the operational performance for the movements getting into and out of the school while keeping the delays on Sixth Line at acceptable delays. The access on William Halton Parkway was proposed to be signalized to provide adequate time for the northbound outbound movements from the site.

n) The access on William Halton Parkway is proposed to be signalized to prevent high delays for outbound vehicles from the industrial buildings. The access on Sixth Line is proposed to be either signalized or all-way stop control to accommodate the east-west traffic to/from the school.

o) The bus loop in the school site is recommended to be extended along the entire length of the circulating driveway to provide more pick-up/drop-off spaces for parents.

p) TDM measures are proposed to further encourage commuters to shift away from single occupant vehicle trips. For this development, which primarily consists of school and employment land uses, the most effective measures involve access and usability of transit, cycling and pedestrian facilities. To ensure that the transit, cycling, and pedestrian modes are served appropriately by the proposed development, concept plans have been prepared.

The Sixth Oak developments will have a minor impact on the Study Area road network. The proposed accesses will operate with reasonable LOS and delays on the turning movements into and out of the site. The concept plan prepared will provide a good pedestrian and cycling network along with good access to transit throughout the

development. It is recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

Zhengxuan Lai, E.I.T.
289-834-0646
May.Lai@CGHTransportation.com

Reviewed By:

Mark Crockford, P. Eng.
905-251-4070
Mark.Crockford@CGHTransportation.com

Appendix A

Scope Confirmation

Technical Memorandum

To:	Syed Rizvi – Town of Oakville Matt Krusto – Halton Region	Date:	2021-11-24
Cc:	Mark Crockford – CGH Transportation		
From:	Nasteha Abdullahi	Project Number:	2021-113

Re: Sixth Oak Inc. School & Employment Lands Development – Terms of Reference

We have been asked to undertake a Transportation Impact Study (TIS) for Sixth Oak Inc. properties located on the northwest corner of Burnhamthorpe Road at Sixth Line. The developments are surrounded by the proposed Neighbourhood 9, 10, and 11 developments in North Oakville. The school (~100,000 square feet GFA) will have accesses on both Burnhamthorpe Road and Sixth Line, while the single-storey employment lands (~250,000 square feet GFA) will have an access on William Halton Parkway. Access to the employment lands will be guided by the Halton Region Access Management Guidelines. CGH undertook a TIS for large portions of Neighbourhoods 9, 10, and 11. That study will be used to inform the proposed TIS including network background volumes and growth rates, as well as projected volumes along William Halton Parkway.

We have prepared the following TIS scope of work for review. Please let us know if you have any comments or additions.

Transportation Impact Study Requirements (TIS):

The following intersections have been proposed for the Transportation Impact Study Area:

- Burnhamthorpe Road at Sixth Line
- Sixth Line at William Halton Parkway
- Burnhamthorpe Road at William Halton Parkway
- One School Access on Burnhamthorpe Road
- Up to Two School accesses on Sixth Line
- One Employment Access on William Halton Parkway

Analysis Assumptions:

- Horizon years: 2021, 2025 (Buildout), and 2030 (+ 5 years).
- Sixth Line will be analyzed as two general purpose lanes for year 2021 (based on existing conditions), and as four lanes for years 2025 and 2030.

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

Background Traffic:

- A CAGR of 2% from the Neighbourhood 9, 10, and 11 study will be implemented for Burnhamthorpe Road and Sixth Line.
- Background development assumptions for the proposed Neighbourhood 9, 10, and 11 developments directly across from the subject development, which include developments by:
    - Timsin Holding Corp.
    - Docasa Group Ltd.
    - Star Oak Developments Ltd.
    - Diagram Developments Inc.
    - ARGO (West Morrison Creek) Ltd.
    - Lower Fourth Development Ltd. & Pendent Development Ltd.
    - Crosstrail Estates Inc. and TWKD Developments Inc.
    - Mattamy Homes / SGGC
    - G.C. Family Investments
- Background development assumptions for other nearby developments by:
    - EMGO (North Oakville)
    - Petgor
    - Sixth Line Corp.

Mode Share:

Halton's Transportation Master Plan 2011 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 15% will be utilized for the buildout year 2025 and a transit mode split of 20% will be utilized for the 2030 horizon. In 2030, 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 (2021), 2026 and 2031 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.

Site Access:

- Study will be in accordance with Halton Region's Transportation Impact Guidelines and Town of Oakville's Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies
- Required/recommended road improvements either as a result of the development impacts, or general non-development improvements will be identified

From:	Nasteha Abdullahi
To:	May Lai
Subject:	FW: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference
Date:	January 11, 2022 8:16:17 PM
Attachments:	image001.png

FYI

From: Pasquini-Smith, Alexsandria <Alex.Pasquini-Smith@halton.ca>
Sent: December 3, 2021 9:01 AM
To: Nasteha Abdullahi <nasteha.abdullahi@cghtransportation.com>
Subject: RE: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference

Hello Nasteha,

Regional staff have reviewed the provided TOR and offer the following comments:

As noted in the terms of references, the following intersections will be analyzed:
- Burnhamthorpe Road at Sixth Line
- Sixth Line at William Halton Parkway
-Burnhamthorpe Road at William Halton Parkway
-One School Access on Burnhamthorpe Road
-Up to Two School accesses on Sixth Line
-One Employment Access on William Halton Parkway
The study area intersections and accesses are acceptable for the study review.

The analysis years of 2021, 2025 and 2030 are acceptable.

The Study must be in accordance to Halton Region's Transportation Impact Study Guidelines (2015), Halton's Access By-Law 32-17 and Halton's Access Management Guidelines (2015). Any proposed development access to a Regional road will only be reviewed as part of the Transportation Impact Study. Any access to a Regional road must be reasonably justified in the study.

For the traffic volume counts and traffic signal timing (from Halton Region), information can be requested from our Road Operations group at trafficdatarequests@halton.ca.

All other items in the terms of references appear acceptable.

Have a great day.
Alex

Alexsandria Pasquini-Smith, MCIP, RPP
Intermediate Planner
Planning Services
Legislative & Planning Services
Halton Region

905-825-6057 ext. 7185 | 1-866-442-5866

Halton Region logo

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From: Nasteha Abdullahi <nasteha.abdullahi@cghtransportation.com>
Sent: Wednesday, November 24, 2021 6:30 PM
To: Pasquini-Smith, Alexsandria <Alex.Pasquini-Smith@halton.ca>
Subject: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference

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Good evening Alex,

CGH Transportation has been retained by Sixth Oak Inc. to undertake a Transportation Impact Study for their school and employment lands development at Burnhamthorpe Road and Sixth Line in Oakville. We have drafted the attached terms of reference for this development for your review. Please let us know if you have any comments or questions.

Thank you,
Nasteha

Nasteha Abdullahi, M. Eng
CGH Transportation Inc.
P: 647-965-2835
E:nasteha.abdullahi@CGHTransportation.com

From:	Nasteha Abdullahi
To:	May Lai
Subject:	FW: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference
Date:	January 11, 2022 8:16:01 PM
Attachments:	image001.png

FYI

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: November 30, 2021 11:23 PM
To: Nasteha Abdullahi <nasteha.abdullahi@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference

Hi Nasteha,

Thanks for providing opportunity to comment on TOR for the High School future site TIS.

In addition to the attached sections of TOR, please add following assessment in the study:

- Enrolment/Catchment area – HS intended to serve residential areas from each direction
- Internal Traffic Circulation
- Drop-off/Pick-up by parents – Consider peak 10 minutes Drop-off/Pick-up rates. You may consult " York Region Safety and Traffic Circulation at School Sites Guidelines Study". You may apply Average Rate/Student from schools survey data.
- Bus lay-by
- Parking

Please feel free to contact if you have any questions.

Thanks,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca

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From: Nasteha Abdullahi <nasteha.abdullahi@cghtransportation.com>

Sent: November 24, 2021 6:33 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Subject: Sixth Oak Inc. School and Employment Lands TIS - Terms of Reference

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Good evening Syed,

Thank you for your comments on the previous TIS terms of reference.

In addition, CGH Transportation has been retained by Sixth Oak Inc. to undertake a Transportation Impact Study for their school and employment lands development at Burnhamthorpe Road and Sixth Line in Oakville. We have drafted the attached terms of reference for this development for your review. Please let us know if you have any comments or questions.

Thank you,
Nasteha

Nasteha Abdullahi, M. Eng
CGH Transportation Inc.
P: 647-965-2835
E:nasteha.abdullahi@CGHTransportation.com

Appendix B

Turning Movement Count Data

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #22-015 - CGH Transportation

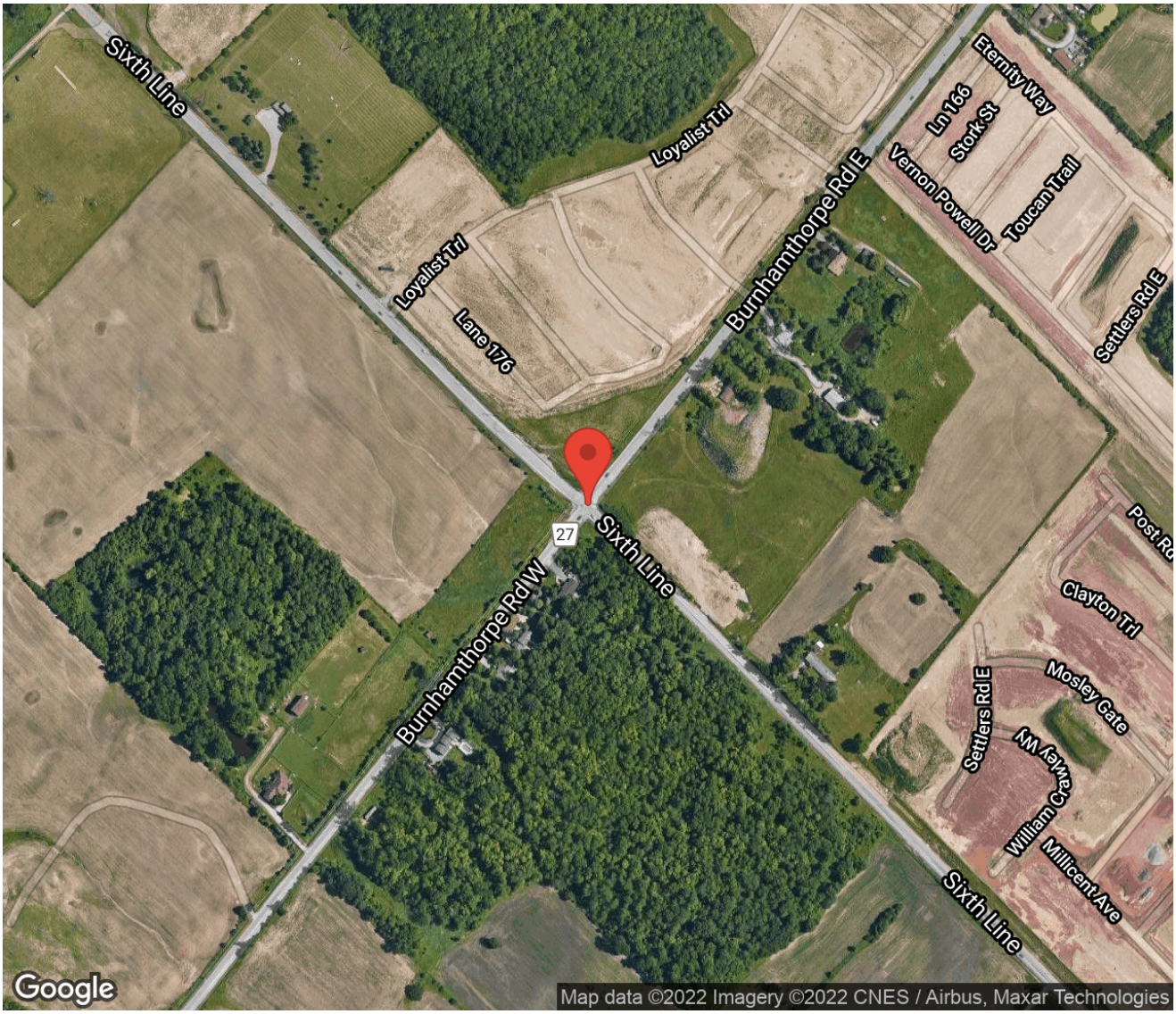
Intersection Count Report

Intersection:	Burnhamthorpe Rd W & Sixth Line
Municipality:	Oakville
Count Date:	Jan 26, 2022
Site Code:	2201500001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 15:00-18:00
Weather:	Clear

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Burnhamthorpe Rd W & Sixth Line
Site Code:	2201500001
Municipality:	Oakville
Count Date:	Jan 26, 2022



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

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	181	11	0	204	0	19	146	21	0	186	0	390
08:00 - 09:00	19	205	18	0	242	0	39	143	32	0	214	0	456
09:00 - 10:00	11	154	18	0	183	0	32	151	25	0	208	0	391
BREAK													
15:00 - 16:00	13	172	8	0	193	0	19	181	17	0	217	0	410
16:00 - 17:00	14	165	16	0	195	0	50	192	35	0	277	0	472
17:00 - 18:00	4	166	11	0	181	0	42	245	42	0	329	0	510
GRAND TOTAL	**73**	**1043**	**82**	**0**	**1198**	**0**	**201**	**1058**	**172**	**0**	**1431**	**0**	**2629**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Burnhamthorpe Rd W & Sixth Line
Site Code:	2201500001
Municipality:	Oakville
Count Date:	Jan 26, 2022

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	16	95	5	0	116	0	6	147	9	0	162	0	278
08:00 - 09:00	32	154	12	0	198	0	11	204	24	0	239	0	437
09:00 - 10:00	21	225	11	0	257	0	9	268	25	0	302	0	559
BREAK													
15:00 - 16:00	30	306	11	0	347	0	13	368	47	0	428	0	775
16:00 - 17:00	55	431	30	0	516	0	21	540	63	0	624	0	1140
17:00 - 18:00	56	579	12	0	647	0	30	681	71	0	782	0	1429
GRAND TOTAL	**210**	**1790**	**81**	**0**	**2081**	**0**	**90**	**2208**	**239**	**0**	**2537**	**0**	**4618**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	1	36	2	0	39	0	2	0	0	2	0	0	0	0	0	0
07:15	3	29	2	0	34	0	5	0	0	5	0	0	0	0	0	0
07:30	2	43	3	0	48	0	6	0	0	6	0	0	0	0	0	0
07:45	5	58	4	0	67	1	2	0	0	3	0	0	0	0	0	0
08:00	3	74	2	0	79	0	5	0	0	5	0	1	0	0	1	0
08:15	5	37	6	0	48	0	4	1	0	5	0	0	0	0	0	0
08:30	6	42	4	0	52	1	5	0	0	6	0	0	0	0	0	0
08:45	4	33	5	0	42	0	4	0	0	4	0	0	0	0	0	0
09:00	5	32	7	0	44	0	2	0	0	2	0	0	0	0	0	0
09:15	3	34	5	0	42	0	2	1	0	3	0	0	0	0	0	0
09:30	1	41	3	0	45	0	2	0	0	2	0	0	0	0	0	0
09:45	2	38	2	0	42	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	40	497	45	0	582	2	42	2	0	46	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	1	43	2	0	46	0	3	0	0	3	0	0	0	0	0	0
15:15	2	36	1	0	39	0	2	0	0	2	0	0	0	0	0	0
15:30	4	36	3	0	43	1	4	0	0	5	0	1	0	0	1	0
15:45	5	44	2	0	51	0	3	0	0	3	0	0	0	0	0	0
16:00	3	40	5	0	48	1	4	1	0	6	0	0	0	0	0	0
16:15	5	35	4	0	44	0	4	0	0	4	0	0	0	0	0	0
16:30	4	36	2	0	42	0	2	0	0	2	0	0	0	0	0	0
16:45	1	41	3	0	45	0	3	1	0	4	0	0	0	0	0	0
17:00	2	47	5	0	54	0	2	0	0	2	0	0	0	0	0	0
17:15	1	42	3	0	46	0	1	0	0	1	0	0	0	0	0	0
17:30	0	38	1	0	39	0	0	0	0	0	0	0	0	0	0	0
17:45	1	35	2	0	38	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	29	473	33	0	535	2	29	2	0	33	0	1	0	0	1	0
GRAND TOTAL	69	970	78	0	1117	4	71	4	0	79	0	2	0	0	2	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	5	36	4	0	45	0	4	0	0	4	0	0	0	0	0	0
07:15	3	38	6	0	47	0	4	1	0	5	0	0	0	0	0	0
07:30	6	32	5	0	43	1	3	0	0	4	0	0	0	0	0	0
07:45	4	25	3	0	32	0	4	2	0	6	0	0	0	0	0	0
08:00	5	36	7	0	48	1	6	0	0	7	0	0	0	0	0	0
08:15	8	39	5	0	52	2	3	0	0	5	0	0	0	0	0	0
08:30	10	29	9	0	48	0	3	1	0	4	0	0	0	0	0	0
08:45	12	25	10	0	47	1	2	0	0	3	0	0	0	0	0	0
09:00	11	31	8	0	50	0	5	0	0	5	0	1	0	0	1	0
09:15	8	30	7	0	45	0	3	1	0	4	0	0	0	0	0	0
09:30	7	35	5	0	47	1	4	0	0	5	0	0	0	0	0	0
09:45	5	39	4	0	48	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	84	395	73	0	552	6	44	5	0	55	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	3	46	2	0	51	0	2	0	0	2	0	0	0	0	0	0
15:15	4	37	5	0	46	0	4	1	0	5	0	0	0	0	0	0
15:30	6	41	3	0	50	1	3	0	0	4	0	0	0	0	0	0
15:45	5	45	6	0	56	0	3	0	0	3	0	0	0	0	0	0
16:00	8	42	4	0	54	0	6	1	0	7	0	0	0	0	0	0
16:15	12	38	8	0	58	1	3	0	0	4	0	0	0	0	0	0
16:30	15	39	11	0	65	1	4	1	0	6	0	1	0	0	1	0
16:45	13	57	9	0	79	0	2	1	0	3	0	0	0	0	0	0
17:00	11	52	12	0	75	0	2	0	0	2	0	0	0	0	0	0
17:15	12	51	14	0	77	1	0	0	0	1	0	0	0	0	0	0
17:30	10	64	9	0	83	0	1	0	0	1	0	0	0	0	0	0
17:45	8	75	7	0	90	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	107	587	90	0	784	4	30	4	0	38	0	1	0	0	1	0
GRAND TOTAL	191	982	163	0	1336	10	74	9	0	93	0	2	0	0	2	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	3	12	0	0	15	0	4	0	0	4	0	0	0	0	0	0
07:15	2	13	2	0	17	0	6	0	0	6	0	0	0	0	0	0
07:30	6	27	1	0	34	1	5	0	0	6	0	0	0	0	0	0
07:45	4	21	2	0	27	0	7	0	0	7	0	0	0	0	0	0
08:00	7	23	3	0	33	1	9	1	0	11	0	0	0	0	0	0
08:15	8	28	1	0	37	0	8	0	0	8	0	1	0	0	1	0
08:30	7	21	4	0	32	1	9	0	0	10	0	0	0	0	0	0
08:45	6	47	2	0	55	2	8	1	0	11	0	0	0	0	0	0
09:00	5	53	3	0	61	1	9	0	0	10	0	0	0	0	0	0
09:15	7	45	5	0	57	0	6	0	0	6	0	0	0	0	0	0
09:30	4	54	1	0	59	1	5	0	0	6	0	0	0	0	0	0
09:45	3	50	2	0	55	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	62	394	26	0	482	7	79	2	0	88	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	7	70	1	0	78	1	2	0	0	3	0	0	0	0	0	0
15:15	9	73	2	0	84	0	1	0	0	1	0	0	0	0	0	0
15:30	5	72	4	0	81	0	4	0	0	4	0	0	0	0	0	0
15:45	7	78	3	0	88	1	6	1	0	8	0	0	0	0	0	0
16:00	9	78	5	0	92	0	8	0	0	8	0	0	0	0	0	0
16:15	12	114	7	0	133	1	6	0	0	7	0	0	0	0	0	0
16:30	14	106	9	0	129	0	3	0	0	3	0	0	0	0	0	0
16:45	19	112	8	0	139	0	4	1	0	5	0	0	0	0	0	0
17:00	16	139	3	0	158	0	5	0	0	5	0	0	0	0	0	0
17:15	13	160	2	0	175	1	4	0	0	5	0	0	0	0	0	0
17:30	15	138	4	0	157	0	2	0	0	2	0	0	0	0	0	0
17:45	11	128	3	0	142	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	137	1268	51	0	1456	4	48	2	0	54	0	0	0	0	0	0
GRAND TOTAL	199	1662	77	0	1938	11	127	4	0	142	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

West Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	13	2	0	15	0	3	0	0	3	0	0	0	0	0	0
07:15	1	27	1	0	29	0	3	0	0	3	0	0	0	0	0	0
07:30	3	48	3	0	54	0	2	0	0	2	0	0	0	0	0	0
07:45	2	47	2	0	51	0	4	1	0	5	0	0	0	0	0	0
08:00	1	41	4	0	46	1	3	0	0	4	0	0	0	0	0	0
08:15	2	41	3	0	46	0	4	2	0	6	0	0	0	0	0	0
08:30	4	41	5	0	50	0	5	1	0	6	0	0	0	0	0	0
08:45	2	65	7	0	74	1	4	2	0	7	0	0	0	0	0	0
09:00	3	64	4	0	71	0	3	1	0	4	0	0	0	0	0	0
09:15	1	59	6	0	66	0	5	0	0	5	0	0	0	0	0	0
09:30	2	66	5	0	73	0	2	1	0	3	0	0	0	0	0	0
09:45	3	66	8	0	77	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	24	578	50	0	652	2	41	8	0	51	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Municipality: Oakville
Count Date: Jan 26, 2022

West Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	4	67	10	0	81	0	1	0	0	1	0	0	0	0	0	0
15:15	2	84	7	0	93	1	1	0	0	2	0	0	0	0	0	0
15:30	1	107	12	0	120	0	2	2	0	4	0	0	0	0	0	0
15:45	5	104	15	0	124	0	2	1	0	3	0	0	0	0	0	0
16:00	3	120	13	0	136	1	4	0	0	5	0	0	0	0	0	0
16:15	7	122	16	0	145	0	2	0	0	2	0	0	0	0	0	0
16:30	4	141	14	0	159	0	0	1	0	1	0	0	0	0	0	0
16:45	6	150	19	0	175	0	1	0	0	1	0	0	0	0	0	0
17:00	8	162	17	0	187	0	1	0	0	1	0	0	0	0	0	0
17:15	10	178	23	0	211	0	0	1	0	1	0	0	0	0	0	0
17:30	7	177	16	0	200	0	2	0	0	2	0	0	0	0	0	0
17:45	5	161	14	0	180	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	62	1573	176	0	1811	2	16	5	0	23	0	0	0	0	0	0
GRAND TOTAL	86	2151	226	0	2463	4	57	13	0	74	0	0	0	0	0	0

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 08:45:00
To: 09:45:00

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Count Date: Jan 26, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	173	140	313
Trucks	11	16	27
Bicycles	0	1	1
	184	**157**	**341**

Sixth Line

Bicycles	0	0	0	0
Trucks	1	10	0	0
Cars	20	140	13	0
Totals	**21**	**150**	**13**	**0**

East Approach

	Out	In	Total
Cars	232	297	529
Trucks	33	15	48
Bicycles	0	0	0
	265	**312**	**577**

Peds: 0

Burnhamthorpe Rd W

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	8	**9**
0	14	254	**268**
0	4	22	**26**

Peds: 0

Peds: 0

Burnhamthorpe Rd W

Totals	Cars	Trucks	Bicycles
0	0	0	0
12	11	1	0
227	199	28	0
26	22	4	0

Peds: 0

West Approach

	Out	In	Total
Cars	284	257	541
Trucks	19	31	50
Bicycles	0	0	0
	303	**288**	**591**

Totals	**40**	**136**	**31**	**0**
Cars	38	121	30	0
Trucks	2	14	1	0
Bicycles	0	1	0	0

Sixth Line

South Approach

	Out	In	Total
Cars	189	184	373
Trucks	17	18	35
Bicycles	1	0	1
	207	**202**	**409**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Count Date: Jan 26, 2022
Period: 07:00 - 10:00

Peak Hour Data (08:45 - 09:45)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach Burnhamthorpe Rd W						West Approach Burnhamthorpe Rd W						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:45	4	37	5	0	0	46	13	27	10	0	0	50	8	55	3	0	0	66	3	69	9	0	0	81	243
09:00	5	34	7	0	0	46	11	37	8	0	0	56	6	62	3	0	0	71	3	67	5	0	0	75	248
09:15	3	36	6	0	0	45	8	33	8	0	0	49	7	51	5	0	0	63	1	64	6	0	0	71	228
09:30	1	43	3	0	0	47	8	39	5	0	0	52	5	59	1	0	0	65	2	68	6	0	0	76	240
Grand Total	**13**	**150**	**21**	**0**	**0**	**184**	**40**	**136**	**31**	**0**	**0**	**207**	**26**	**227**	**12**	**0**	**0**	**265**	**9**	**268**	**26**	**0**	**0**	**303**	**959**
Approach %	7.1	81.5	11.4	0		-	19.3	65.7	15	0		-	9.8	85.7	4.5	0		-	3	88.4	8.6	0		-	
Totals %	1.4	15.6	2.2	0		19.2	4.2	14.2	3.2	0		21.6	2.7	23.7	1.3	0		27.6	0.9	27.9	2.7	0		31.6	
PHF	**0.65**	**0.87**	**0.75**	**0**		**0.98**	**0.77**	**0.87**	**0.78**	**0**		**0.92**	**0.81**	**0.92**	**0.6**	**0**		**0.93**	**0.75**	**0.97**	**0.72**	**0**		**0.94**	**0.97**
Cars	13	140	20	0		173	38	121	30	0		189	22	199	11	0		232	8	254	22	0		284	878
% Cars	100	93.3	95.2	0		94	95	89	96.8	0		91.3	84.6	87.7	91.7	0		87.5	88.9	94.8	84.6	0		93.7	91.6
Trucks	0	10	1	0		11	2	14	1	0		17	4	28	1	0		33	1	14	4	0		19	80
% Trucks	0	6.7	4.8	0		6	5	10.3	3.2	0		8.2	15.4	12.3	8.3	0		12.5	11.1	5.2	15.4	0		6.3	8.3
Bicycles	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	0	0.7	0	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	-	

Peak Hour Diagram

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

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

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Count Date: Jan 26, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	177	284	461
Trucks	4	3	7
Bicycles	0	0	0
	181	**287**	**468**

Sixth Line

Bicycles	0	0	0	0
Trucks	0	4	0	0
Cars	11	162	4	0
Totals	**11**	**166**	**4**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	632	724	1356
Trucks	15	3	18
Bicycles	0	0	0
	647	**727**	**1374**

Burnhamthorpe Rd W

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	30	**30**
0	3	678	**681**
0	1	70	**71**

Peds: 0

Peds: 0

Burnhamthorpe Rd W

Totals	Cars	Trucks	Bicycles
0	0	0	0
12	12	0	0
579	565	14	0
56	55	1	0

Peds: 0

West Approach

	Out	In	Total
Cars	778	617	1395
Trucks	4	15	19
Bicycles	0	0	0
	782	**632**	**1414**

Totals	**42**	**245**	**42**	**0**
Cars	41	242	42	0
Trucks	1	3	0	0
Bicycles	0	0	0	0

Sixth Line

South Approach

	Out	In	Total
Cars	325	287	612
Trucks	4	6	10
Bicycles	0	0	0
	329	**293**	**622**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd W & Sixth Line
Site Code: 2201500001
Count Date: Jan 26, 2022
Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach Burnhamthorpe Rd W						West Approach Burnhamthorpe Rd W						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
17:00	2	49	5	0	0	56	11	54	12	0	0	77	16	144	3	0	0	163	8	163	17	0	0	188	484
17:15	1	43	3	0	0	47	13	51	14	0	0	78	14	164	2	0	0	180	10	178	24	0	0	212	517
17:30	0	38	1	0	0	39	10	65	9	0	0	84	15	140	4	0	0	159	7	179	16	0	0	202	484
17:45	1	36	2	0	0	39	8	75	7	0	0	90	11	131	3	0	0	145	5	161	14	0	0	180	454
Grand Total	**4**	**166**	**11**	**0**	**0**	**181**	**42**	**245**	**42**	**0**	**0**	**329**	**56**	**579**	**12**	**0**	**0**	**647**	**30**	**681**	**71**	**0**	**0**	**782**	**1939**
Approach %	2.2	91.7	6.1	0		-	12.8	74.5	12.8	0		-	8.7	89.5	1.9	0		-	3.8	87.1	9.1	0		-	
Totals %	0.2	8.6	0.6	0		9.3	2.2	12.6	2.2	0		17	2.9	29.9	0.6	0		33.4	1.5	35.1	3.7	0		40.3	
PHF	**0.5**	**0.85**	**0.55**	**0**		**0.81**	**0.81**	**0.82**	**0.75**	**0**		**0.91**	**0.88**	**0.88**	**0.75**	**0**		**0.9**	**0.75**	**0.95**	**0.74**	**0**		**0.92**	**0.94**
Cars	4	162	11	0		177	41	242	42	0		325	55	565	12	0		632	30	678	70	0		778	1912
% Cars	100	97.6	100	0		97.8	97.6	98.8	100	0		98.8	98.2	97.6	100	0		97.7	100	99.6	98.6	0		99.5	98.6
Trucks	0	4	0	0		4	1	3	0	0		4	1	14	0	0		15	0	3	1	0		4	27
% Trucks	0	2.4	0	0		2.2	2.4	1.2	0	0		1.2	1.8	2.4	0	0		2.3	0	0.4	1.4	0		0.5	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 #22-015 - CGH Transportation

Intersection Count Report

Intersection:	Sixth Line & William Halton Pkwy
Municipality:	Oakville
Count Date:	Jan 26, 2022
Site Code:	2201500002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 15:00-18:00
Weather:	Clear

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Sixth Line & William Halton Pkwy
Site Code:	2201500002
Municipality:	Oakville
Count Date:	Jan 26, 2022

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

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	30	85	0	0	115	0	0	67	93	0	160	0	275
08:00 - 09:00	41	103	0	0	144	0	0	70	98	0	168	0	312
09:00 - 10:00	30	75	0	0	105	0	0	75	94	0	169	0	274
BREAK													
15:00 - 16:00	20	87	0	0	107	0	0	79	130	0	209	0	316
16:00 - 17:00	26	78	0	0	104	0	0	96	149	0	245	0	349
17:00 - 18:00	18	80	0	0	98	0	0	133	156	0	289	0	387
GRAND TOTAL	**165**	**508**	**0**	**0**	**673**	**0**	**0**	**520**	**720**	**0**	**1240**	**0**	**1913**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

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	119	0	23	0	142	0	0	0	0	0	0	0	142
08:00 - 09:00	143	0	43	0	186	0	0	0	0	0	0	0	186
09:00 - 10:00	109	0	28	0	137	0	0	0	0	0	0	0	137
BREAK													
15:00 - 16:00	108	0	24	0	132	0	0	0	0	0	0	0	132
16:00 - 17:00	117	0	30	0	147	0	0	0	0	0	0	0	147
17:00 - 18:00	103	0	19	0	122	0	0	0	0	0	0	0	122
GRAND TOTAL	**699**	**0**	**167**	**0**	**866**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**866**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	7	19	0	0	26	0	1	0	0	1	0	0	0	0	0	0
07:15	5	12	0	0	17	1	2	0	0	3	0	0	0	0	0	0
07:30	8	18	0	0	26	2	4	0	0	6	0	0	0	0	0	0
07:45	6	27	0	0	33	1	2	0	0	3	0	0	0	0	0	0
08:00	12	34	0	0	46	3	1	0	0	4	0	1	0	0	1	0
08:15	8	17	0	0	25	1	3	0	0	4	0	0	0	0	0	0
08:30	5	24	0	0	29	2	3	0	0	5	0	0	0	0	0	0
08:45	9	18	0	0	27	1	2	0	0	3	0	0	0	0	0	0
09:00	11	16	0	0	27	0	2	0	0	2	0	0	0	0	0	0
09:15	7	18	0	0	25	1	1	0	0	2	0	0	0	0	0	0
09:30	6	20	0	0	26	1	1	0	0	2	0	0	0	0	0	0
09:45	4	15	0	0	19	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	88	238	0	0	326	13	24	0	0	37	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

North Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	2	24	0	0	26	2	1	0	0	3	0	0	0	0	0	0
15:15	5	14	0	0	19	1	2	0	0	3	0	1	0	0	1	0
15:30	3	21	0	0	24	0	3	0	0	3	0	0	0	0	0	0
15:45	6	20	0	0	26	1	1	0	0	2	0	0	0	0	0	0
16:00	8	21	0	0	29	0	4	0	0	4	0	0	0	0	0	0
16:15	7	18	0	0	25	2	1	0	0	3	0	0	0	0	0	0
16:30	5	15	0	0	20	1	1	0	0	2	0	0	0	0	0	0
16:45	2	17	0	0	19	1	1	0	0	2	0	0	0	0	0	0
17:00	4	24	0	0	28	0	2	0	0	2	0	0	0	0	0	0
17:15	6	20	0	0	26	1	1	0	0	2	0	0	0	0	0	0
17:30	3	15	0	0	18	0	0	0	0	0	0	0	0	0	0	0
17:45	3	17	0	0	20	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	54	226	0	0	280	10	18	0	0	28	0	1	0	0	1	0
GRAND TOTAL	142	464	0	0	606	23	42	0	0	65	0	2	0	0	2	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	14	23	0	37	0	3	1	0	4	0	0	0	0	0	0
07:15	0	17	26	0	43	0	2	1	0	3	0	0	0	0	0	0
07:30	0	13	22	0	35	0	2	2	0	4	0	0	0	0	0	0
07:45	0	13	17	0	30	0	3	1	0	4	0	0	0	0	0	0
08:00	0	18	24	0	42	0	4	3	0	7	0	0	0	0	0	0
08:15	0	15	25	0	40	0	2	2	0	4	0	0	0	0	0	0
08:30	0	15	23	0	38	0	2	1	0	3	0	0	0	0	0	0
08:45	0	13	17	0	30	0	1	3	0	4	0	0	0	0	0	0
09:00	0	11	24	0	35	0	3	2	0	5	0	1	0	0	1	0
09:15	0	17	20	0	37	0	2	2	0	4	0	0	0	0	0	0
09:30	0	19	17	0	36	0	1	3	0	4	0	0	0	0	0	0
09:45	0	19	25	0	44	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	0	184	263	0	447	0	27	22	0	49	0	1	0	0	1	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

South Approach - Sixth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	0	17	35	0	52	0	1	1	0	2	0	0	0	0	0	0
15:15	0	19	24	0	43	0	2	3	0	5	0	0	0	0	0	0
15:30	0	16	29	0	45	0	3	1	0	4	0	0	0	0	0	0
15:45	0	20	35	0	55	0	1	2	0	3	0	0	0	0	0	0
16:00	0	23	30	0	53	0	3	3	0	6	0	0	0	0	0	0
16:15	0	17	34	0	51	0	2	2	0	4	0	0	0	0	0	0
16:30	0	22	31	0	53	0	3	1	0	4	0	0	0	0	0	0
16:45	0	24	46	0	70	0	1	2	0	3	0	1	0	0	1	0
17:00	0	28	37	0	65	0	1	1	0	2	0	0	0	0	0	0
17:15	0	22	41	0	63	0	0	0	0	0	0	0	0	0	0	0
17:30	0	37	37	0	74	0	1	0	0	1	0	0	0	0	0	0
17:45	0	44	40	0	84	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	289	419	0	708	0	18	16	0	34	0	1	0	0	1	0
GRAND TOTAL	**0**	**473**	**682**	**0**	**1155**	**0**	**45**	**38**	**0**	**83**	**0**	**2**	**0**	**0**	**2**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	20	0	4	0	24	1	0	1	0	2	0	0	0	0	0	0
07:15	23	0	3	0	26	3	0	0	0	3	0	0	0	0	0	0
07:30	28	0	7	0	35	2	0	1	0	3	0	0	0	0	0	0
07:45	41	0	6	0	47	1	0	1	0	2	0	0	0	0	0	0
08:00	46	0	8	0	54	4	0	2	0	6	0	0	0	0	0	0
08:15	32	0	10	0	42	3	0	1	0	4	0	0	0	0	0	0
08:30	28	0	12	0	40	2	0	0	0	2	0	0	0	0	0	0
08:45	26	0	9	0	35	2	0	1	0	3	0	0	0	0	0	0
09:00	27	0	8	0	35	1	0	2	0	3	0	0	0	0	0	0
09:15	24	0	6	0	30	2	0	0	0	2	0	0	0	0	0	0
09:30	26	0	5	0	31	1	0	1	0	2	0	0	0	0	0	0
09:45	27	0	6	0	33	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	348	0	84	0	432	23	0	10	0	33	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Municipality: Oakville
Count Date: Jan 26, 2022

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
15:00	22	0	4	0	26	2	0	0	0	2	0	0	0	0	0	0
15:15	27	0	6	0	33	0	0	1	0	1	0	0	0	0	0	0
15:30	21	0	5	0	26	1	0	2	0	3	0	0	0	0	0	0
15:45	32	0	6	0	38	3	0	0	0	3	0	0	0	0	0	0
16:00	28	0	9	0	37	2	0	1	0	3	0	0	0	0	0	0
16:15	25	0	4	0	29	3	0	1	0	4	0	0	0	0	0	0
16:30	29	0	7	0	36	1	0	2	0	3	0	0	0	0	0	0
16:45	27	0	6	0	33	2	0	0	0	2	0	0	0	0	0	0
17:00	30	0	5	0	35	1	0	1	0	2	0	0	0	0	0	0
17:15	26	0	3	0	29	0	0	0	0	0	0	0	0	0	0	0
17:30	25	0	5	0	30	0	0	1	0	1	0	0	0	0	0	0
17:45	21	0	4	0	25	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	313	0	64	0	377	15	0	9	0	24	0	0	0	0	0	0
GRAND TOTAL	661	0	148	0	809	38	0	19	0	57	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: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Count Date: Jan 26, 2022

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	133	97	230
Trucks	16	15	31
Bicycles	1	0	1
	150	**112**	**262**

Sixth Line

Bicycles	1	0	0
Trucks	9	7	0
Cars	102	31	0
Totals	**112**	**38**	**0**

Peds: 0

Peds: 0

Peds: 0

Totals	**72**	**96**	**0**
Cars	61	89	0
Trucks	11	7	0
Bicycles	0	0	0

Sixth Line

East Approach

	Out	In	Total
Cars	183	120	303
Trucks	14	14	28
Bicycles	0	0	0
	197	**134**	**331**

William Halton Pkwy

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	40	36	4	0
	157	147	10	0

South Approach

	Out	In	Total
Cars	150	249	399
Trucks	18	19	37
Bicycles	0	1	1
	168	**269**	**437**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Count Date: Jan 26, 2022
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach William Halton Pkwy						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	7	29		0	0	36		16	18	0	0	34	42		7	0	0	49					0		119
08:00	15	36		0	0	51		22	27	0	0	49	50		10	0	0	60					0		160
08:15	9	20		0	0	29		17	27	0	0	44	35		11	0	0	46					0		119
08:30	7	27		0	0	34		17	24	0	0	41	30		12	0	0	42					0		117
Grand Total	**38**	**112**		**0**	**0**	**150**		**72**	**96**	**0**	**0**	**168**	**157**		**40**	**0**	**0**	**197**					**0**	**0**	**515**
Approach %	25.3	74.7		0		-		42.9	57.1	0		-	79.7		20.3	0		-						-	
Totals %	7.4	21.7		0		29.1		14	18.6	0		32.6	30.5		7.8	0		38.3						0	
PHF	**0.63**	**0.78**		**0**		**0.74**		**0.82**	**0.89**	**0**		**0.86**	**0.79**		**0.83**	**0**		**0.82**						**0**	**0.8**
Cars	31	102		0		133		61	89	0		150	147		36	0		183						0	466
% Cars	81.6	91.1		0		88.7		84.7	92.7	0		89.3	93.6		90	0		92.9						0	90.5
Trucks	7	9		0		16		11	7	0		18	10		4	0		14						0	48
% Trucks	18.4	8		0		10.7		15.3	7.3	0		10.7	6.4		10	0		7.1						0	9.3
Bicycles	0	1		0		1		0	0	0		0	0		0	0		0						0	1
% Bicycles	0	0.9		0		0.7		0	0	0		0	0		0	0		0						0	0.2
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:	15:00:00	From:	17:00:00
To:	18:00:00	To:	18:00:00

Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Count Date: Jan 26, 2022

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Sixth Line runs N/S

North Approach

	Out	In	Total
Cars	92	148	240
Trucks	6	4	10
Bicycles	0	0	0
	98	**152**	**250**

Sixth Line

Bicycles	0	0	0
Trucks	4	2	0
Cars	76	16	0
Totals	**80**	**18**	**0**

Peds: 0

Peds: 0

Peds: 0

Totals	**133**	**156**	**0**
Cars	131	155	0
Trucks	2	1	0
Bicycles	0	0	0

Sixth Line

East Approach

	Out	In	Total
Cars	119	171	290
Trucks	3	3	6
Bicycles	0	0	0
	122	**174**	**296**

William Halton Pkwy

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	19	17	2	0
	103	102	1	0

South Approach

	Out	In	Total
Cars	286	178	464
Trucks	3	5	8
Bicycles	0	0	0
	289	**183**	**472**

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

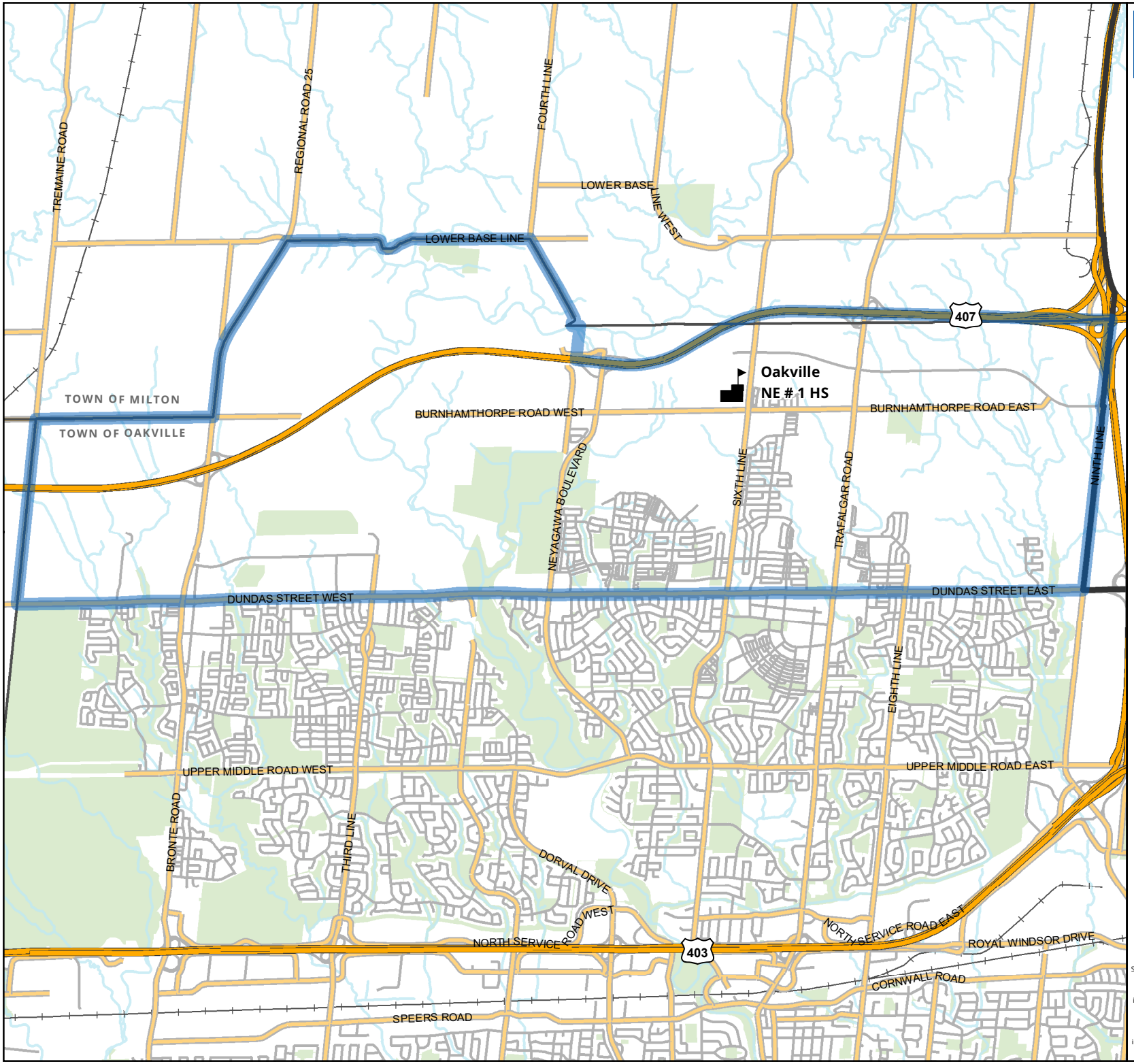
Intersection: Sixth Line & William Halton Pkwy
Site Code: 2201500002
Count Date: Jan 26, 2022
Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach Sixth Line						South Approach Sixth Line						East Approach William Halton Pkwy						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
17:00	4	26		0	0	30		29	38	0	0	67	31		6	0	0	37					0		134
17:15	7	21		0	0	28		22	41	0	0	63	26		3	0	0	29					0		120
17:30	3	15		0	0	18		38	37	0	0	75	25		6	0	0	31					0		124
17:45	4	18		0	0	22		44	40	0	0	84	21		4	0	0	25					0		131
Grand Total	**18**	**80**		**0**	**0**	**98**		**133**	**156**	**0**	**0**	**289**	**103**		**19**	**0**	**0**	**122**					**0**	**0**	**509**
Approach %	18.4	81.6		0		-		46	54	0		-	84.4		15.6	0		-						-	
Totals %	3.5	15.7		0		19.3		26.1	30.6	0		56.8	20.2		3.7	0		24						0	
PHF	**0.64**	**0.77**		**0**		**0.82**		**0.76**	**0.95**	**0**		**0.86**	**0.83**		**0.79**	**0**		**0.82**						**0**	**0.95**
Cars	16	76		0		92		131	155	0		286	102		17	0		119						0	497
% Cars	88.9	95		0		93.9		98.5	99.4	0		99	99		89.5	0		97.5						0	97.6
Trucks	2	4		0		6		2	1	0		3	1		2	0		3						0	12
% Trucks	11.1	5		0		6.1		1.5	0.6	0		1	1		10.5	0		2.5						0	2.4
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	-	

Appendix C

Proposed Secondary School Catchment Area



Halton District School Board

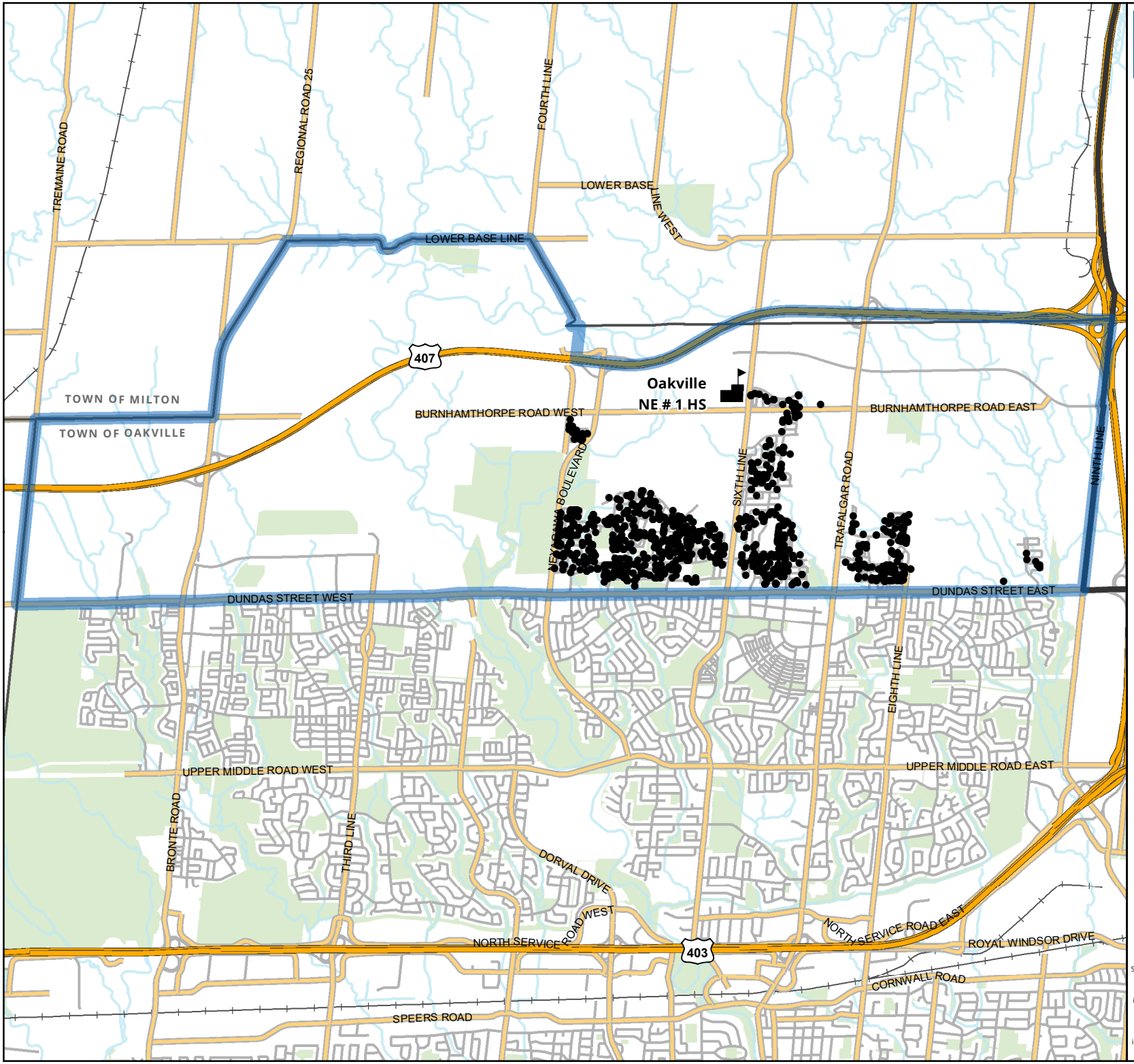
North Oakville # 1 High School

Legend

School Catchment (subject to change)

0 500 1,000
Metres

Street network provided by the Regional Municipality of Halton. The Region assumes no responsibility or liability for its use or accuracy.
It is the intention of the HDSB to provide up-to-date and accurate information. Reasonable efforts have been made to verify the information shown here, however a degree of error is inherent. This information is distributed "as is" without warranty. HDSB assumes no legal liability or responsibility for the accuracy, completeness, or usefulness of any information. If you require additional information please contact the HDSB Planning Department at 905-335-3663. Boundaries are subject to change.



Halton District School Board

North Oakville # 1 High School Students in Catchment

Legend

- Secondary Students in Catchment (total: 895)
- School Catchment (subject to change)

0 500 1,000
Metres

Street network provided by the Regional Municipality of Halton. The Region assumes no responsibility or liability for its use or accuracy.
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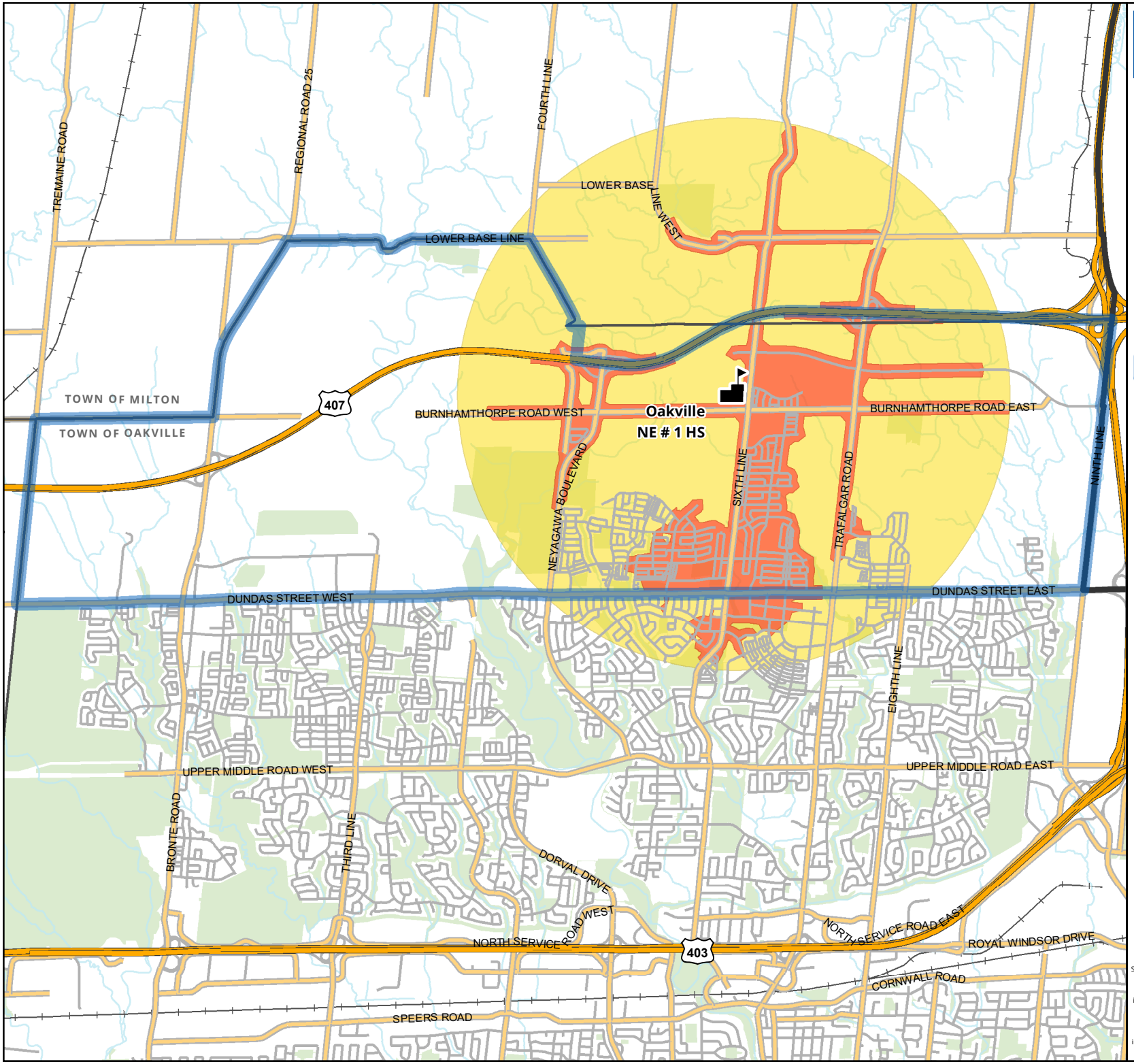

Halton District School Board

North Oakville # 1 High School Walking Radius

Legend

- School Catchment (subject to change)
- Walking Area (3.2 km based on road network)
- Walking Radius (3.2 km)

0 500 1,000
Metres

Street network provided by the Regional Municipality of Halton. The Region assumes no responsibility or liability for its use or accuracy.
It is the intention of the HDSB to provide up-to-date and accurate information. Reasonable efforts have been made to verify the information shown here, however a degree of error is inherent. This information is distributed "as is" without warranty. HDSB assumes no legal liability or responsibility for the accuracy, completeness, or usefulness of any information. If you require additional information please contact the HDSB Planning Department at 905-335-3663. Boundaries are subject to change.

From:	Nasteha Abdullahi
To:	May Lai
Subject:	FW: Sixth Oak Inc. TIS
Date:	January 11, 2022 2:03:43 PM
Attachments:	08_TIS_V1_2020-09-15.pdf image001.png

FYI

From: Mark Crockford <mark.crockford@cghtransportation.com>
Sent: November 18, 2021 2:31 PM
To: Nasteha Abdullahi <nasteha.abdullahi@cghtransportation.com>
Subject: FW: Sixth Oak Inc. TIS

Mark Crockford, P.Eng.
CGH Transportation Inc.
P:905-251-4070
E:Mark.Crockford@CGHTransportation.com

From: thibeaultf@hdsb.ca <thibeaultf@hdsb.ca>
Sent: October 22, 2021 4:44 PM
To: 'David Faye' <davidfaye.associates@gmail.com>; Mark Crockford <mark.crockford@cghtransportation.com>
Cc: 'Michael Wildfong' <wildfongm@hdsb.ca>; 'Laureen Choi' <choil@hdsb.ca>; 'Adam Cairns' <acairns@melroseinvestments.com>; 'Leo Wu' <lwu@melroseinvestments.com>; 'Colley, David' <ColleyD@Haltonbus.ca>
Subject: RE: Sixth Oak Inc. TIS

Mark, if you need anything else like walk distances, catchment areas, bus counts, walker counts, etc…, you let me know.

See attached for some additional information for the last TIS we did.

Frederick Thibeault, MPI, BES
General Manager of Planning | HDSB
Email: thibeaultf@hdsb.ca
Office: (905) 335-3665 ext. 3375
Cell: (905) 691-7076

From: David Faye <davidfaye.associates@gmail.com>
Sent: October 22, 2021 4:36 PM
To: Mark Crockford <mark.crockford@cghtransportation.com>
Cc: Fred Thibeault <thibeaultf@hdsb.ca>; Michael Wildfong <wildfongm@hdsb.ca>; Laureen Choi

<choil@hdsb.ca>; Adam Cairns <acairns@melroseinvestments.com>; Leo Wu <lwu@melroseinvestments.com>
Subject: Sixth Oak Inc. TIS

Mark,

See information from Fred Thibeault at the HDSB regarding the 15-acre high school site proposed on the Sixth Oak Inc. property which will answer your questions regarding the high school, child day care, and office components for the TIS. I will send information on the employment lands early next week. Call me if you have any questions.

1. **Conceptual Site Plan**
    a. Looking to submit conceptual drawings for now that identify the general massing of the buildings the Board is proposing
        i. 1,200 pupil place secondary school facility
        ii. 100,000 square foot facility
        iii. Sport Facility
        iv. Child Care
    b. Drawings to provide location of access points, subject to detailed Site Plan design
2. **Official Plan Amendment**
    1. Town is recommending to re-designate Employment to Transitional Area, as it permits a school.
    2. Town is looking to have the symbol moved from the location at Neyagawa and Dundas to this location as part of the OPA.
2. **Archaeological**
    1. Town confirm that report can be submitted in the new year once completed. Will not be required for a complete submission.
2. **Traffic Impact Study**
    1. Town to review general location of the access points of the school use (sixth line and Burnhamthorpe), will not focus on internal circulation
    2. Proponent to provide uses and traffic generation numbers
    3. Martin from Town provided TOR, being reviewed.
2. **Zoning By-law Requirement:**
    1. Board will be seeking the following uses on the school block – essentially a duel zone:
        i. Secondary School
        ii. Child Care Centre
        iii. Sport Facility (dome, turf, and running track)
        iv. Administrative Office (+/- 100 square feet) – Light Employment (LE)
    b. Zoning permissions

i. Will seek some allowances on the Burnhamthorpe frontage to increase setbacks, and allow for flexibility for the Board office

ii. Parking requirements: +/- 380 on site required to have +/- 350 spaces on site

1. Office: 1 per 37 square metres = 9,290m2 / 37m2 = 251 parking spaces
2. Day care centre: 1 per 40 square metres = 750m2 / 40m2 = 19 parking spaces
3. School: 1 per classroom minimum = 56 core and 24 portables = 80 parking spaces
4. Sport Facility (dome): 0 per square metre = 0 parking spaces

Regards,

David Faye

--

David Faye, MCIP, RPP
David Faye & Associates Inc.
338 Lakeshore Road East
P.O. Box 52147
Oakville, Ontario
L6J 7N5
Tel/Cell: 905-467-4250
Email: davidfaye.associates@gmail.com

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Appendix D

Traffic Control Signal Warrant

Intersection: Access on William Halton Parkway

Major Street:	East-West	Lanes:	2+
Minor Street:	North-South	Lanes:	1
Urban/Rural:	Urban		
Legs:	3		

New/Existing Intersection: New

Scenario: 2025 FT

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AHV	19	0	28	0	0	0	0	1085	22	32	1058	0
AM	10	0	16	0	0	0	0	2201	76	113	2107	0
PM	64	0	97	0	0	0	0	2140	10	16	2123	0

Access on William Halton Parkway
2025 FT

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	2243	249%	41%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	70	41%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2197	244%	46%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	35	46%		

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

Intersection: Access on William Halton Parkway

Major Street:	East-West	Lanes:	2+
Minor Street:	North-South	Lanes:	1
Urban/Rural:	Urban		
Legs:	3		

New/Existing Intersection: New

Scenario: 2030 FT

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AHV	16	0	25	0	0	0	0	1087	19	28	1057	0
AM	9	0	13	0	0	0	0	2205	66	99	2106	0
PM	56	0	85	0	0	0	0	2141	9	14	2121	0

Access on William Halton Parkway
2030 FT

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	2231	248%	36%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	61	36%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	2190	243%	41%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	30	41%		

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

Intersection: Access on Sixth Line / Loyalist Trail at Sixth Line

Major Street:	North-South	Lanes:	1
Minor Street:	East-West	Lanes:	1
Urban/Rural:	Urban		
Legs:	4		

New/Existing Intersection: New

Scenario: 2025 FT

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AHV	56	233	5	7	219	36	9	9	111	5	7	11
AM	166	444	7	17	330	110	13	17	229	11	20	19
PM	56	488	13	12	547	34	23	17	214	10	8	25

Access on Sixth Line / Loyalist Trail at Sixth Line
2025 FT

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	708	98%	89%	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	556	77%	30%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	23	30%		

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

Intersection: Access on Sixth Line / Loyalist Trail at Sixth Line

Major Street:	North-South	Lanes:	2+
Minor Street:	East-West	Lanes:	1
Urban/Rural:	Urban		
Legs:	4		

New/Existing Intersection: New

Scenario: 2030 FT

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AHV	53	268	6	8	257	37	9	8	103	6	7	12
AM	156	537	8	19	369	113	12	17	215	12	20	21
PM	54	533	14	13	657	36	22	16	197	11	8	28

Access on Sixth Line / Loyalist Trail at Sixth Line
2030 FT

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	772	86%	85%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	145	85%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	627	70%	30%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	23	30%		

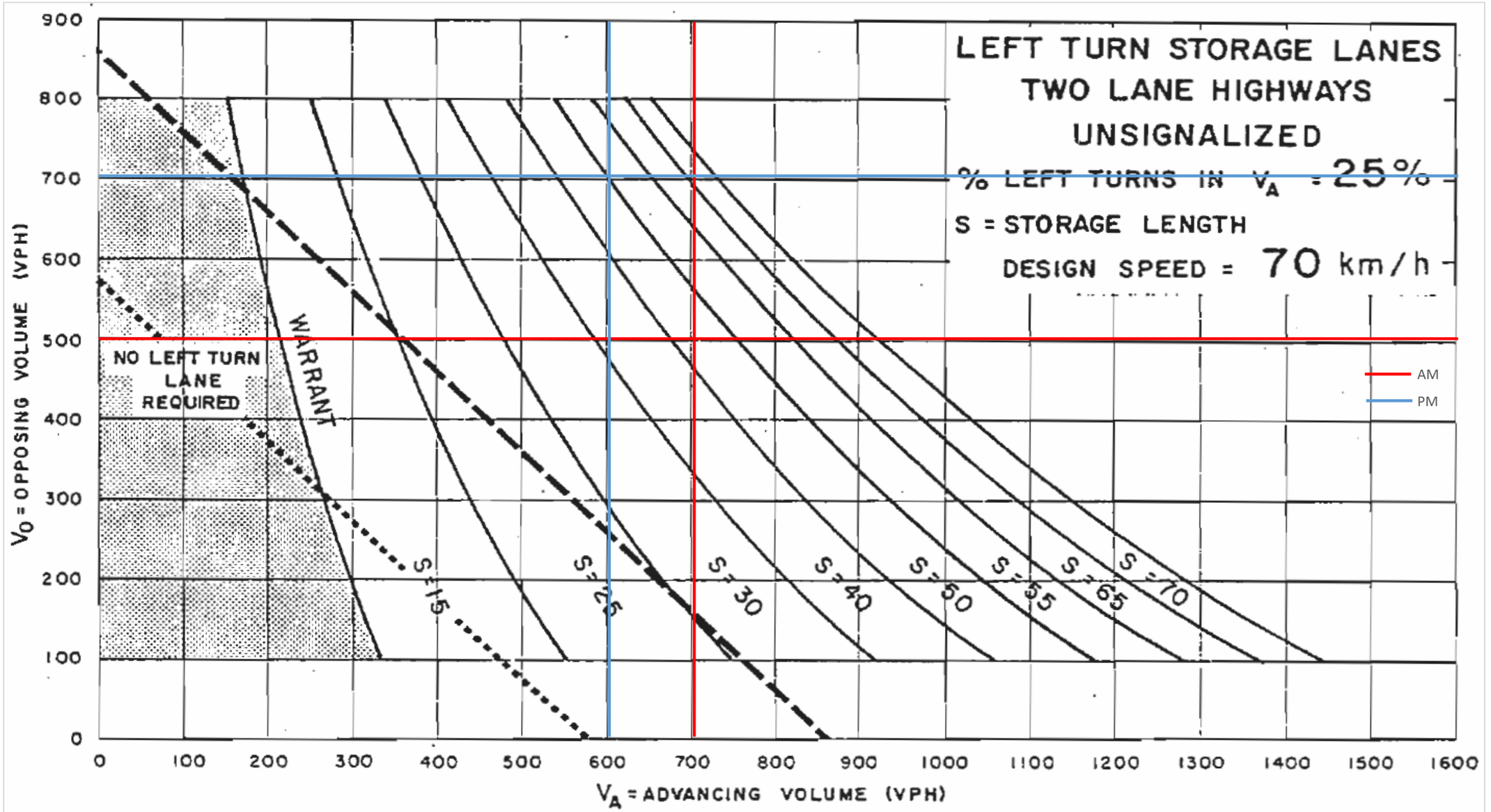
Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Appendix E

Left Turn Lane Warrant

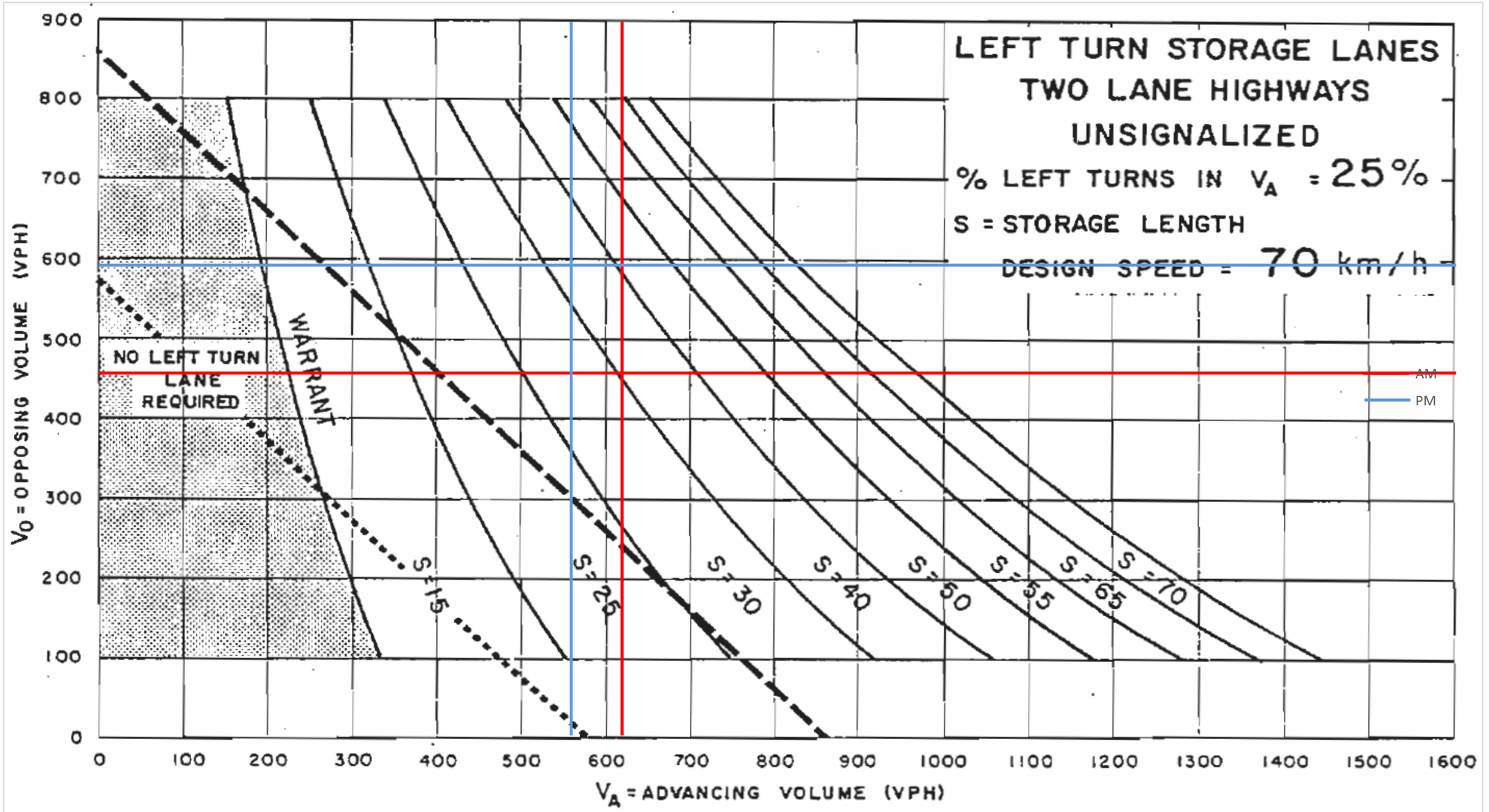
2025 FT Access/Loyalist Trail at Sixth Line

Design Speed	Northbound Left						Yes								
70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	12	17	215	12	20	21	156	537	8	19	369	113	22.3%	701	501
PM	22	16	197	11	8	28	54	533	14	13	657	36	9.0%	601	706


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 25%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2030 FT Access/Loyalist Trail at Sixth Line

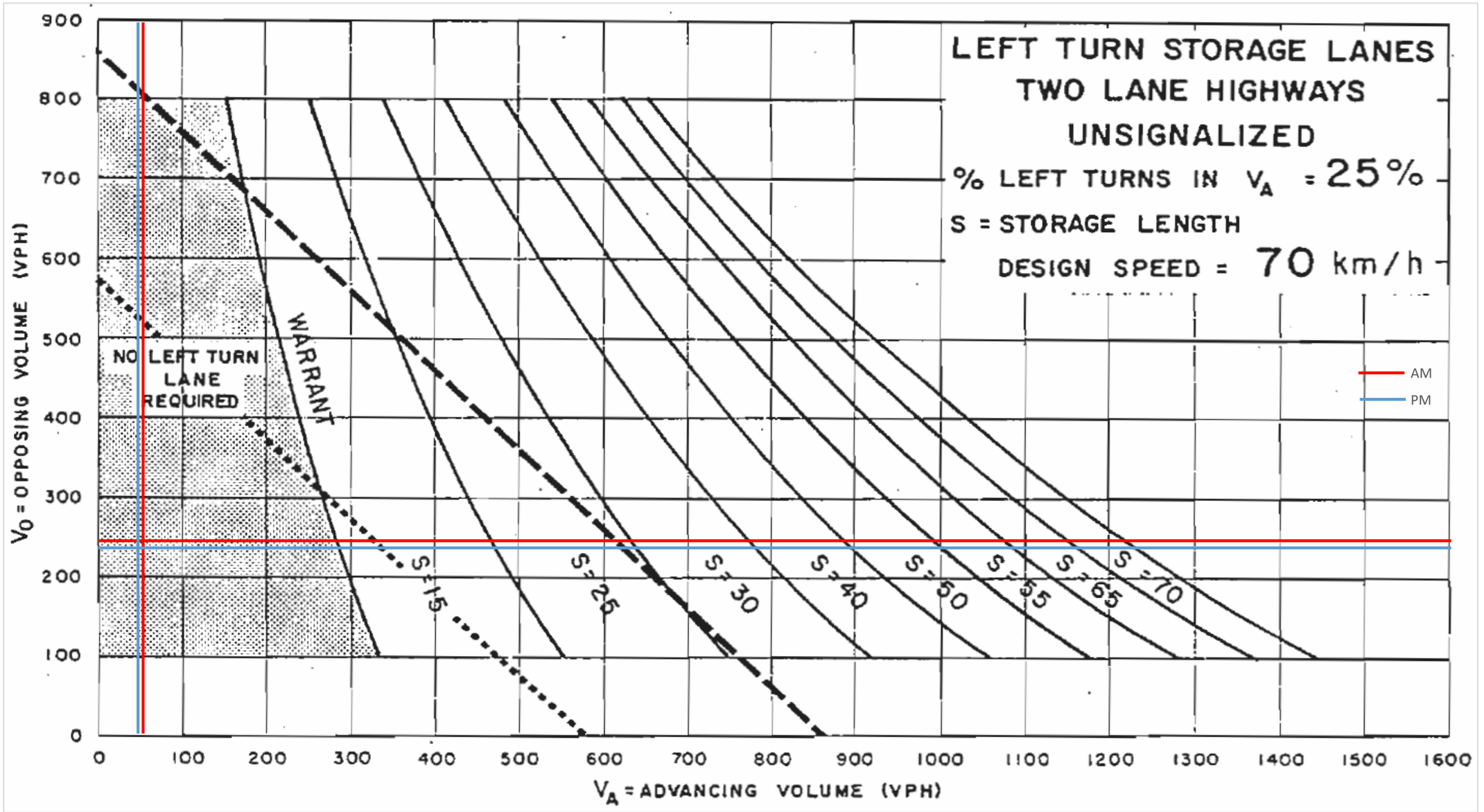
Design Speed	Northbound Left						Yes								
70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	13	17	229	11	20	19	166	444	7	17	330	110	26.9%	617	457
PM	23	17	214	10	8	25	56	488	13	12	547	34	10.1%	557	593


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 25%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2025 FT Access/Loyalist Trail at Sixth Line

Design Speed	Westbound Left														
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
	AM	12	17	215	12	20	21	156	537	8	19	369	113	22.6%	53	244
	PM	22	16	197	11	8	28	54	533	14	13	657	36	23.4%	47	235

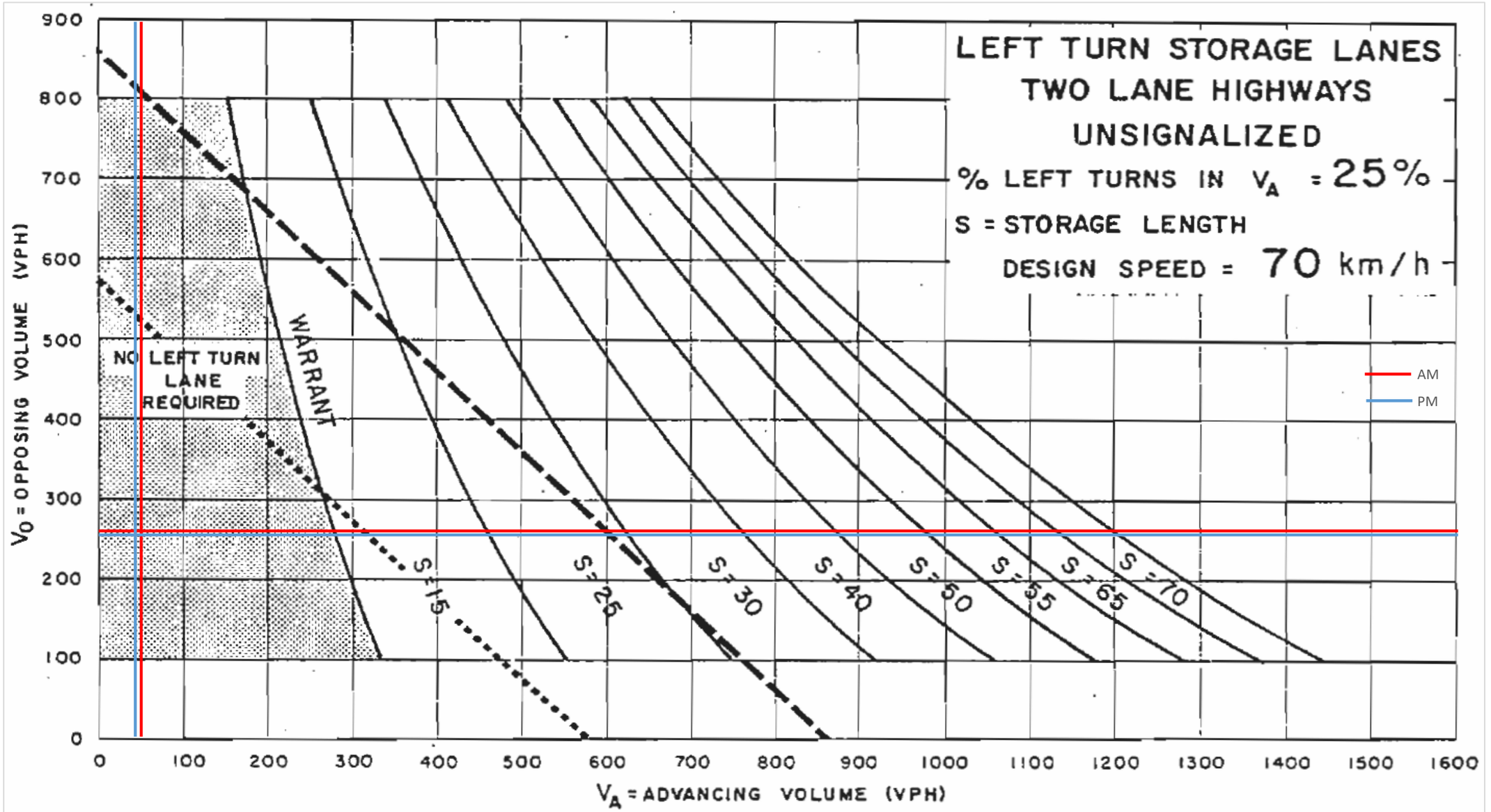
Yes


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 25%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2030 FT Access/Loyalist Trail at Sixth Line

Design Speed	Westbound Left														
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
	AM	13	17	229	11	20	19	166	444	7	17	330	110	22.0%	50	259
	PM	23	17	214	10	8	25	56	488	13	12	547	34	23.3%	43	254

Yes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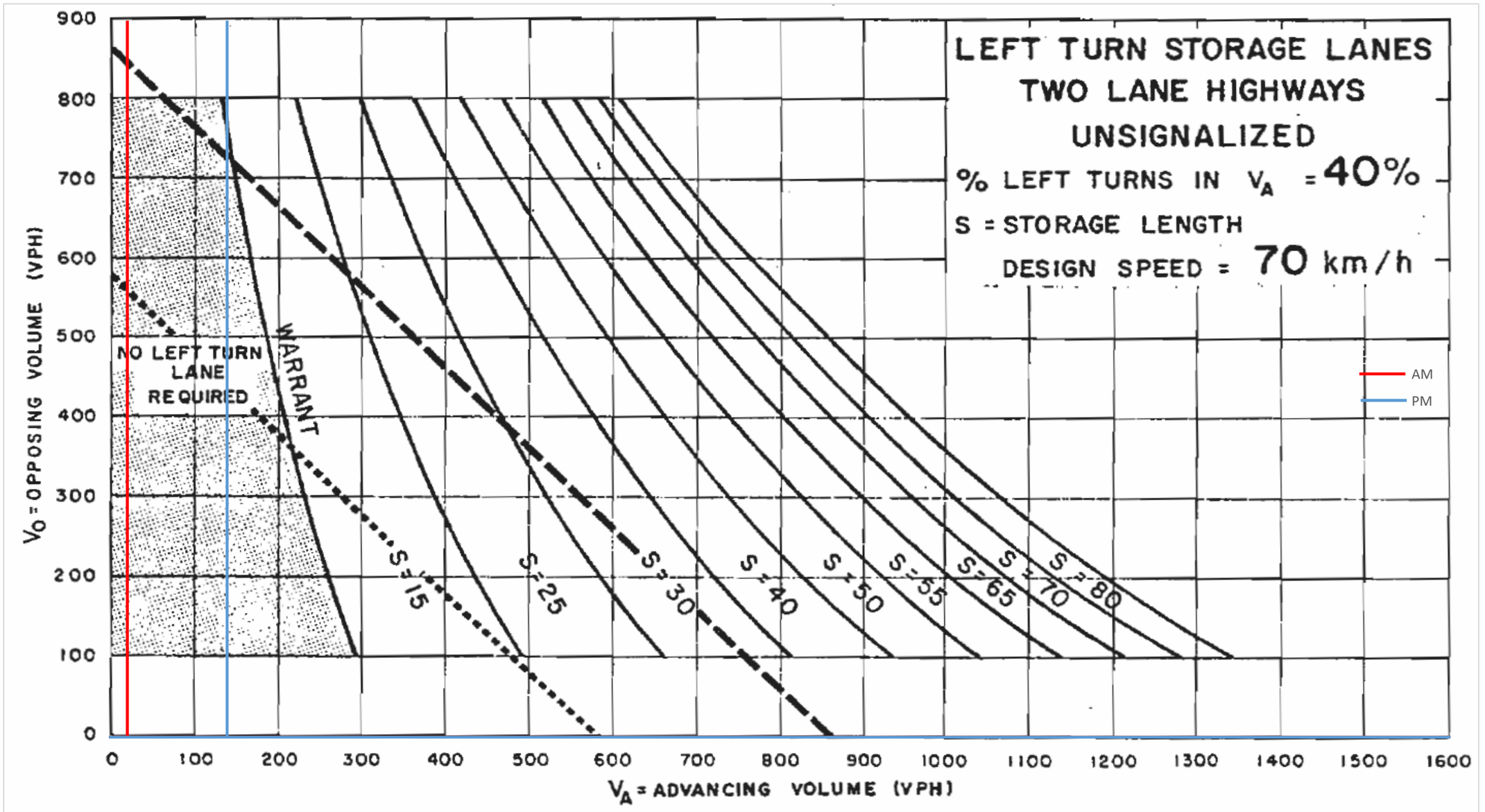
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 25%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

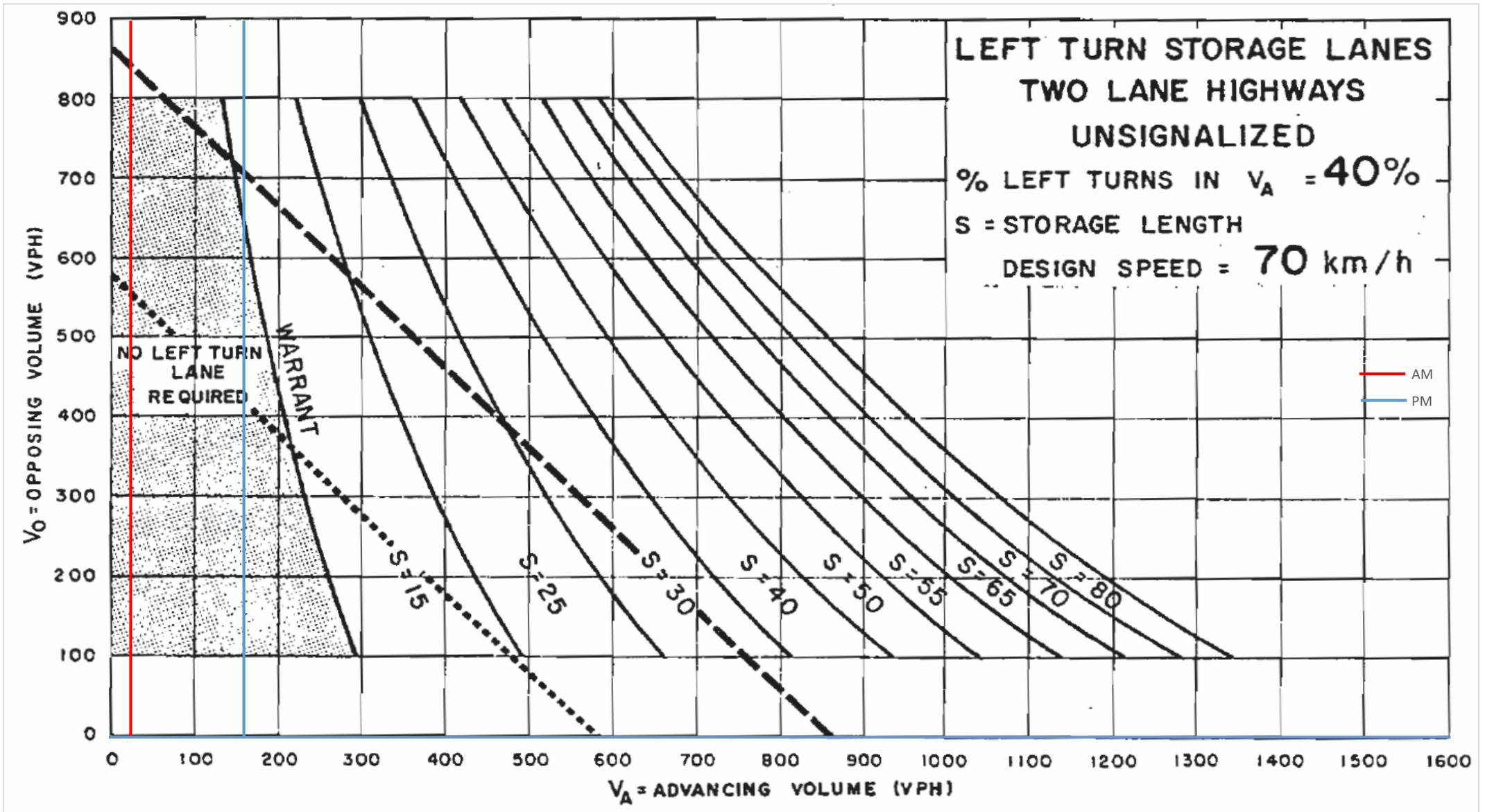
2025 FT Access at William Halton Parkway

Design Speed	Northbound Left						Yes								
70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	0	2205	66	99	2106	0	9	0	13	0	0	0	40.9%	22	0
PM	0	2141	9	14	2121	0	56	0	85	0	0	0	39.7%	141	0


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 40%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
S=80
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
900
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2030 FT Access at William Halton Parkway

Design Speed	Northbound Left						Yes								
70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	0	2201	76	113	2107	0	10	0	16	0	0	0	38.5%	26	0
PM	0	2140	10	16	2123	0	64	0	97	0	0	0	39.8%	161	0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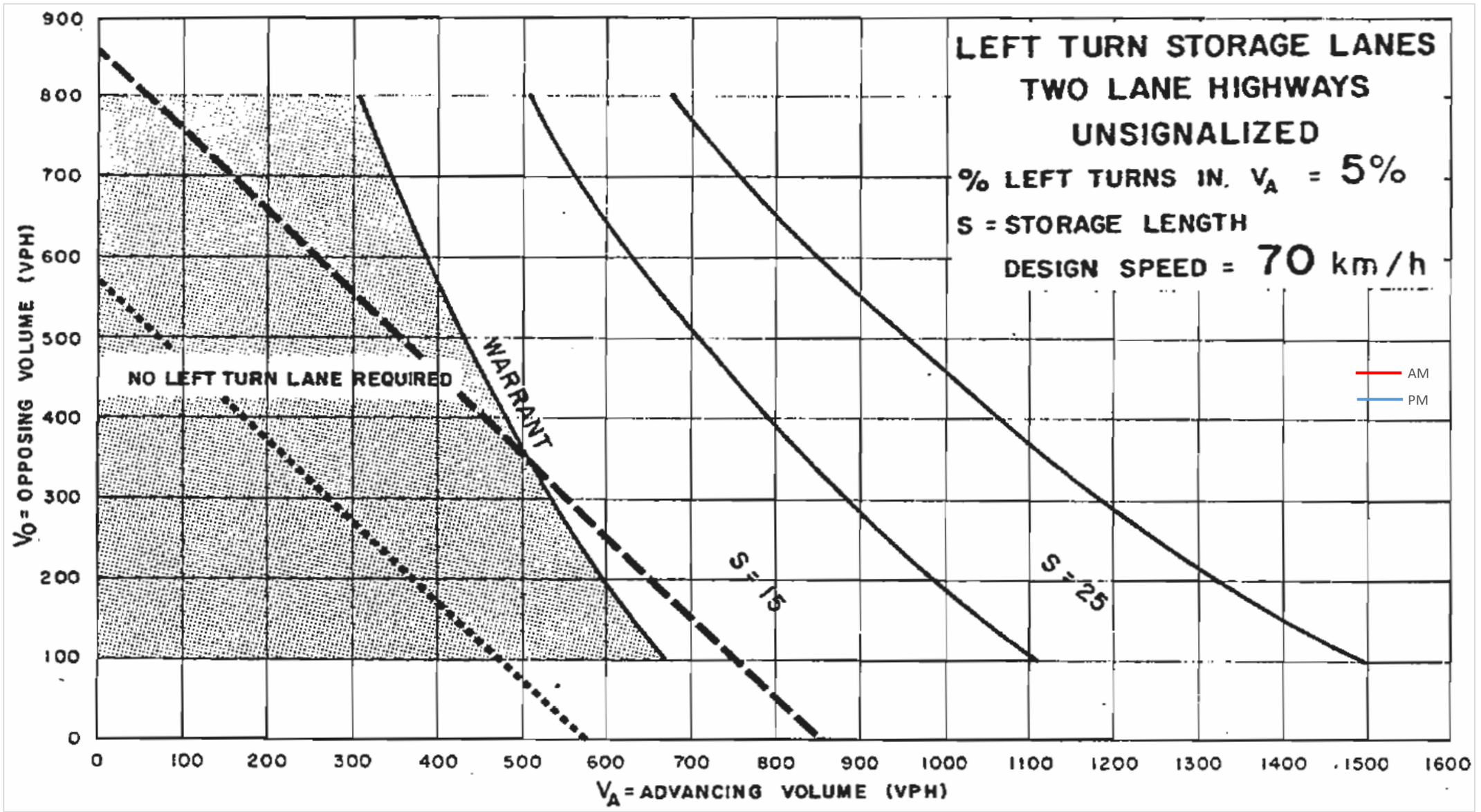
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 40%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
S=50
S=55
S=65
S=70
S=80
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
900
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2025 FT Access at William Halton Parkway

Design Speed	Westbound Left														
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
	AM	0	2205	66	99	2106	0	9	0	13	0	0	0	4.5%	2205	2271
	PM	0	2141	9	14	2121	0	56	0	85	0	0	0	0.7%	2135	2150

Yes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TWO LANE HIGHWAYS
UNSIGNALIZED
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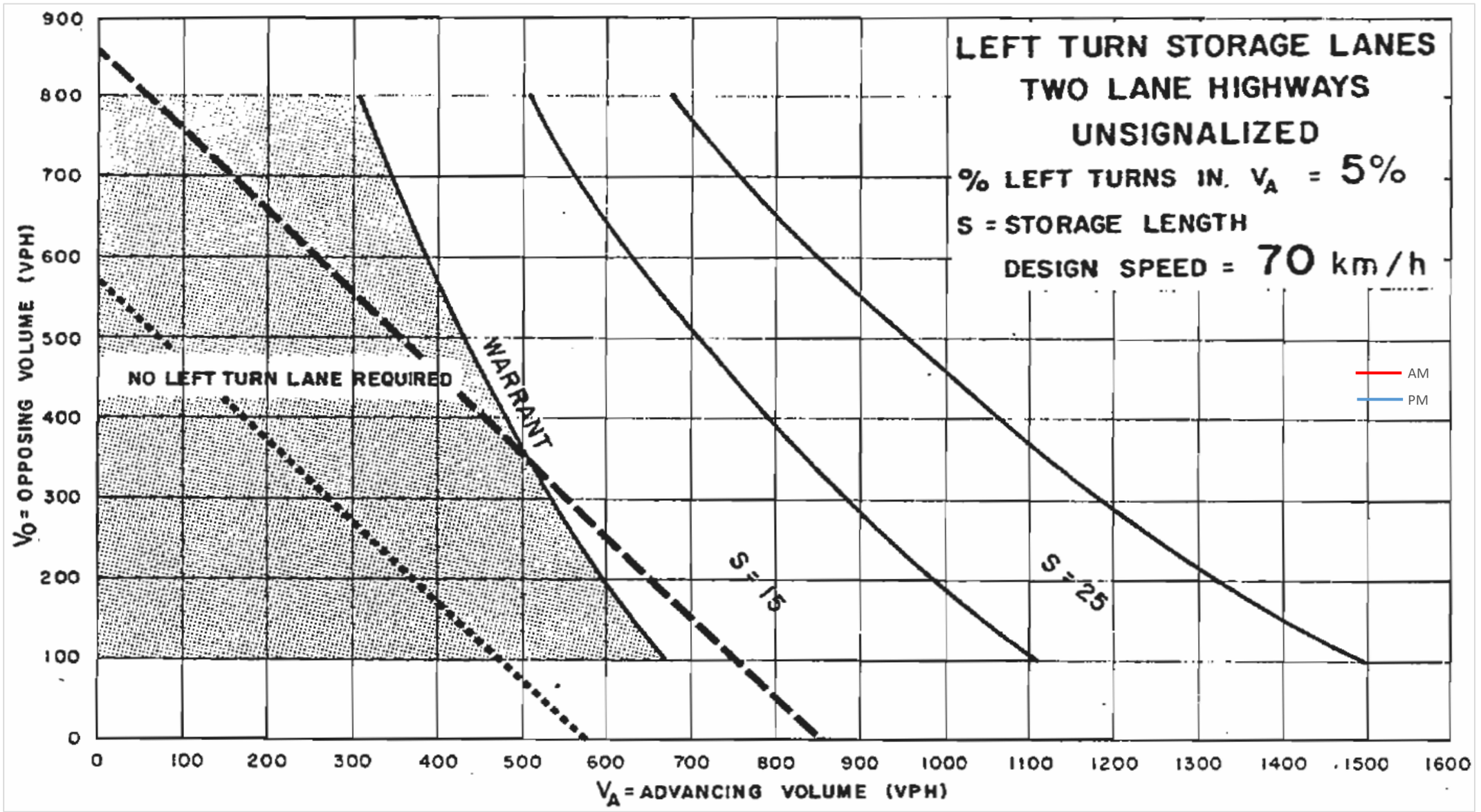
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
AM
PM
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

2030 FT Access at William Halton Parkway

Design Speed	Westbound Left														
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
	AM	0	2201	76	113	2107	0	10	0	16	0	0	0	5.1%	2220	2277
	PM	0	2140	10	16	2123	0	64	0	97	0	0	0	0.7%	2139	2150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TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN. V_A = 5%
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
AM
PM
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

Appendix F

Heavy Vehicle Percent Calculations

AM/PM Intersection

1 Burnhamthorpe Road / Sixth Line

	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	40	136	31	26	227	12	13	150	21	9	268	26
PM	42	245	42	56	579	12	4	166	11	30	681	71
SAT												
	40(42)	136(245)	31(42)	26(56)	227(579)	12(12)	13(4)	150(166)	21(11)	9(30)	268(681)	26(71)

2 William Halton Parkway / Sixth Line

	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM		72	96	157		40	38	112				
PM		133	156	103		19	18	80				
SAT												
	0(0)	72(133)	96(156)	157(103)	0(0)	40(19)	38(18)	112(80)	0(0)	0(0)	0(0)	0(0)

AM/PM Intersection

1 Burnhamthorpe Road / Sixth Line

ts after output

ts after output

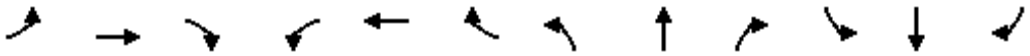
	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM	2	14	1	4	28	1	0	10	1	1	14	4
PM	1	3	0	1	14	0	0	4	0	0	3	1
SAT												
	5%(2%)	10%(2%)	3%(2%)	15%(2%)	12%(2%)	8%(2%)	2%(2%)	7%(2%)	5%(2%)	11%(2%)	5%(2%)	15%(2%)

2 William Halton Parkway / Sixth Line

	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
AM		11	7	10		4	7	9				
PM		2	1	1		2	2	4				
SAT												
	2%(2%)	15%(2%)	7%(2%)	6%(2%)	2%(2%)	10%(11%)	18%(11%)	8%(5%)	2%(2%)	2%(2%)	2%(2%)	2%(2%)

Appendix G

2022 Existing Conditions Synchro and Sidra Worksheets



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	268	26	26	227	12	40	136	31	13	150	21
Future Volume (vph)	9	268	26	26	227	12	40	136	31	13	150	21
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
Hourly flow rate (vph)	9	276	27	27	234	12	41	140	32	13	155	22

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	312	273	213	190
Volume Left (vph)	9	27	41	13
Volume Right (vph)	27	12	32	22
Hadj (s)	0.06	0.20	0.08	0.05
Departure Headway (s)	5.7	6.0	6.1	6.1
Degree Utilization, x	0.50	0.45	0.36	0.32
Capacity (veh/h)	584	559	524	519
Control Delay (s)	14.3	13.8	12.6	12.1
Approach Delay (s)	14.3	13.8	12.6	12.1
Approach LOS	B	B	B	B

Intersection Summary				
Delay	13.4			
Level of Service	B			
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	268	26	26	227	12	40	136	31	13	150	21
Future Vol, veh/h	9	268	26	26	227	12	40	136	31	13	150	21
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, %	11	5	15	15	12	8	5	10	3	2	7	5
Mvmt Flow	9	276	27	27	234	12	41	140	32	13	155	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

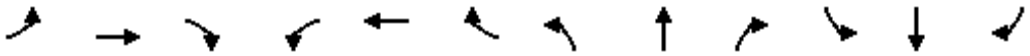
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.5	13.8	12.5	11.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	3%	10%	7%
Vol Thru, %	66%	88%	86%	82%
Vol Right, %	15%	9%	5%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	207	303	265	184
LT Vol	40	9	26	13
Through Vol	136	268	227	150
RT Vol	31	26	12	21
Lane Flow Rate	213	312	273	190
Geometry Grp	1	1	1	1
Degree of Util (X)	0.357	0.5	0.45	0.317
Departure Headway (Hd)	6.019	5.766	5.933	6.02
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	593	622	604	592
Service Time	4.105	3.843	4.012	4.108
HCM Lane V/C Ratio	0.359	0.502	0.452	0.321
HCM Control Delay	12.5	14.5	13.8	11.9
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.6	2.8	2.3	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	18	150	7	16	210
Future Volume (Veh/h)	10	18	150	7	16	210
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	20	163	8	17	228
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	429	167			171	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	429	167			171	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	576	877			1406	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	31	171	245
Volume Left	11	0	17
Volume Right	20	8	0
cSH	740	1700	1406
Volume to Capacity	0.04	0.10	0.01
Queue Length 95th (m)	1.0	0.0	0.3
Control Delay (s)	10.1	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	681	71	56	579	12	42	245	42	4	166	11
Future Volume (vph)	30	681	71	56	579	12	42	245	42	4	166	11
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)	32	724	76	60	616	13	45	261	45	4	177	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	832	689	351	193
Volume Left (vph)	32	60	45	4
Volume Right (vph)	76	13	45	12
Hadj (s)	-0.01	0.04	-0.02	0.00
Departure Headway (s)	7.8	7.8	8.2	9.1
Degree Utilization, x	1.79	1.50	0.80	0.49
Capacity (veh/h)	473	475	430	374
Control Delay (s)	385.0	255.6	37.0	20.3
Approach Delay (s)	385.0	255.6	37.0	20.3
Approach LOS	F	F	E	C

Intersection Summary				
Delay	248.6			
Level of Service	F			
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	252.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	681	71	56	579	12	42	245	42	4	166	11
Future Vol, veh/h	30	681	71	56	579	12	42	245	42	4	166	11
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	2	2	2	2	2	2	2
Mvmt Flow	32	724	76	60	616	13	45	261	45	4	177	12
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	386.5	259.1	45.2	26.3
HCM LOS	F	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	4%	9%	2%
Vol Thru, %	74%	87%	89%	92%
Vol Right, %	13%	9%	2%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	329	782	647	181
LT Vol	42	30	56	4
Through Vol	245	681	579	166
RT Vol	42	71	12	11
Lane Flow Rate	350	832	688	193
Geometry Grp	1	1	1	1
Degree of Util (X)	0.796	1.791	1.492	0.482
Departure Headway (Hd)	10.795	8.749	9.33	12.328
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	340	424	399	295
Service Time	8.795	6.749	7.33	10.328
HCM Lane V/C Ratio	1.029	1.962	1.724	0.654
HCM Control Delay	45.2	386.5	259.1	26.3
HCM Lane LOS	E	F	F	D
HCM 95th-tile Q	6.6	46.6	30.8	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	24	265	12	11	172
Future Volume (Veh/h)	9	24	265	12	11	172
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)	10	27	294	13	12	191
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	516	300			307	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	300			307	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	96			99	
cM capacity (veh/h)	515	739			1254	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	37	307	203
Volume Left	10	0	12
Volume Right	27	13	0
cSH	661	1700	1254
Volume to Capacity	0.06	0.18	0.01
Queue Length 95th (m)	1.3	0.0	0.2
Control Delay (s)	10.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.5
Approach LOS	B		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2022 Existing AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
2	T1	90	11.0	0.087	4.3	LOS A	0.2	1.7	0.11	0.04	0.11	54.8
3	R2	120	7.0	0.114	4.4	LOS A	0.3	2.2	0.11	0.04	0.11	52.7
Approach		210	8.7	0.114	4.4	LOS A	0.3	2.2	0.11	0.04	0.11	53.6
East: William Halton												
4	L2	196	6.0	0.191	5.3	LOS A	0.5	3.9	0.17	0.09	0.17	50.4
6	R2	50	10.0	0.050	4.0	LOS A	0.1	1.0	0.15	0.07	0.15	52.9
Approach		246	6.8	0.191	5.0	LOS A	0.5	3.9	0.16	0.09	0.16	50.9
North: Sixth												
7	L2	48	18.0	0.101	5.0	LOS A	0.3	2.1	0.25	0.16	0.25	52.2
8	T1	140	8.0	0.101	4.8	LOS A	0.3	2.1	0.24	0.16	0.24	53.7
Approach		188	10.5	0.101	4.8	LOS A	0.3	2.1	0.24	0.16	0.24	53.3
All Vehicles		644	8.5	0.191	4.8	LOS A	0.5	3.9	0.17	0.09	0.17	52.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2022 Existing PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
2	T1	140	2.0	0.127	4.4	LOS A	0.4	2.6	0.07	0.02	0.07	54.8
3	R2	164	2.0	0.149	4.6	LOS A	0.4	2.9	0.06	0.02	0.06	52.7
Approach		304	2.0	0.149	4.5	LOS A	0.4	2.9	0.07	0.02	0.07	53.7
East: William Halton												
4	L2	108	2.0	0.107	4.5	LOS A	0.3	2.0	0.19	0.11	0.19	51.0
6	R2	20	11.0	0.021	3.9	LOS A	0.1	0.4	0.19	0.09	0.19	53.0
Approach		128	3.4	0.107	4.4	LOS A	0.3	2.0	0.19	0.11	0.19	51.3
North: Sixth												
7	L2	19	11.0	0.051	4.1	LOS A	0.1	1.0	0.17	0.08	0.17	53.6
8	T1	84	5.0	0.051	4.0	LOS A	0.1	1.0	0.16	0.08	0.16	54.5
Approach		103	6.1	0.051	4.0	LOS A	0.1	1.0	0.16	0.08	0.16	54.3
All Vehicles		536	3.1	0.149	4.4	LOS A	0.4	2.9	0.11	0.05	0.11	53.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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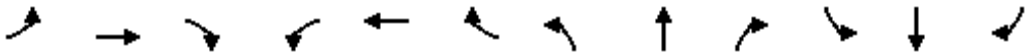
Appendix H

2025 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)	22	107	37	87	163	24	73	352	75	18	249	20
Future Volume (vph)	22	107	37	87	163	24	73	352	75	18	249	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.970			0.988			0.980			0.990	
Flt Protected		0.993			0.984			0.993			0.997	
Satd. Flow (prot)	0	1774	0	0	1791	0	0	1787	0	0	1818	0
Flt Permitted		0.923			0.776			0.907			0.959	
Satd. Flow (perm)	0	1649	0	0	1412	0	0	1632	0	0	1749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			5			10			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Bikes (#/hr)									1			
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
Adj. Flow (vph)	23	110	38	90	168	25	75	363	77	19	257	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	283	0	0	515	0	0	297	0
Enter Blocked Intersection	No	No	No	No	No	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
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	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		23.8			23.8			65.5			65.5	
Actuated g/C Ratio		0.24			0.24			0.66			0.66	
v/c Ratio		0.42			0.83			0.48			0.26	
Control Delay		31.3			55.5			11.4			8.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		31.3			55.5			11.4			8.7	
LOS		C			E			B			A	
Approach Delay		31.3			55.5			11.4			8.7	
Approach LOS		C			E			B			A	
Queue Length 50th (m)		25.5			51.2			44.9			21.3	
Queue Length 95th (m)		40.3			74.3			83.1			40.9	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		564			372			1071			1146	
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		0.30			0.76			0.48			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	

Analysis Period (min) 15

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	107	37	87	163	24	73	352	75	18	249	20
Future Volume (vph)	22	107	37	87	163	24	73	352	75	18	249	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			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		0.97			0.99			0.98			0.99	
Flt Protected		0.99			0.98			0.99			1.00	
Satd. Flow (prot)		1775			1792			1786			1819	
Flt Permitted		0.92			0.78			0.91			0.96	
Satd. Flow (perm)		1649			1412			1632			1751	
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)	23	110	38	90	168	25	75	363	77	19	257	21
RTOR Reduction (vph)	0	11	0	0	4	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	160	0	0	279	0	0	512	0	0	295	0
Confl. Bikes (#/hr)									1			
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.8			23.8			65.5			65.5	
Effective Green, g (s)		23.8			23.8			65.5			65.5	
Actuated g/C Ratio		0.24			0.24			0.66			0.66	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		392			336			1068			1146	
v/s Ratio Prot												
v/s Ratio Perm		0.10			c0.20			c0.31			0.17	
v/c Ratio		0.41			0.83			0.48			0.26	
Uniform Delay, d1		32.1			36.2			8.7			7.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			15.9			1.5			0.1	
Delay (s)		32.8			52.0			10.2			7.3	
Level of Service		C			D			B			A	
Approach Delay (s)		32.8			52.0			10.2			7.3	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	84.2%	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)	2105	165	2	2115	403	6
Future Volume (vph)	2105	165	2	2115	403	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.052		0.950	
Satd. Flow (perm)	3500	1566	96	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		131				7
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.9	150.9	
Travel Time (s)	11.9			9.1	10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2288	179	2	2299	438	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2288	179	2	2299	438	7
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	77.1	77.1	77.1	77.1	32.5	32.5
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.27	0.27
v/c Ratio	1.02	0.17	0.03	1.02	0.93	0.02
Control Delay	45.7	3.2	10.0	47.1	69.4	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	3.2	10.0	47.1	69.4	17.5
LOS	D	A	A	D	E	B
Approach Delay	42.6			47.1	68.6	
Approach LOS	D			D	E	
Queue Length 50th (m)	~305.7	4.0	0.2	~308.5	98.7	0.0
Queue Length 95th (m)	#346.7	12.4	1.3	#349.5	#154.9	3.6
Internal Link Dist (m)	141.7			101.9	126.9	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2250	1053	61	2250	495	448
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.17	0.03	1.02	0.88	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 46.8		Intersection LOS: D	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

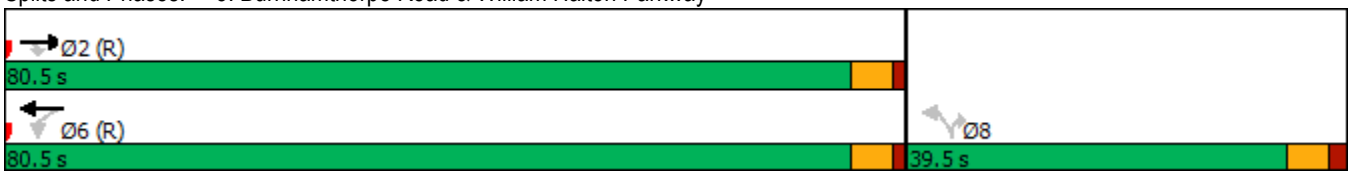
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

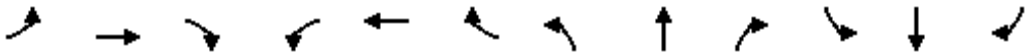
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2105	165	2	2115	403	6
Future Volume (vph)	2105	165	2	2115	403	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1566	96	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2288	179	2	2299	438	7
RTOR Reduction (vph)	0	47	0	0	0	5
Lane Group Flow (vph)	2288	132	2	2299	438	2
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	77.1	77.1	77.1	77.1	32.5	32.5
Effective Green, g (s)	77.1	77.1	77.1	77.1	32.5	32.5
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.27	0.27
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2248	1006	61	2248	473	424
v/s Ratio Prot	0.65			c0.66		
v/s Ratio Perm		0.08	0.02		c0.25	0.00
v/c Ratio	1.02	0.13	0.03	1.02	0.93	0.00
Uniform Delay, d1	21.5	8.4	7.8	21.5	42.6	31.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.6	0.3	1.0	25.0	24.1	0.0
Delay (s)	45.0	8.6	8.8	46.4	66.7	31.9
Level of Service	D	A	A	D	E	C
Approach Delay (s)	42.4			46.4	66.1	
Approach LOS	D			D	E	

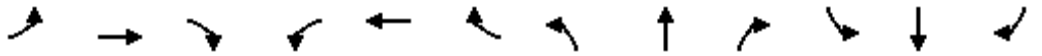
Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	11	0	19	0	397	7	17	323	0
Future Volume (vph)	0	0	0	11	0	19	0	397	7	17	323	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.914			0.998				
Flt Protected					0.982						0.998	
Satd. Flow (prot)	0	1842	0	0	1653	0	0	1838	0	0	1838	0
Flt Permitted					0.982						0.998	
Satd. Flow (perm)	0	1842	0	0	1653	0	0	1838	0	0	1838	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	12	0	21	0	432	8	18	351	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	33	0	0	440	0	0	369	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

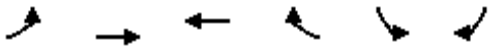
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	19	0	397	7	17	323	0
Future Volume (Veh/h)	0	0	0	11	0	19	0	397	7	17	323	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	12	0	21	0	432	8	18	351	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	844	827	351	823	823	436	351			440		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	805	787	351	782	782	372	351			376		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	96	100	97	100			98		
cM capacity (veh/h)	271	301	692	290	302	636	1208			1115		

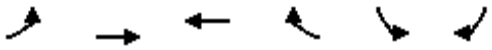
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	33	440	369
Volume Left	0	12	0	18
Volume Right	0	21	8	0
cSH	1700	444	1208	1115
Volume to Capacity	0.00	0.07	0.00	0.02
Queue Length 95th (m)	0.0	1.8	0.0	0.4
Control Delay (s)	0.0	13.8	0.0	0.6
Lane LOS	A	B		A
Approach Delay (s)	0.0	13.8	0.0	0.6
Approach LOS	A	B		

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	166	257	0	0	0
Future Volume (vph)	0	166	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	0	1842
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	0	1842
Link Speed (k/h)		50	50		50	
Link Distance (m)		758.7	169.9		123.2	
Travel Time (s)		54.6	12.2		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	180	279	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	180	279	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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 16.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	166	257	0	0	0
Future Volume (Veh/h)	0	166	257	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	180	279	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	279				459	279
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238				424	238
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1286				568	775

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	180	279	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.11	0.16	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2121	0	0	2107	0	0
Future Volume (vph)	2121	0	0	2107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3500	0	0	3500	1842	0
Flt Permitted						
Satd. Flow (perm)	3500	0	0	3500	1842	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2305	0	0	2290	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2305	0	0	2290	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
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	

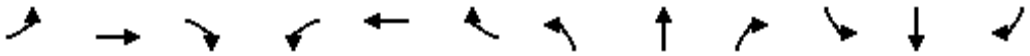
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2121	0	0	2107	0	0
Future Volume (Veh/h)	2121	0	0	2107	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2305	0	0	2290	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2305		3450	1152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2305		3450	1152
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			215		5	191

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1537	768	763	1527	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	215	1700	1700
Volume to Capacity	0.90	0.45	0.00	0.90	0.00
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					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	62.0%	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)	14	52	43	131	245	20	62	441	70	16	467	25
Future Volume (vph)	14	52	43	131	245	20	62	441	70	16	467	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.947			0.993			0.984			0.993	
Flt Protected		0.994			0.984			0.995			0.998	
Satd. Flow (prot)	0	1734	0	0	1800	0	0	1799	0	0	1825	0
Flt Permitted		0.934			0.856			0.898			0.978	
Satd. Flow (perm)	0	1629	0	0	1566	0	0	1624	0	0	1789	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			3			8			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Bikes (#/hr)									1			
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
Adj. Flow (vph)	14	54	44	135	253	21	64	455	72	16	481	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	409	0	0	591	0	0	523	0
Enter Blocked Intersection	No	No	No	No	No	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
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	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		33.6			33.6			55.7			55.7	
Actuated g/C Ratio		0.34			0.34			0.56			0.56	
v/c Ratio		0.20			0.77			0.65			0.52	
Control Delay		17.3			41.3			19.4			16.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.3			41.3			19.4			16.1	
LOS		B			D			B			B	
Approach Delay		17.3			41.3			19.4			16.1	
Approach LOS		B			D			B			B	
Queue Length 50th (m)		10.3			70.0			74.1			59.2	
Queue Length 95th (m)		22.5			#114.9			111.0			86.9	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		570			528			908			998	
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		0.20			0.77			0.65			0.52	

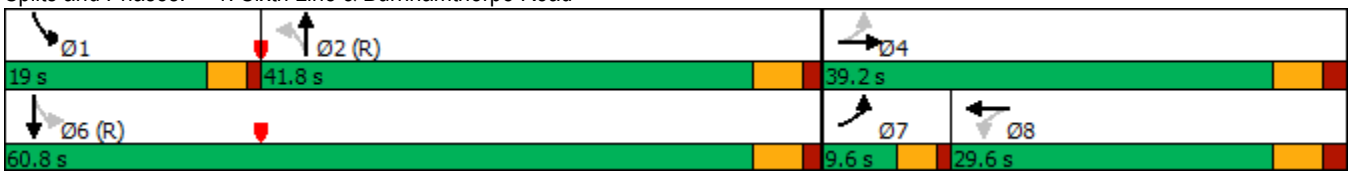
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 93.0%		ICU Level of Service F	

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	52	43	131	245	20	62	441	70	16	467	25
Future Volume (vph)	14	52	43	131	245	20	62	441	70	16	467	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			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		0.95			0.99			0.98			0.99	
Flt Protected		0.99			0.98			0.99			1.00	
Satd. Flow (prot)		1734			1800			1797			1827	
Flt Permitted		0.93			0.86			0.90			0.98	
Satd. Flow (perm)		1629			1565			1622			1790	
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)	14	54	44	135	253	21	64	455	72	16	481	26
RTOR Reduction (vph)	0	23	0	0	2	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	89	0	0	407	0	0	587	0	0	521	0
Confl. Bikes (#/hr)									1			
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		33.6			33.6			55.7			55.7	
Effective Green, g (s)		33.6			33.6			55.7			55.7	
Actuated g/C Ratio		0.34			0.34			0.56			0.56	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		547			525			903			997	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.26			c0.36			0.29	
v/c Ratio		0.16			0.78			0.65			0.52	
Uniform Delay, d1		23.3			29.8			15.4			13.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			7.1			3.6			0.5	
Delay (s)		23.5			36.9			19.0			14.3	
Level of Service		C			D			B			B	
Approach Delay (s)		23.5			36.9			19.0			14.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	93.0%	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)	2116	245	7	2110	384	4
Future Volume (vph)	2116	245	7	2110	384	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.051		0.950	
Satd. Flow (perm)	3500	1566	94	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		194				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			115.5	119.1	
Travel Time (s)	11.9			8.3	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2300	266	8	2293	417	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2300	266	8	2293	417	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	78.0	78.0	78.0	78.0	31.6	31.6
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.26	0.26
v/c Ratio	1.01	0.24	0.13	1.01	0.91	0.01
Control Delay	43.6	3.3	15.1	42.7	67.0	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	3.3	15.1	42.7	67.0	19.5
LOS	D	A	B	D	E	B
Approach Delay	39.4			42.6	66.6	
Approach LOS	D			D	E	
Queue Length 50th (m)	~308.8	6.1	0.7	~307.0	92.5	0.0
Queue Length 95th (m)	#349.8	16.3	3.6	#348.0	#143.6	2.7
Internal Link Dist (m)	141.7			91.5	95.1	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2275	1086	61	2275	495	446
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.24	0.13	1.01	0.84	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 43.0	Intersection LOS: D
Intersection Capacity Utilization 88.4%	ICU Level of Service E
Analysis Period (min) 15	

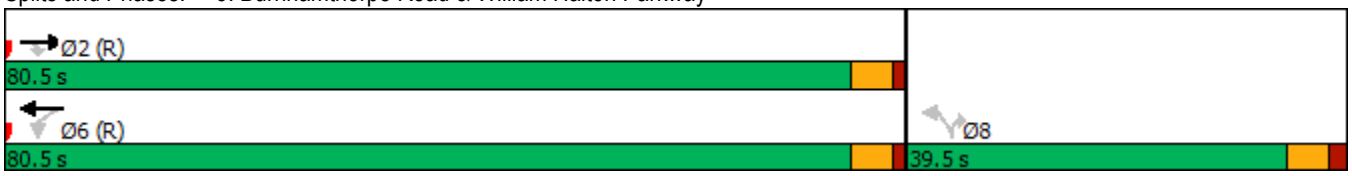
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

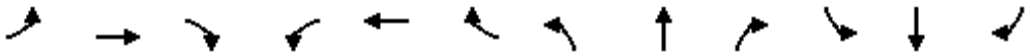
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2116	245	7	2110	384	4
Future Volume (vph)	2116	245	7	2110	384	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1566	94	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2300	266	8	2293	417	4
RTOR Reduction (vph)	0	68	0	0	0	3
Lane Group Flow (vph)	2300	198	8	2293	417	1
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	78.0	78.0	78.0	78.0	31.6	31.6
Effective Green, g (s)	78.0	78.0	78.0	78.0	31.6	31.6
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.26	0.26
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2275	1017	61	2275	460	412
v/s Ratio Prot	c0.66			0.66		
v/s Ratio Perm		0.13	0.08		c0.24	0.00
v/c Ratio	1.01	0.19	0.13	1.01	0.91	0.00
Uniform Delay, d1	21.0	8.4	8.0	21.0	42.8	32.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.6	0.4	4.4	20.8	21.2	0.0
Delay (s)	42.6	8.8	12.4	41.8	64.0	32.6
Level of Service	D	A	B	D	E	C
Approach Delay (s)	39.1			41.7	63.7	
Approach LOS	D			D	E	

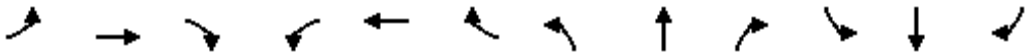
Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	10	0	25	0	481	13	12	507	0
Future Volume (vph)	0	0	0	10	0	25	0	481	13	12	507	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904			0.996				
Flt Protected					0.986						0.999	
Satd. Flow (prot)	0	1842	0	0	1642	0	0	1835	0	0	1840	0
Flt Permitted					0.986						0.999	
Satd. Flow (perm)	0	1842	0	0	1642	0	0	1835	0	0	1840	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	0	27	0	523	14	13	551	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	38	0	0	537	0	0	564	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

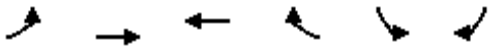
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	25	0	481	13	12	507	0
Future Volume (Veh/h)	0	0	0	10	0	25	0	481	13	12	507	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	0	27	0	523	14	13	551	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1134	1114	551	1107	1107	530	551			537		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1059	1035	551	1027	1027	332	551			340		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	95	100			99		
cM capacity (veh/h)	159	190	534	175	192	589	1019			1012		

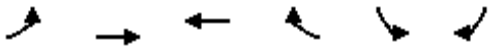
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	38	537	564
Volume Left	0	11	0	13
Volume Right	0	27	14	0
cSH	1700	350	1019	1012
Volume to Capacity	0.00	0.11	0.00	0.01
Queue Length 95th (m)	0.0	2.8	0.0	0.3
Control Delay (s)	0.0	16.5	0.0	0.4
Lane LOS	A	C		A
Approach Delay (s)	0.0	16.5	0.0	0.4
Approach LOS	A	C		

Intersection Summary				
Average Delay	0.7			
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	109	332	0	0	0
Future Volume (vph)	0	109	332	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	0	1842
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	0	1842
Link Speed (k/h)		50	50		50	
Link Distance (m)		778.9	169.9		123.2	
Travel Time (s)		56.1	12.2		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	118	361	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	118	361	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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 20.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	109	332	0	0	0
Future Volume (Veh/h)	0	109	332	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	118	361	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	361				479	361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				353	220
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1201				574	729

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	118	361	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.07	0.21	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2114	0	0	2123	0	0
Future Volume (vph)	2114	0	0	2123	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3500	0	1842	3500	1842	1842
Flt Permitted						
Satd. Flow (perm)	3500	0	1842	3500	1842	1842
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2298	0	0	2308	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2298	0	0	2308	0	0
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 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2114	0	0	2123	0	0
Future Volume (Veh/h)	2114	0	0	2123	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2298	0	0	2308	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2298		3452	1149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2298		3452	1149
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			216		5	192

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1532	766	0	1154	1154	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.90	0.45	0.00	0.68	0.68	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A	A
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS						A	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2025 AM FB]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	19	2.0	0.797	48.6	LOS E	4.3	30.9	0.92	1.25	2.25	33.4
2	T1	249	2.0	0.797	48.4	LOS E	4.4	31.2	0.92	1.25	2.25	33.3
3	R2	253	2.0	0.797	45.5	LOS E	4.4	31.2	0.92	1.24	2.25	33.2
Approach		520	2.0	0.797	47.0	LOS E	4.4	31.2	0.92	1.24	2.25	33.3
East: William Halton												
4	L2	250	2.0	1.603	290.4	LOS F	208.4	1483.9	1.00	5.39	10.96	10.6
5	T1	2634	2.0	1.603	290.3	LOS F	210.9	1501.4	1.00	5.42	11.03	10.6
6	R2	53	2.0	1.603	290.2	LOS F	210.9	1501.4	1.00	5.44	11.09	10.6
Approach		2936	2.0	1.603	290.3	LOS F	210.9	1501.4	1.00	5.42	11.03	10.6
North: Sixth												
7	L2	50	2.0	0.458	25.5	LOS D	1.5	10.7	0.84	0.95	1.28	41.2
8	T1	209	2.0	0.458	24.2	LOS C	1.5	10.7	0.83	0.94	1.27	42.2
9	R2	10	2.0	0.458	23.5	LOS C	1.5	10.5	0.83	0.93	1.26	41.8
Approach		269	2.0	0.458	24.5	LOS C	1.5	10.7	0.83	0.94	1.27	42.0
West: William Halton												
10	L2	9	2.0	1.628	302.8	LOS F	184.6	1314.5	1.00	5.93	14.01	10.3
11	T1	2651	2.0	1.628	302.7	LOS F	188.1	1339.2	1.00	5.98	14.15	10.3
12	R2	24	2.0	1.628	302.5	LOS F	188.1	1339.2	1.00	6.03	14.28	10.2
Approach		2684	2.0	1.628	302.7	LOS F	188.1	1339.2	1.00	5.98	14.15	10.3
All Vehicles		6409	2.0	1.628	264.6	LOS F	210.9	1501.4	0.99	5.13	11.21	11.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2025 PM FB]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	29	2.0	0.770	43.1	LOS E	4.1	29.2	0.91	1.20	2.10	35.0
2	T1	260	2.0	0.770	42.7	LOS E	4.1	29.5	0.91	1.20	2.10	35.0
3	R2	244	2.0	0.770	40.4	LOS E	4.1	29.5	0.90	1.20	2.10	34.8
Approach		534	2.0	0.770	41.7	LOS E	4.1	29.5	0.90	1.20	2.10	34.9
East: William Halton												
4	L2	220	2.0	1.390	198.2	LOS F	139.9	996.1	1.00	4.56	9.46	14.4
5	T1	2235	2.0	1.390	198.0	LOS F	141.7	1009.0	1.00	4.59	9.53	14.4
6	R2	21	2.0	1.390	197.9	LOS F	141.7	1009.0	1.00	4.61	9.59	14.2
Approach		2476	2.0	1.390	198.1	LOS F	141.7	1009.0	1.00	4.59	9.53	14.4
North: Sixth												
7	L2	20	2.0	0.468	25.6	LOS D	1.5	11.0	0.84	0.95	1.29	41.8
8	T1	251	2.0	0.468	24.5	LOS C	1.5	11.0	0.83	0.94	1.28	42.3
9	R2	8	2.0	0.468	23.6	LOS C	1.5	10.9	0.83	0.93	1.28	41.8
Approach		279	2.0	0.468	24.5	LOS C	1.5	11.0	0.83	0.94	1.28	42.2
West: William Halton												
10	L2	32	2.0	1.429	216.2	LOS F	131.7	937.7	1.00	4.98	11.63	13.5
11	T1	2225	2.0	1.429	216.0	LOS F	134.2	955.3	1.00	5.02	11.74	13.4
12	R2	75	2.0	1.429	215.9	LOS F	134.2	955.3	1.00	5.06	11.85	13.3
Approach		2332	2.0	1.429	216.0	LOS F	134.2	955.3	1.00	5.02	11.74	13.4
All Vehicles		5620	2.0	1.429	182.1	LOS F	141.7	1009.0	0.98	4.27	9.33	15.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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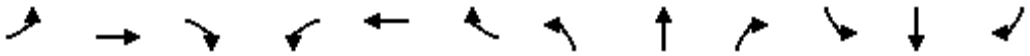
Appendix I

2025 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)	56	107	37	87	254	33	212	522	75	67	434	20
Future Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.97			0.96			0.99	
Frt		0.975			0.988			0.988			0.995	
Flt Protected		0.986			0.988			0.987			0.994	
Satd. Flow (prot)	0	1729	0	0	1776	0	0	1763	0	0	1801	0
Flt Permitted		0.722			0.830			0.704			0.824	
Satd. Flow (perm)	0	1266	0	0	1473	0	0	1224	0	0	1488	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			4			6			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
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
Adj. Flow (vph)	58	110	38	90	262	34	219	538	77	69	447	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	206	0	0	386	0	0	834	0	0	537	0
Enter Blocked Intersection	No	No	No	No	No	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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	41.5		32.0	32.0		68.4	68.4		10.1	78.5	
Total Split (%)	7.9%	34.6%		26.7%	26.7%		57.0%	57.0%		8.4%	65.4%	
Maximum Green (s)	5.5	35.9		26.4	26.4		63.3	63.3		6.1	73.4	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		35.9			35.9			73.4			73.4	
Actuated g/C Ratio		0.30			0.30			0.61			0.61	
v/c Ratio		0.54			0.87			1.11			0.59	
Control Delay		36.2			60.7			91.9			17.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		36.2			60.7			91.9			17.4	
LOS		D			E			F			B	
Approach Delay		36.2			60.7			91.9			17.4	
Approach LOS		D			E			F			B	
Queue Length 50th (m)		32.0			85.3			~224.8			71.5	
Queue Length 95th (m)		63.2			#139.6			#300.0			104.3	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		385			443			751			911	
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		0.54			0.87			1.11			0.59	

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: 1.11	
Intersection Signal Delay: 59.5	Intersection LOS: E

Intersection Capacity Utilization 110.9% 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: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Future Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			0.99	
Flpb, ped/bikes		0.99			0.99			0.98			1.00	
Frt		0.98			0.99			0.99			0.99	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1717			1760			1723			1793	
Flt Permitted		0.72			0.83			0.70			0.82	
Satd. Flow (perm)		1256			1479			1230			1486	
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)	58	110	38	90	262	34	219	538	77	69	447	21
RTOR Reduction (vph)	0	7	0	0	3	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	199	0	0	383	0	0	832	0	0	536	0
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.9			35.9			73.4			73.4	
Effective Green, g (s)		35.9			35.9			73.4			73.4	
Actuated g/C Ratio		0.30			0.30			0.61			0.61	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		375			442			752			908	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.26			c0.68			0.36	
v/c Ratio		0.53			0.87			1.11			0.59	
Uniform Delay, d1		35.0			39.8			23.3			14.2	
Progression Factor		0.91			1.00			1.00			1.00	
Incremental Delay, d2		1.4			16.2			65.8			1.0	
Delay (s)		33.3			56.0			89.1			15.2	
Level of Service		C			E			F			B	
Approach Delay (s)		33.3			56.0			89.1			15.2	
Approach LOS		C			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	110.9%	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)	2261	199	2	2125	474	6
Future Volume (vph)	2261	199	2	2125	474	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.89			0.99	0.96
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.053		0.950	
Satd. Flow (perm)	3500	1386	98	3500	1739	1505
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		147				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.9	150.9	
Travel Time (s)	11.9			9.1	10.9	
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2458	216	2	2310	515	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2458	216	2	2310	515	7
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
v/c Ratio	1.11	0.23	0.03	1.05	1.05	0.02
Control Delay	82.0	3.8	10.0	56.1	94.2	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	3.8	10.0	56.1	94.2	24.8
LOS	F	A	A	E	F	C
Approach Delay	75.7			56.0	93.3	
Approach LOS	E			E	F	
Queue Length 50th (m)	~349.5	5.9	0.2	~311.4	~132.5	0.5
Queue Length 95th (m)	#390.0	15.3	1.3	#352.4 m	#171.2	m2.3
Internal Link Dist (m)	141.7			101.9	126.9	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2205	927	61	2205	492	429
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.23	0.03	1.05	1.05	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 69.1	Intersection LOS: E

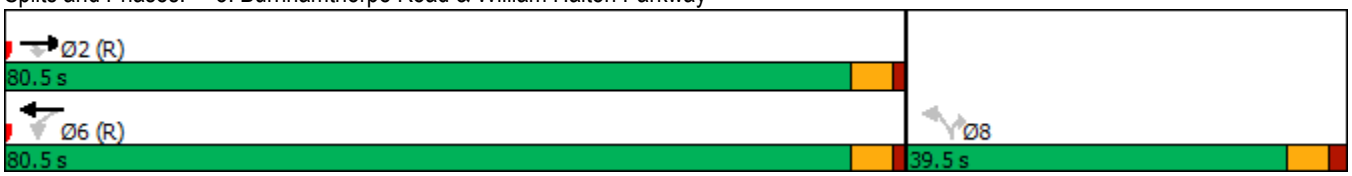
Intersection Capacity Utilization 98.2%	ICU Level of Service F
Analysis Period (min) 15	

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

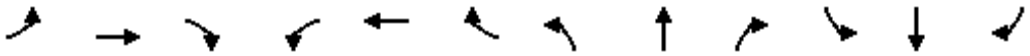
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2261	199	2	2125	474	6
Future Volume (vph)	2261	199	2	2125	474	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.89	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1386	1750	3500	1739	1505
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1386	97	3500	1739	1505
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2458	216	2	2310	515	7
RTOR Reduction (vph)	0	54	0	0	0	3
Lane Group Flow (vph)	2458	162	2	2310	515	4
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	75.6	75.6	75.6	75.6	34.0	34.0
Effective Green, g (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2205	873	61	2205	492	426
v/s Ratio Prot	c0.70			0.66		
v/s Ratio Perm		0.12	0.02		c0.30	0.00
v/c Ratio	1.11	0.19	0.03	1.05	1.05	0.01
Uniform Delay, d1	22.2	9.3	8.4	22.2	43.0	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.03	1.06
Incremental Delay, d2	58.6	0.5	1.0	33.1	51.0	0.0
Delay (s)	80.8	9.8	9.4	55.3	95.3	32.9
Level of Service	F	A	A	E	F	C
Approach Delay (s)	75.1			55.2	94.5	
Approach LOS	E			E	F	

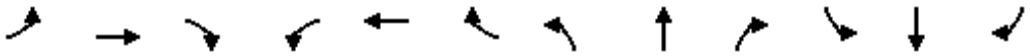
Intersection Summary			
HCM 2000 Control Delay	68.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	17	229	11	20	19	166	444	7	17	330	110
Future Volume (vph)	13	17	229	11	20	19	166	444	7	17	330	110
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		0.880			0.948			0.998			0.967	
Flt Protected		0.998			0.989			0.987			0.998	
Satd. Flow (prot)	0	1618	0	0	1727	0	0	1814	0	0	1778	0
Flt Permitted		0.998			0.989			0.987			0.998	
Satd. Flow (perm)	0	1618	0	0	1727	0	0	1814	0	0	1778	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Confl. Peds. (#/hr)	45		30	30		45	136		30	30		136
Confl. Bikes (#/hr)			29			44			29			131
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	18	249	12	22	21	180	483	8	18	359	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	281	0	0	55	0	0	671	0	0	497	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

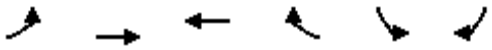
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	17	229	11	20	19	166	444	7	17	330	110
Future Volume (Veh/h)	13	17	229	11	20	19	166	444	7	17	330	110
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	18	249	12	22	21	180	483	8	18	359	120
Pedestrians		136			30			30			45	
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		13			3			3			4	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.74	0.74		0.74	0.74	0.74				0.74		
vC, conflicting volume	1515	1472	585	1620	1528	562	615			521		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1520	1462	585	1661	1538	240	615			184		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	53	71	42	9	61	96	78			98		
cM capacity (veh/h)	30	62	430	13	56	552	837			1004		

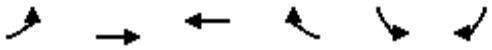
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	281	55	671	497
Volume Left	14	12	180	18
Volume Right	249	21	8	120
cSH	210	41	837	1004
Volume to Capacity	1.34	1.34	0.22	0.02
Queue Length 95th (m)	118.7	41.9	6.2	0.4
Control Delay (s)	224.9	413.9	5.1	0.5
Lane LOS	F	F	A	A
Approach Delay (s)	224.9	413.9	5.1	0.5
Approach LOS	F	F		

Intersection Summary				
Average Delay	59.6			
Intersection Capacity Utilization	88.7%	ICU Level of Service	E	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	200	257	228	0	71
Future Volume (vph)	0	200	257	228	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.936			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1724	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1724	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		758.7	169.9		123.2	
Travel Time (s)		54.6	12.2		8.9	
Confl. Peds. (#/hr)				106		
Confl. Bikes (#/hr)				102		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	217	279	248	0	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	217	527	0	0	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	200	257	228	0	71
Future Volume (Veh/h)	0	200	257	228	0	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	217	279	248	0	77
Pedestrians					106	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					10	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	633				726	509
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487				596	342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	86
cM capacity (veh/h)	826				358	538

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	217	527	77
Volume Left	0	0	0
Volume Right	0	248	77
cSH	1700	1700	538
Volume to Capacity	0.13	0.31	0.14
Queue Length 95th (m)	0.0	0.0	3.8
Control Delay (s)	0.0	0.0	12.8
Lane LOS			B
Approach Delay (s)	0.0	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

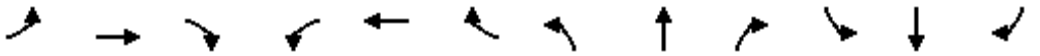
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2201	76	113	2107	10	16
Future Volume (vph)	2201	76	113	2107	10	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3482	0	1750	3500	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3482	0	1750	3500	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2392	83	123	2290	11	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2475	0	123	2290	11	17
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	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

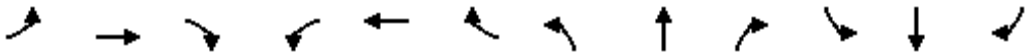
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2201	76	113	2107	10	16
Future Volume (Veh/h)	2201	76	113	2107	10	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2392	83	123	2290	11	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2475		3824	1238
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2475		3824	1238
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			33		0	90
cM capacity (veh/h)			184		1	167

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1595	880	123	1145	1145	11	17
Volume Left	0	0	123	0	0	11	0
Volume Right	0	83	0	0	0	0	17
cSH	1700	1700	184	1700	1700	1	167
Volume to Capacity	0.94	0.52	0.67	0.67	0.67	12.18	0.10
Queue Length 95th (m)	0.0	0.0	30.3	0.0	0.0	Err	2.5
Control Delay (s)	0.0	0.0	57.2	0.0	0.0	Err	28.9
Lane LOS			F			F	D
Approach Delay (s)	0.0		2.9			3945.7	
Approach LOS						F	

Intersection Summary				
Average Delay	23.9			
Intersection Capacity Utilization	82.9%	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)	56	107	37	87	254	33	212	522	75	67	434	20
Future Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.97			0.96			0.99	
Frt		0.975			0.988			0.988			0.995	
Flt Protected		0.986			0.988			0.987			0.994	
Satd. Flow (prot)	0	1729	0	0	1776	0	0	1763	0	0	1801	0
Flt Permitted		0.722			0.830			0.704			0.824	
Satd. Flow (perm)	0	1266	0	0	1473	0	0	1224	0	0	1488	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			4			6			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
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
Adj. Flow (vph)	58	110	38	90	262	34	219	538	77	69	447	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	206	0	0	386	0	0	834	0	0	537	0
Enter Blocked Intersection	No	No	No	No	No	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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	41.5		32.0	32.0		68.4	68.4		10.1	78.5	
Total Split (%)	7.9%	34.6%		26.7%	26.7%		57.0%	57.0%		8.4%	65.4%	
Maximum Green (s)	5.5	35.9		26.4	26.4		63.3	63.3		6.1	73.4	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		35.9			35.9			73.4			73.4	
Actuated g/C Ratio		0.30			0.30			0.61			0.61	
v/c Ratio		0.54			0.87			1.11			0.59	
Control Delay		36.2			60.7			91.9			17.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		36.2			60.7			91.9			17.4	
LOS		D			E			F			B	
Approach Delay		36.2			60.7			91.9			17.4	
Approach LOS		D			E			F			B	
Queue Length 50th (m)		32.0			85.3			~224.8			71.5	
Queue Length 95th (m)		63.2			#139.6			#300.0			104.3	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		385			443			751			911	
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		0.54			0.87			1.11			0.59	

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: 1.11	
Intersection Signal Delay: 59.5	Intersection LOS: E

Intersection Capacity Utilization 110.9% 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: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Future Volume (vph)	56	107	37	87	254	33	212	522	75	67	434	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			0.99	
Flpb, ped/bikes		0.99			0.99			0.98			1.00	
Frt		0.98			0.99			0.99			0.99	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1717			1760			1723			1793	
Flt Permitted		0.72			0.83			0.70			0.82	
Satd. Flow (perm)		1256			1479			1230			1486	
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)	58	110	38	90	262	34	219	538	77	69	447	21
RTOR Reduction (vph)	0	7	0	0	3	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	199	0	0	383	0	0	832	0	0	536	0
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.9			35.9			73.4			73.4	
Effective Green, g (s)		35.9			35.9			73.4			73.4	
Actuated g/C Ratio		0.30			0.30			0.61			0.61	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		375			442			752			908	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.26			c0.68			0.36	
v/c Ratio		0.53			0.87			1.11			0.59	
Uniform Delay, d1		35.0			39.8			23.3			14.2	
Progression Factor		0.91			1.00			1.00			1.00	
Incremental Delay, d2		1.4			16.2			65.8			1.0	
Delay (s)		33.3			56.0			89.1			15.2	
Level of Service		C			E			F			B	
Approach Delay (s)		33.3			56.0			89.1			15.2	
Approach LOS		C			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	110.9%	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)	2261	199	2	2125	474	6
Future Volume (vph)	2261	199	2	2125	474	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.89			0.99	0.96
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.053		0.950	
Satd. Flow (perm)	3500	1386	98	3500	1739	1505
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		147				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.9	150.9	
Travel Time (s)	11.9			9.1	10.9	
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2458	216	2	2310	515	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2458	216	2	2310	515	7
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
v/c Ratio	1.11	0.23	0.03	1.05	1.05	0.02
Control Delay	82.0	3.8	10.0	56.1	94.2	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	3.8	10.0	56.1	94.2	24.8
LOS	F	A	A	E	F	C
Approach Delay	75.7			56.0	93.3	
Approach LOS	E			E	F	
Queue Length 50th (m)	~349.5	5.9	0.2	~311.4	~132.5	0.5
Queue Length 95th (m)	#390.0	15.3	1.3	#352.4 m	#171.2	m2.3
Internal Link Dist (m)	141.7			101.9	126.9	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2205	927	61	2205	492	429
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.23	0.03	1.05	1.05	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 69.1	Intersection LOS: E

Intersection Capacity Utilization 98.2% ICU Level of Service F

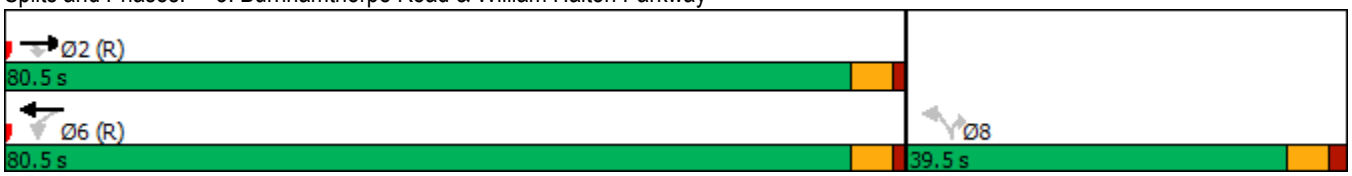
Analysis Period (min) 15

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

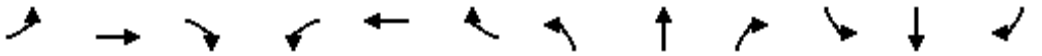
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2261	199	2	2125	474	6
Future Volume (vph)	2261	199	2	2125	474	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.89	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1386	1750	3500	1739	1505
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1386	97	3500	1739	1505
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2458	216	2	2310	515	7
RTOR Reduction (vph)	0	54	0	0	0	3
Lane Group Flow (vph)	2458	162	2	2310	515	4
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	75.6	75.6	75.6	75.6	34.0	34.0
Effective Green, g (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2205	873	61	2205	492	426
v/s Ratio Prot	c0.70			0.66		
v/s Ratio Perm		0.12	0.02		c0.30	0.00
v/c Ratio	1.11	0.19	0.03	1.05	1.05	0.01
Uniform Delay, d1	22.2	9.3	8.4	22.2	43.0	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.03	1.06
Incremental Delay, d2	58.6	0.5	1.0	33.1	51.0	0.0
Delay (s)	80.8	9.8	9.4	55.3	95.3	32.9
Level of Service	F	A	A	E	F	C
Approach Delay (s)	75.1			55.2	94.5	
Approach LOS	E			E	F	

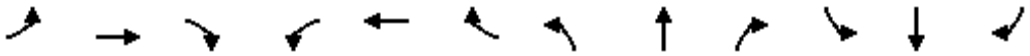
Intersection Summary			
HCM 2000 Control Delay	68.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	17	229	11	20	19	166	444	7	17	330	110
Future Volume (vph)	13	17	229	11	20	19	166	444	7	17	330	110
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	75.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.880			0.948			0.998			0.967	
Flt Protected		0.998			0.989			0.987			0.998	
Satd. Flow (prot)	0	1618	0	0	1727	0	0	1814	0	0	1778	0
Flt Permitted		0.998			0.989			0.987			0.998	
Satd. Flow (perm)	0	1618	0	0	1727	0	0	1814	0	0	1778	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Confl. Peds. (#/hr)	45		30	30		45	136		30	30		136
Confl. Bikes (#/hr)			29			44			29			131
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	18	249	12	22	21	180	483	8	18	359	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	281	0	0	55	0	0	671	0	0	497	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

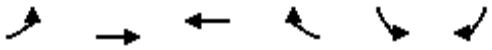
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	17	229	11	20	19	166	444	7	17	330	110
Future Volume (Veh/h)	13	17	229	11	20	19	166	444	7	17	330	110
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	18	249	12	22	21	180	483	8	18	359	120
Pedestrians		136			30			30			45	
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		13			3			3			4	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.74	0.74		0.74	0.74	0.74				0.74		
vC, conflicting volume	1515	1472	585	1620	1528	562	615			521		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1520	1462	585	1661	1538	240	615			184		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	53	71	42	9	61	96	78			98		
cM capacity (veh/h)	30	62	430	13	56	552	837			1004		

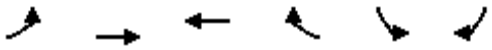
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	281	55	671	497
Volume Left	14	12	180	18
Volume Right	249	21	8	120
cSH	210	41	837	1004
Volume to Capacity	1.34	1.34	0.22	0.02
Queue Length 95th (m)	118.7	41.9	6.2	0.4
Control Delay (s)	224.9	413.9	5.1	0.5
Lane LOS	F	F	A	A
Approach Delay (s)	224.9	413.9	5.1	0.5
Approach LOS	F	F		

Intersection Summary				
Average Delay	59.6			
Intersection Capacity Utilization	88.7%	ICU Level of Service	E	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	200	257	228	0	71
Future Volume (vph)	0	200	257	228	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.936			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1724	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1724	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		758.7	169.9		123.2	
Travel Time (s)		54.6	12.2		8.9	
Confl. Peds. (#/hr)				106		
Confl. Bikes (#/hr)				102		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	217	279	248	0	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	217	527	0	0	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	200	257	228	0	71
Future Volume (Veh/h)	0	200	257	228	0	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	217	279	248	0	77
Pedestrians					106	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					10	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	633				726	509
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487				596	342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	86
cM capacity (veh/h)	826				358	538

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	217	527	77
Volume Left	0	0	0
Volume Right	0	248	77
cSH	1700	1700	538
Volume to Capacity	0.13	0.31	0.14
Queue Length 95th (m)	0.0	0.0	3.8
Control Delay (s)	0.0	0.0	12.8
Lane LOS			B
Approach Delay (s)	0.0	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2201	76	113	2107	10	16
Future Volume (vph)	2201	76	113	2107	10	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3482	0	1750	3500	1750	1566
Flt Permitted			0.042		0.950	
Satd. Flow (perm)	3482	0	77	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					17
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2392	83	123	2290	11	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2475	0	123	2290	11	17
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	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases			8		5	2

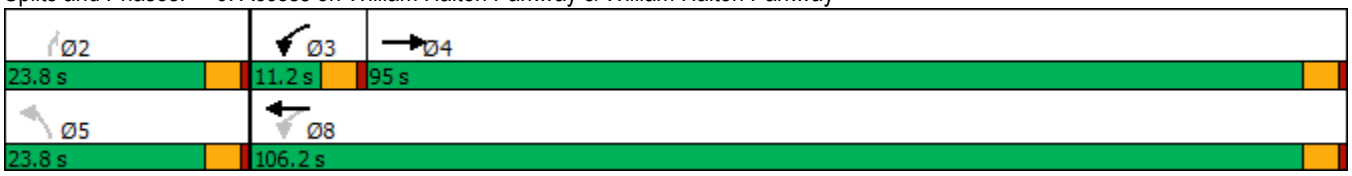
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	4		3	8	5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	9.5	22.5
Total Split (s)	95.0		11.2	106.2	23.8	23.8
Total Split (%)	73.1%		8.6%	81.7%	18.3%	18.3%
Maximum Green (s)	90.5		6.7	101.7	19.3	19.3
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	Max
Walk Time (s)	7.0			7.0		7.0
Flash Dont Walk (s)	11.0			11.0		11.0
Pedestrian Calls (#/hr)	0			0		0
Act Effct Green (s)	90.5		101.7	101.7	8.7	19.3
Actuated g/C Ratio	0.70		0.78	0.78	0.07	0.15
v/c Ratio	1.02		0.84	0.84	0.09	0.07
Control Delay	44.0		69.3	12.6	55.2	20.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	44.0		69.3	12.6	55.2	20.0
LOS	D		E	B	E	B
Approach Delay	44.0			15.5	33.8	
Approach LOS	D			B	C	
Queue Length 50th (m)	~353.4		16.2	164.2	2.8	0.0
Queue Length 95th (m)	#393.3		#50.9	198.6	8.1	7.0
Internal Link Dist (m)	886.1			87.6	47.0	
Turn Bay Length (m)			75.0			
Base Capacity (vph)	2425		146	2738	259	246
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	1.02		0.84	0.84	0.04	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 29.9		Intersection LOS: C	
Intersection Capacity Utilization 84.9%		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: 6: Access on William Halton Parkway & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2201	76	113	2107	10	16
Future Volume (vph)	2201	76	113	2107	10	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3482		1750	3500	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	3482		78	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2392	83	123	2290	11	17
RTOR Reduction (vph)	2	0	0	0	0	14
Lane Group Flow (vph)	2473	0	123	2290	11	3
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases			8		5	2
Actuated Green, G (s)	90.5		101.7	101.7	19.3	19.3
Effective Green, g (s)	90.5		101.7	101.7	19.3	19.3
Actuated g/C Ratio	0.70		0.78	0.78	0.15	0.15
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2424		147	2738	259	232
v/s Ratio Prot	c0.71		0.04	c0.65		
v/s Ratio Perm			0.61		c0.01	0.00
v/c Ratio	1.02		0.84	0.84	0.04	0.01
Uniform Delay, d1	19.8		45.7	8.9	47.4	47.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	23.6		31.9	2.4	0.1	0.1
Delay (s)	43.3		77.5	11.3	47.5	47.3
Level of Service	D		E	B	D	D
Approach Delay (s)	43.3			14.7	47.4	
Approach LOS	D			B	D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	84.9%	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)	25	52	43	131	271	21	108	491	70	80	657	25
Future Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.99			0.99			1.00	
Frt		0.951			0.993			0.986			0.996	
Flt Protected		0.990			0.985			0.992			0.995	
Satd. Flow (prot)	0	1702	0	0	1797	0	0	1787	0	0	1819	0
Flt Permitted		0.860			0.845			0.721			0.851	
Satd. Flow (perm)	0	1479	0	0	1533	0	0	1295	0	0	1554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			2			7			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
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
Adj. Flow (vph)	27	55	46	139	288	22	115	522	74	85	699	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	0	0	449	0	0	711	0	0	811	0
Enter Blocked Intersection	No	No	No	No	No	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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	46.7		37.2	37.2		63.2	63.2		10.1	73.3	
Total Split (%)	7.9%	38.9%		31.0%	31.0%		52.7%	52.7%		8.4%	61.1%	
Maximum Green (s)	5.5	41.1		31.6	31.6		58.1	58.1		6.1	68.2	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		41.1			41.1			68.2			68.2	
Actuated g/C Ratio		0.34			0.34			0.57			0.57	
v/c Ratio		0.24			0.85			0.96			0.92	
Control Delay		21.8			53.5			50.7			40.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		21.8			53.5			50.7			40.3	
LOS		C			D			D			D	
Approach Delay		21.8			53.5			50.7			40.3	
Approach LOS		C			D			D			D	
Queue Length 50th (m)		14.4			97.4			150.8			163.7	
Queue Length 95th (m)		23.7			#153.4			#238.6			#254.7	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		523			526			739			884	
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			0.85			0.96			0.92	

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: 0.96	
Intersection Signal Delay: 45.5	Intersection LOS: D

Intersection Capacity Utilization 94.1% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Future Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.95			0.99			0.99			1.00	
Flt Protected		0.99			0.98			0.99			0.99	
Satd. Flow (prot)		1700			1788			1783			1815	
Flt Permitted		0.86			0.84			0.72			0.85	
Satd. Flow (perm)		1478			1533			1296			1553	
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)	27	55	46	139	288	22	115	522	74	85	699	27
RTOR Reduction (vph)	0	17	0	0	1	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	111	0	0	448	0	0	708	0	0	810	0
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		41.1			41.1			68.2			68.2	
Effective Green, g (s)		41.1			41.1			68.2			68.2	
Actuated g/C Ratio		0.34			0.34			0.57			0.57	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		506			525			736			882	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.29			c0.55			0.52	
v/c Ratio		0.22			0.85			0.96			0.92	
Uniform Delay, d1		28.0			36.6			24.7			23.4	
Progression Factor		0.91			1.00			1.00			1.00	
Incremental Delay, d2		0.2			12.7			25.1			14.2	
Delay (s)		25.8			49.3			49.7			37.6	
Level of Service		C			D			D			D	
Approach Delay (s)		25.8			49.3			49.7			37.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	94.1%	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)	2152	256	7	2174	473	4
Future Volume (vph)	2152	256	7	2174	473	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.95			1.00	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.053		0.950	
Satd. Flow (perm)	3500	1488	98	3500	1746	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		199				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			115.3	115.4	
Travel Time (s)	11.9			8.3	8.3	
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	278	8	2363	514	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2339	278	8	2363	514	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
v/c Ratio	1.06	0.27	0.13	1.07	1.04	0.01
Control Delay	60.8	3.6	15.0	64.9	93.3	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	3.6	15.0	64.9	93.3	24.5
LOS	E	A	B	E	F	C
Approach Delay	54.7			64.7	92.7	
Approach LOS	D			E	F	
Queue Length 50th (m)	~318.8	6.8	0.7	~325.0	~132.0	0.2
Queue Length 95th (m)	#359.8	17.2	3.5	#365.8	m#176.2	m0.9
Internal Link Dist (m)	141.7			91.3	91.4	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2205	1011	61	2205	494	437
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.27	0.13	1.07	1.04	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 62.6	Intersection LOS: E

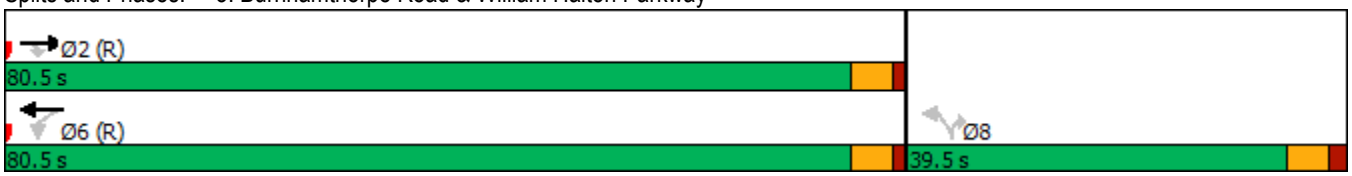
Intersection Capacity Utilization 95.3%	ICU Level of Service F
Analysis Period (min) 15	

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

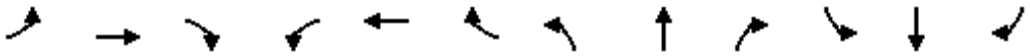
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2152	256	7	2174	473	4
Future Volume (vph)	2152	256	7	2174	473	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.95	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1488	1750	3500	1746	1533
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1488	97	3500	1746	1533
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	278	8	2363	514	4
RTOR Reduction (vph)	0	74	0	0	0	3
Lane Group Flow (vph)	2339	204	8	2363	514	1
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	75.6	75.6	75.6	75.6	34.0	34.0
Effective Green, g (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2205	937	61	2205	494	434
v/s Ratio Prot	0.67			c0.68		
v/s Ratio Perm		0.14	0.08		c0.29	0.00
v/c Ratio	1.06	0.22	0.13	1.07	1.04	0.00
Uniform Delay, d1	22.2	9.5	9.0	22.2	43.0	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.11	1.26
Incremental Delay, d2	37.7	0.5	4.4	41.7	47.1	0.0
Delay (s)	59.9	10.1	13.4	63.9	94.8	39.0
Level of Service	E	B	B	E	F	D
Approach Delay (s)	54.6			63.7	94.3	
Approach LOS	D			E	F	

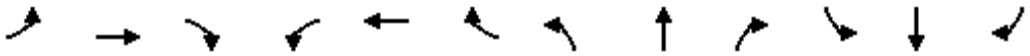
Intersection Summary			
HCM 2000 Control Delay	62.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	214	10	8	25	56	488	13	12	547	34
Future Volume (vph)	23	17	214	10	8	25	56	488	13	12	547	34
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		0.886			0.922			0.997			0.992	
Flt Protected		0.995			0.988			0.995			0.999	
Satd. Flow (prot)	0	1624	0	0	1678	0	0	1827	0	0	1825	0
Flt Permitted		0.995			0.988			0.995			0.999	
Satd. Flow (perm)	0	1624	0	0	1678	0	0	1827	0	0	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Confl. Peds. (#/hr)	14		9	9		14	42		9	9		42
Confl. Bikes (#/hr)			9			14			9			41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	18	233	11	9	27	61	530	14	13	595	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	276	0	0	47	0	0	605	0	0	645	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

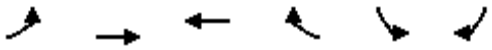
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	17	214	10	8	25	56	488	13	12	547	34
Future Volume (Veh/h)	23	17	214	10	8	25	56	488	13	12	547	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	18	233	11	9	27	61	530	14	13	595	37
Pedestrians		42			9			9			14	
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		4			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.76	0.76		0.76	0.76	0.76				0.76		
vC, conflicting volume	1386	1356	664	1558	1368	560	674			553		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1350	1312	664	1577	1327	266	674			257		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	83	47	55	91	95	93			99		
cM capacity (veh/h)	74	106	438	24	103	575	880			988		

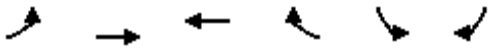
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	276	47	605	645
Volume Left	25	11	61	13
Volume Right	233	27	14	37
cSH	265	80	880	988
Volume to Capacity	1.04	0.58	0.07	0.01
Queue Length 95th (m)	82.7	19.8	1.7	0.3
Control Delay (s)	108.1	99.4	1.8	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	108.1	99.4	1.8	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	22.8			
Intersection Capacity Utilization	81.2%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	120	332	72	0	89
Future Volume (vph)	0	120	332	72	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.976			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1798	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1798	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		778.9	169.9		123.2	
Travel Time (s)		56.1	12.2		8.9	
Confl. Peds. (#/hr)				33		
Confl. Bikes (#/hr)				32		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	130	361	78	0	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	130	439	0	0	97
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	120	332	72	0	89
Future Volume (Veh/h)	0	120	332	72	0	89
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	130	361	78	0	97
Pedestrians					33	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	472				563	433
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	278				386	232
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	85
cM capacity (veh/h)	1046				502	657

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	130	439	97
Volume Left	0	0	0
Volume Right	0	78	97
cSH	1700	1700	657
Volume to Capacity	0.08	0.26	0.15
Queue Length 95th (m)	0.0	0.0	3.9
Control Delay (s)	0.0	0.0	11.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

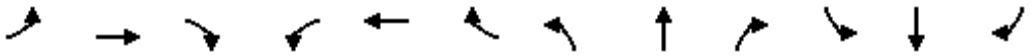
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2140	10	16	2123	64	97
Future Volume (vph)	2140	10	16	2123	64	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3496	0	1750	3500	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3496	0	1750	3500	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2326	11	17	2308	70	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2337	0	17	2308	70	105
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	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

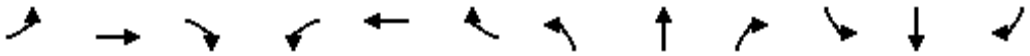
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2140	10	16	2123	64	97
Future Volume (Veh/h)	2140	10	16	2123	64	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2326	11	17	2308	70	105
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2337		3520	1168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2337		3520	1168
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		0	44
cM capacity (veh/h)			208		4	186

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1551	786	17	1154	1154	70	105
Volume Left	0	0	17	0	0	70	0
Volume Right	0	11	0	0	0	0	105
cSH	1700	1700	208	1700	1700	4	186
Volume to Capacity	0.91	0.46	0.08	0.68	0.68	16.81	0.56
Queue Length 95th (m)	0.0	0.0	2.0	0.0	0.0	Err	22.8
Control Delay (s)	0.0	0.0	23.8	0.0	0.0	Err	46.8
Lane LOS			C			F	E
Approach Delay (s)	0.0		0.2			4027.7	
Approach LOS						F	

Intersection Summary			
Average Delay	145.8		
Intersection Capacity Utilization	72.1%	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)	25	52	43	131	271	21	108	491	70	80	657	25
Future Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
Storage Lanes	0		0	0		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.99			0.99			1.00	
Frt		0.951			0.993			0.986			0.996	
Flt Protected		0.990			0.985			0.992			0.995	
Satd. Flow (prot)	0	1702	0	0	1797	0	0	1787	0	0	1819	0
Flt Permitted		0.861			0.845			0.720			0.851	
Satd. Flow (perm)	0	1480	0	0	1533	0	0	1293	0	0	1554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			2			7			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
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
Adj. Flow (vph)	27	55	46	139	288	22	115	522	74	85	699	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	0	0	449	0	0	711	0	0	811	0
Enter Blocked Intersection	No	No	No	No	No	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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	46.9		37.4	37.4		63.0	63.0		10.1	73.1	
Total Split (%)	7.9%	39.1%		31.2%	31.2%		52.5%	52.5%		8.4%	60.9%	
Maximum Green (s)	5.5	41.3		31.8	31.8		57.9	57.9		6.1	68.0	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.1			5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)		41.3			41.3			68.0			68.0	
Actuated g/C Ratio		0.34			0.34			0.57			0.57	
v/c Ratio		0.24			0.85			0.97			0.92	
Control Delay		21.7			53.0			51.9			40.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		21.7			53.0			51.9			40.9	
LOS		C			D			D			D	
Approach Delay		21.7			53.0			51.9			40.9	
Approach LOS		C			D			D			D	
Queue Length 50th (m)		14.3			97.1			151.8			164.4	
Queue Length 95th (m)		23.7			#152.7			#239.4			#255.4	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)												
Base Capacity (vph)		526			528			735			881	
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			0.85			0.97			0.92	

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: 0.97	
Intersection Signal Delay: 46.1	Intersection LOS: D

Intersection Capacity Utilization 94.1% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Future Volume (vph)	25	52	43	131	271	21	108	491	70	80	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6			5.6			5.1			5.1	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.95			0.99			0.99			1.00	
Flt Protected		0.99			0.98			0.99			0.99	
Satd. Flow (prot)		1700			1788			1783			1815	
Flt Permitted		0.86			0.84			0.72			0.85	
Satd. Flow (perm)		1479			1534			1295			1552	
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)	27	55	46	139	288	22	115	522	74	85	699	27
RTOR Reduction (vph)	0	17	0	0	1	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	111	0	0	448	0	0	708	0	0	810	0
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		41.3			41.3			68.0			68.0	
Effective Green, g (s)		41.3			41.3			68.0			68.0	
Actuated g/C Ratio		0.34			0.34			0.57			0.57	
Clearance Time (s)		5.6			5.6			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		509			527			733			879	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.29			c0.55			0.52	
v/c Ratio		0.22			0.85			0.97			0.92	
Uniform Delay, d1		27.9			36.5			24.9			23.6	
Progression Factor		0.91			1.00			1.00			1.00	
Incremental Delay, d2		0.2			12.2			25.9			14.8	
Delay (s)		25.7			48.6			50.8			38.4	
Level of Service		C			D			D			D	
Approach Delay (s)		25.7			48.6			50.8			38.4	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	94.1%	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)	2152	256	7	2174	473	4
Future Volume (vph)	2152	256	7	2174	473	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.95			1.00	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.053		0.950	
Satd. Flow (perm)	3500	1488	98	3500	1746	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		199				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			115.3	115.4	
Travel Time (s)	11.9			8.3	8.3	
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	278	8	2363	514	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2339	278	8	2363	514	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.9	32.9	32.9	32.9	39.5	39.5
Total Split (s)	80.5	80.5	80.5	80.5	39.5	39.5
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%
Maximum Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	27.0	27.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
v/c Ratio	1.06	0.27	0.13	1.07	1.04	0.01
Control Delay	60.8	3.6	15.0	64.9	93.3	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	3.6	15.0	64.9	93.3	24.8
LOS	E	A	B	E	F	C
Approach Delay	54.7			64.7	92.8	
Approach LOS	D			E	F	
Queue Length 50th (m)	~318.8	6.8	0.7	~325.0	~132.1	0.2
Queue Length 95th (m)	#359.8	17.2	3.5	#365.8	m#176.8	m0.9
Internal Link Dist (m)	141.7			91.3	91.4	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2205	1011	61	2205	494	437
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.27	0.13	1.07	1.04	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 62.6	Intersection LOS: E

Intersection Capacity Utilization 95.3% ICU Level of Service F

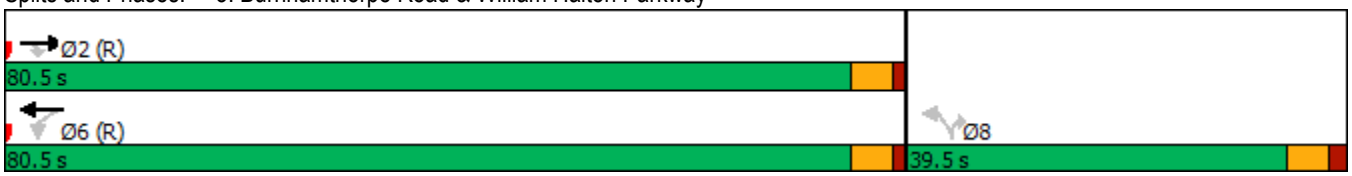
Analysis Period (min) 15

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

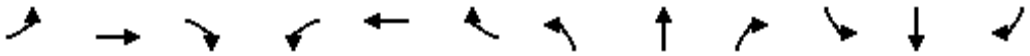
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2152	256	7	2174	473	4
Future Volume (vph)	2152	256	7	2174	473	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.95	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1488	1750	3500	1746	1533
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1488	97	3500	1746	1533
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	278	8	2363	514	4
RTOR Reduction (vph)	0	74	0	0	0	3
Lane Group Flow (vph)	2339	204	8	2363	514	1
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	75.6	75.6	75.6	75.6	34.0	34.0
Effective Green, g (s)	75.6	75.6	75.6	75.6	34.0	34.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.28	0.28
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2205	937	61	2205	494	434
v/s Ratio Prot	0.67			c0.68		
v/s Ratio Perm		0.14	0.08		c0.29	0.00
v/c Ratio	1.06	0.22	0.13	1.07	1.04	0.00
Uniform Delay, d1	22.2	9.5	9.0	22.2	43.0	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.11	1.27
Incremental Delay, d2	37.7	0.5	4.4	41.7	47.1	0.0
Delay (s)	59.9	10.1	13.4	63.9	94.8	39.1
Level of Service	E	B	B	E	F	D
Approach Delay (s)	54.6			63.7	94.4	
Approach LOS	D			E	F	

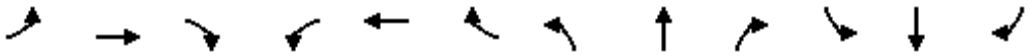
Intersection Summary			
HCM 2000 Control Delay	62.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	214	10	8	25	56	488	13	12	547	34
Future Volume (vph)	23	17	214	10	8	25	56	488	13	12	547	34
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		0.886			0.922			0.997			0.992	
Flt Protected		0.995			0.988			0.995			0.999	
Satd. Flow (prot)	0	1624	0	0	1678	0	0	1827	0	0	1825	0
Flt Permitted		0.995			0.988			0.995			0.999	
Satd. Flow (perm)	0	1624	0	0	1678	0	0	1827	0	0	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Confl. Peds. (#/hr)	14		9	9		14	42		9	9		42
Confl. Bikes (#/hr)			9			14			9			41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	18	233	11	9	27	61	530	14	13	595	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	276	0	0	47	0	0	605	0	0	645	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

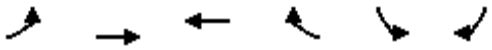
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	17	214	10	8	25	56	488	13	12	547	34
Future Volume (Veh/h)	23	17	214	10	8	25	56	488	13	12	547	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	18	233	11	9	27	61	530	14	13	595	37
Pedestrians		42			9			9			14	
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		4			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.76	0.76		0.76	0.76	0.76				0.76		
vC, conflicting volume	1386	1356	664	1558	1368	560	674			553		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1350	1311	664	1577	1326	264	674			255		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	83	47	55	91	95	93			99		
cM capacity (veh/h)	74	105	438	24	103	576	880			988		

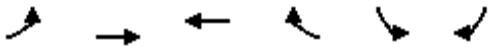
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	276	47	605	645
Volume Left	25	11	61	13
Volume Right	233	27	14	37
cSH	265	80	880	988
Volume to Capacity	1.04	0.59	0.07	0.01
Queue Length 95th (m)	82.7	19.8	1.7	0.3
Control Delay (s)	108.3	99.7	1.8	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	108.3	99.7	1.8	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	22.8			
Intersection Capacity Utilization	81.2%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	120	332	72	0	89
Future Volume (vph)	0	120	332	72	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.976			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1798	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1798	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		778.9	169.9		123.2	
Travel Time (s)		56.1	12.2		8.9	
Confl. Peds. (#/hr)				33		
Confl. Bikes (#/hr)				32		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	130	361	78	0	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	130	439	0	0	97
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	120	332	72	0	89
Future Volume (Veh/h)	0	120	332	72	0	89
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	130	361	78	0	97
Pedestrians					33	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	472				563	433
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	279				387	233
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	85
cM capacity (veh/h)	1046				502	657

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	130	439	97
Volume Left	0	0	0
Volume Right	0	78	97
cSH	1700	1700	657
Volume to Capacity	0.08	0.26	0.15
Queue Length 95th (m)	0.0	0.0	3.9
Control Delay (s)	0.0	0.0	11.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

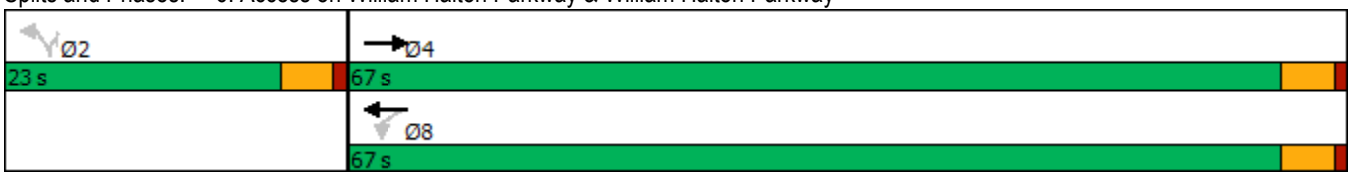
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2140	10	16	2123	64	97
Future Volume (vph)	2140	10	16	2123	64	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3496	0	1750	3500	1750	1566
Flt Permitted			0.065		0.950	
Satd. Flow (perm)	3496	0	120	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					11
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2326	11	17	2308	70	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2337	0	17	2308	70	105
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		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	4		8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5
Total Split (s)	67.0		67.0	67.0	23.0	23.0
Total Split (%)	74.4%		74.4%	74.4%	25.6%	25.6%
Maximum Green (s)	62.5		62.5	62.5	18.5	18.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	62.0		62.0	62.0	18.5	18.5
Actuated g/C Ratio	0.69		0.69	0.69	0.21	0.21
v/c Ratio	0.96		0.20	0.95	0.19	0.32
Control Delay	25.5		11.8	23.5	31.3	30.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.5		11.8	23.5	31.3	30.2
LOS	C		B	C	C	C
Approach Delay	25.5			23.4	30.6	
Approach LOS	C			C	C	
Queue Length 50th (m)	168.6		0.9	162.2	10.1	13.9
Queue Length 95th (m)	#257.1		4.5	#250.8	21.2	28.2
Internal Link Dist (m)	886.1			87.6	47.0	
Turn Bay Length (m)			75.0			
Base Capacity (vph)	2441		83	2443	361	332
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	0.96		0.20	0.94	0.19	0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 73.0%		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: 6: Access on William Halton Parkway & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2140	10	16	2123	64	97
Future Volume (vph)	2140	10	16	2123	64	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3497		1750	3500	1750	1566
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	3497		119	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2326	11	17	2308	70	105
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	2337	0	17	2308	70	96
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	62.0		62.0	62.0	18.5	18.5
Effective Green, g (s)	62.0		62.0	62.0	18.5	18.5
Actuated g/C Ratio	0.69		0.69	0.69	0.21	0.21
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2422		82	2424	361	323
v/s Ratio Prot	c0.67			0.66		
v/s Ratio Perm			0.14		0.04	c0.06
v/c Ratio	0.96		0.21	0.95	0.19	0.30
Uniform Delay, d1	12.7		4.9	12.4	29.3	30.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	11.2		1.3	9.4	1.2	2.3
Delay (s)	23.9		6.2	21.9	30.5	32.4
Level of Service	C		A	C	C	C
Approach Delay (s)	23.9			21.7	31.6	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2025 AM FT]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	78	2.0	0.854	54.4	LOS F	5.6	40.1	0.94	1.36	2.63	31.5
2	T1	258	2.0	0.854	53.8	LOS F	5.7	40.7	0.94	1.36	2.63	31.6
3	R2	260	2.0	0.854	51.3	LOS F	5.7	40.7	0.93	1.36	2.65	31.6
Approach		595	2.0	0.854	52.8	LOS F	5.7	40.7	0.93	1.36	2.64	31.6
East: William Halton												
4	L2	260	2.0	1.719	342.4	LOS F	224.2	1596.2	1.00	6.12	13.62	9.3
5	T1	2681	2.0	1.719	342.3	LOS F	227.6	1620.7	1.00	6.17	13.73	9.3
6	R2	53	2.0	1.719	342.2	LOS F	227.6	1620.7	1.00	6.21	13.83	9.2
Approach		2994	2.0	1.719	342.3	LOS F	227.6	1620.7	1.00	6.17	13.72	9.3
North: Sixth												
7	L2	50	2.0	0.554	29.9	LOS D	2.0	14.2	0.86	1.01	1.45	39.5
8	T1	236	2.0	0.554	28.7	LOS D	2.0	14.2	0.85	1.00	1.44	40.1
9	R2	45	2.0	0.554	27.6	LOS D	2.0	14.1	0.85	0.99	1.44	39.9
Approach		331	2.0	0.554	28.7	LOS D	2.0	14.2	0.86	1.00	1.45	40.0
West: William Halton												
10	L2	14	2.0	1.729	348.0	LOS F	206.5	1470.1	1.00	6.39	15.50	9.2
11	T1	2658	2.0	1.729	347.8	LOS F	210.6	1499.7	1.00	6.44	15.65	9.1
12	R2	133	2.0	1.729	347.7	LOS F	210.6	1499.7	1.00	6.50	15.81	9.1
Approach		2804	2.0	1.729	347.8	LOS F	210.6	1499.7	1.00	6.45	15.65	9.1
All Vehicles		6724	2.0	1.729	303.5	LOS F	227.6	1620.7	0.99	5.60	12.94	10.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2025 PM FT]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	37	2.0	0.791	44.3	LOS E	4.5	32.0	0.91	1.23	2.21	34.6
2	T1	280	2.0	0.791	43.9	LOS E	4.5	32.3	0.91	1.23	2.21	34.6
3	R2	249	2.0	0.791	41.7	LOS E	4.5	32.3	0.90	1.23	2.21	34.4
Approach		566	2.0	0.791	42.9	LOS E	4.5	32.3	0.91	1.23	2.21	34.5
East: William Halton												
4	L2	223	2.0	1.439	219.7	LOS F	145.7	1037.6	1.00	4.92	10.76	13.3
5	T1	2240	2.0	1.439	219.6	LOS F	147.9	1053.3	1.00	4.95	10.85	13.3
6	R2	21	2.0	1.439	219.4	LOS F	147.9	1053.3	1.00	4.98	10.93	13.2
Approach		2484	2.0	1.439	219.6	LOS F	147.9	1053.3	1.00	4.95	10.84	13.3
North: Sixth												
7	L2	20	2.0	0.468	24.8	LOS C	1.6	11.2	0.84	0.95	1.28	42.1
8	T1	256	2.0	0.468	23.8	LOS C	1.6	11.2	0.83	0.94	1.28	42.6
9	R2	13	2.0	0.468	22.9	LOS C	1.5	11.0	0.82	0.93	1.27	42.1
Approach		288	2.0	0.468	23.8	LOS C	1.6	11.2	0.83	0.94	1.28	42.5
West: William Halton												
10	L2	57	2.0	1.510	251.5	LOS F	151.8	1081.2	1.00	5.41	12.79	12.0
11	T1	2259	2.0	1.510	251.3	LOS F	154.8	1102.0	1.00	5.45	12.91	11.9
12	R2	144	2.0	1.510	251.1	LOS F	154.8	1102.0	1.00	5.50	13.04	11.8
Approach		2460	2.0	1.510	251.3	LOS F	154.8	1102.0	1.00	5.45	12.92	11.9
All Vehicles		5799	2.0	1.510	206.0	LOS F	154.8	1102.0	0.98	4.60	10.40	13.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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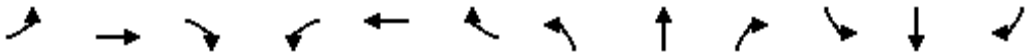
Appendix J

2030 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)	21	120	34	91	197	25	67	451	79	19	283	22
Future Volume (vph)	21	120	34	91	197	25	67	451	79	19	283	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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				
Frt		0.967			0.983			0.978			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1831	0	1770	3451	0	1770	3500	0
Flt Permitted	0.315			0.656			0.561			0.401		
Satd. Flow (perm)	587	1801	0	1222	1831	0	1045	3451	0	747	3500	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			6			22			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Bikes (#/hr)									1			
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
Adj. Flow (vph)	22	124	35	94	203	26	69	465	81	20	292	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	159	0	94	229	0	69	546	0	20	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	22.8	21.2		17.4	17.4		63.9	63.9		69.2	68.1	
Actuated g/C Ratio	0.23	0.21		0.17	0.17		0.64	0.64		0.69	0.68	
v/c Ratio	0.11	0.40		0.44	0.71		0.10	0.25		0.03	0.13	
Control Delay	33.2	36.3		42.4	49.5		12.0	10.3		7.7	6.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.2	36.3		42.4	49.5		12.0	10.3		7.7	6.9	
LOS	C	D		D	D		B	B		A	A	
Approach Delay		36.0			47.4			10.5			6.9	
Approach LOS		D			D			B			A	
Queue Length 50th (m)	3.6	26.4		16.5	41.1		3.5	15.1		0.9	8.1	
Queue Length 95th (m)	10.0	43.4		29.6	61.0		16.0	45.6		4.7	20.4	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	200	615		293	444		667	2211		670	2386	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.26		0.32	0.52		0.10	0.25		0.03	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	120	34	91	197	25	67	451	79	19	283	22
Future Volume (vph)	21	120	34	91	197	25	67	451	79	19	283	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		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	0.97		1.00	0.98		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)	1770	1801		1770	1831		1770	3450		1770	3500	
Flt Permitted	0.32	1.00		0.66	1.00		0.56	1.00		0.40	1.00	
Satd. Flow (perm)	587	1801		1222	1831		1044	3450		746	3500	
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)	22	124	35	94	203	26	69	465	81	20	292	23
RTOR Reduction (vph)	0	11	0	0	5	0	0	9	0	0	4	0
Lane Group Flow (vph)	22	148	0	94	224	0	69	537	0	20	311	0
Confl. Bikes (#/hr)									1			
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.6	23.6		17.4	17.4		59.1	59.1		65.7	65.7	
Effective Green, g (s)	23.6	23.6		17.4	17.4		59.1	59.1		65.7	65.7	
Actuated g/C Ratio	0.24	0.24		0.17	0.17		0.59	0.59		0.66	0.66	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	425		212	318		617	2038		516	2299	
v/s Ratio Prot	0.00	c0.08			c0.12			c0.16		0.00	c0.09	
v/s Ratio Perm	0.03			0.08			0.07			0.02		
v/c Ratio	0.13	0.35		0.44	0.70		0.11	0.26		0.04	0.14	
Uniform Delay, d1	30.1	31.8		37.0	38.9		9.0	9.9		6.2	6.5	
Progression Factor	1.26	1.17		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5		1.5	6.9		0.4	0.3		0.0	0.1	
Delay (s)	38.4	37.8		38.4	45.8		9.3	10.2		6.2	6.6	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		37.9			43.7			10.1			6.6	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2104	174	2	2114	423	6
Future Volume (vph)	2104	174	2	2114	423	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		0.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.063		0.950	
Satd. Flow (perm)	3539	1583	117	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		170				7
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2287	189	2	2298	460	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2287	189	2	2298	460	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	68.8	68.8	68.8	68.8	31.2	31.2
Total Split (%)	68.8%	68.8%	68.8%	68.8%	31.2%	31.2%
Maximum Green (s)	63.9	63.9	63.9	63.9	25.7	25.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	63.9	63.9	63.9	63.9	25.7	25.7
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.26	0.26
v/c Ratio	1.01	0.18	0.03	1.02	1.01	0.02
Control Delay	40.9	1.9	8.0	42.2	87.2	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	1.9	8.0	42.2	87.2	17.2
LOS	D	A	A	D	F	B
Approach Delay	37.9			42.2	86.2	
Approach LOS	D			D	F	
Queue Length 50th (m)	~223.6	1.2	0.1	~229.9	~94.7	0.3
Queue Length 95th (m)	#288.6	8.5	1.0	#291.0	#157.0	m2.4
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0			
Base Capacity (vph)	2261	1072	74	2261	454	412
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.18	0.03	1.02	1.01	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 44.1	Intersection LOS: D
Intersection Capacity Utilization 90.5%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.

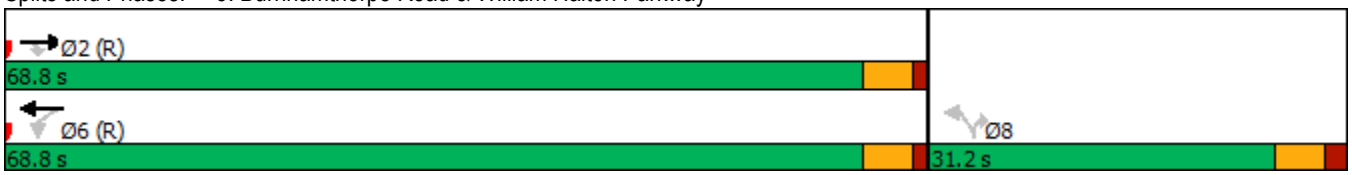
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

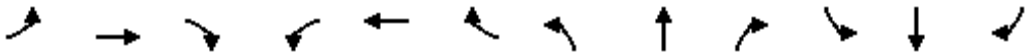
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2104	174	2	2114	423	6
Future Volume (vph)	2104	174	2	2114	423	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	1.00	1.00	0.06	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	117	3539	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2287	189	2	2298	460	7
RTOR Reduction (vph)	0	61	0	0	0	5
Lane Group Flow (vph)	2287	128	2	2298	460	2
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	63.9	63.9	63.9	63.9	25.7	25.7
Effective Green, g (s)	63.9	63.9	63.9	63.9	25.7	25.7
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.26	0.26
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2261	1011	74	2261	454	406
v/s Ratio Prot	0.65			c0.65		
v/s Ratio Perm		0.08	0.02		c0.26	0.00
v/c Ratio	1.01	0.13	0.03	1.02	1.01	0.00
Uniform Delay, d1	18.1	7.1	6.6	18.1	37.1	27.6
Progression Factor	1.00	1.00	1.00	1.00	1.12	1.07
Incremental Delay, d2	21.8	0.3	0.7	23.1	45.2	0.0
Delay (s)	39.8	7.3	7.3	41.2	86.7	29.7
Level of Service	D	A	A	D	F	C
Approach Delay (s)	37.4			41.1	85.9	
Approach LOS	D			D	F	

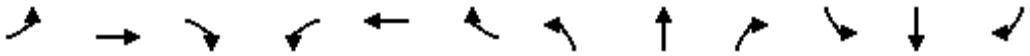
Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	12	0	21	0	496	8	19	363	0
Future Volume (vph)	0	0	0	12	0	21	0	496	8	19	363	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.914			0.998				
Flt Protected					0.982						0.997	
Satd. Flow (prot)	0	1863	0	0	1672	0	0	3532	0	0	3529	0
Flt Permitted					0.982						0.997	
Satd. Flow (perm)	0	1863	0	0	1672	0	0	3532	0	0	3529	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	13	0	23	0	539	9	21	395	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	36	0	0	548	0	0	416	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

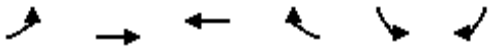
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	12	0	21	0	496	8	19	363	0
Future Volume (Veh/h)	0	0	0	12	0	21	0	496	8	19	363	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	13	0	23	0	539	9	21	395	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	730	985	198	783	980	274	395			548		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	680	941	198	734	936	214	395			494		
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	100	96	100	97	100			98		
cM capacity (veh/h)	315	251	811	297	253	774	1160			1043		

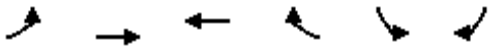
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	36	270	278	218	198
Volume Left	0	13	0	0	21	0
Volume Right	0	23	0	9	0	0
cSH	1700	489	1160	1700	1043	1700
Volume to Capacity	0.00	0.07	0.00	0.16	0.02	0.12
Queue Length 95th (m)	0.0	1.8	0.0	0.0	0.5	0.0
Control Delay (s)	0.0	12.9	0.0	0.0	1.0	0.0
Lane LOS	A	B			A	
Approach Delay (s)	0.0	12.9	0.0		0.5	
Approach LOS	A	B				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	34.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	174	286	0	0	0
Future Volume (vph)	0	174	286	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	189	311	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	189	311	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	174	286	0	0	0
Future Volume (Veh/h)	0	174	286	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	189	311	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.90				0.90	0.90
vC, conflicting volume	311				500	311
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178				388	178
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1257				554	778

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	189	311	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.11	0.18	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2120	0	0	2106	0	0
Future Volume (vph)	2120	0	0	2106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3539	0	1863	3539	1863	1863
Flt Permitted						
Satd. Flow (perm)	3539	0	1863	3539	1863	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2304	0	0	2289	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2304	0	0	2289	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

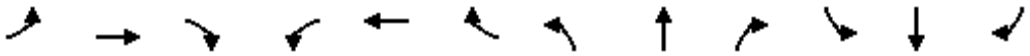
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2120	0	0	2106	0	0
Future Volume (Veh/h)	2120	0	0	2106	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2304	0	0	2289	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2304		3448	1152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2304		3448	1152
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			215		5	191

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1536	768	0	1144	1144	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.90	0.45	0.00	0.67	0.67	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A	A
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS						A	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	75	41	139	281	21	57	486	77	17	583	24
Future Volume (vph)	13	75	41	139	281	21	57	486	77	17	583	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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				
Frt		0.947			0.990			0.979			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1744	0	1750	1824	0	1750	3417	0	1750	3479	0
Flt Permitted	0.223			0.677			0.406			0.367		
Satd. Flow (perm)	411	1744	0	1247	1824	0	748	3417	0	676	3479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			3			20			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Bikes (#/hr)									1			
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
Adj. Flow (vph)	14	80	44	148	299	22	61	517	82	18	620	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	124	0	148	321	0	61	599	0	18	646	0
Enter Blocked Intersection	No	No	No	No	No	No	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	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	25.0	23.4		21.5	21.5		61.7	61.7		67.0	65.9	
Actuated g/C Ratio	0.25	0.23		0.22	0.22		0.62	0.62		0.67	0.66	
v/c Ratio	0.08	0.29		0.55	0.81		0.13	0.28		0.03	0.28	
Control Delay	36.5	31.6		42.7	53.7		13.0	11.0		7.8	8.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.5	31.6		42.7	53.7		13.0	11.0		7.8	8.3	
LOS	D	C		D	D		B	B		A	A	
Approach Delay		32.1			50.2			11.1			8.3	
Approach LOS		C			D			B			A	
Queue Length 50th (m)	2.3	17.0		25.3	58.0		3.8	21.2		1.0	23.8	
Queue Length 95th (m)	7.9	33.7		44.2	#89.4		15.4	51.3		4.4	44.2	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	177	605		303	445		461	2117		614	2295	
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	0.20		0.49	0.72		0.13	0.28		0.03	0.28	

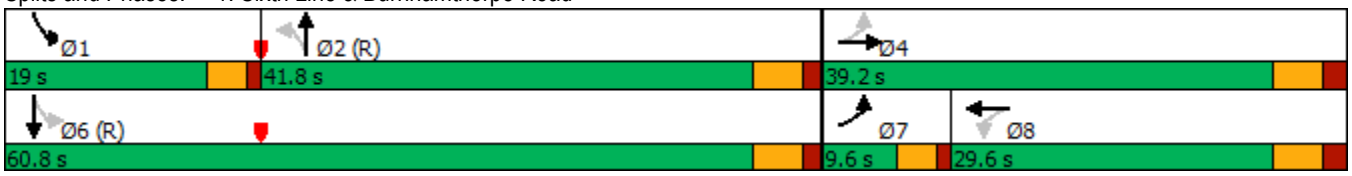
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	75	41	139	281	21	57	486	77	17	583	24
Future Volume (vph)	13	75	41	139	281	21	57	486	77	17	583	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		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	0.95		1.00	0.99		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	1744		1750	1823		1750	3418		1750	3479	
Flt Permitted	0.22	1.00		0.68	1.00		0.41	1.00		0.37	1.00	
Satd. Flow (perm)	411	1744		1248	1823		749	3418		677	3479	
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)	14	80	44	148	299	22	61	517	82	18	620	26
RTOR Reduction (vph)	0	22	0	0	2	0	0	9	0	0	3	0
Lane Group Flow (vph)	14	102	0	148	319	0	61	590	0	18	643	0
Confl. Bikes (#/hr)									1			
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.6	26.6		21.5	21.5		56.1	56.1		62.7	62.7	
Effective Green, g (s)	26.6	26.6		21.5	21.5		56.1	56.1		62.7	62.7	
Actuated g/C Ratio	0.27	0.27		0.22	0.22		0.56	0.56		0.63	0.63	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	124	463		268	391		420	1917		452	2181	
v/s Ratio Prot	0.00	c0.06			c0.17			0.17		0.00	c0.18	
v/s Ratio Perm	0.03			0.12			0.08			0.02		
v/c Ratio	0.11	0.22		0.55	0.81		0.15	0.31		0.04	0.29	
Uniform Delay, d1	28.4	28.6		35.0	37.4		10.5	11.6		7.4	8.5	
Progression Factor	1.45	1.37		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2		2.5	12.3		0.7	0.4		0.0	0.3	
Delay (s)	41.5	39.5		37.4	49.7		11.2	12.1		7.4	8.9	
Level of Service	D	D		D	D		B	B		A	A	
Approach Delay (s)		39.7			45.8			12.0			8.8	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2115	256	6	2109	408	4
Future Volume (vph)	2115	256	6	2109	408	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		0.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.066		0.950	
Satd. Flow (perm)	3500	1566	122	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		205				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2299	278	7	2292	443	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2299	278	7	2292	443	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	61.0	61.0	61.0	61.0	39.0	39.0
Total Split (%)	61.0%	61.0%	61.0%	61.0%	39.0%	39.0%
Maximum Green (s)	56.1	56.1	56.1	56.1	33.5	33.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	60.3	60.3	60.3	60.3	29.3	29.3
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.29	0.29
v/c Ratio	1.09	0.27	0.10	1.09	0.86	0.01
Control Delay	71.0	3.8	14.0	69.7	53.3	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	3.8	14.0	69.7	53.3	16.2
LOS	E	A	B	E	D	B
Approach Delay	63.7			69.5	52.9	
Approach LOS	E			E	D	
Queue Length 50th (m)	~270.6	5.7	0.6	~269.2	89.6	0.4
Queue Length 95th (m)	#323.0	17.7	3.2	#321.7	#121.5	m1.1
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0			
Base Capacity (vph)	2109	1025	73	2109	586	527
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.27	0.10	1.09	0.76	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 65.3	Intersection LOS: E
Intersection Capacity Utilization 89.7%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.

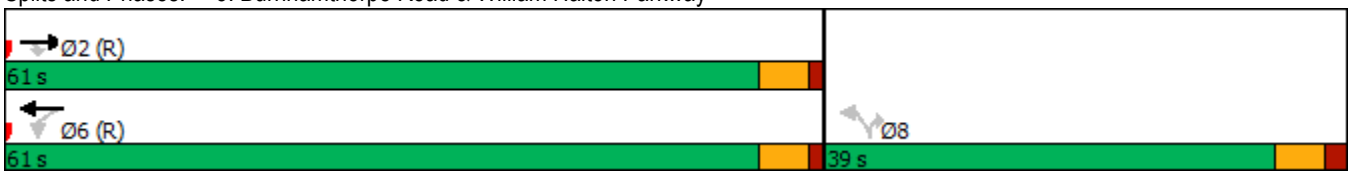
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

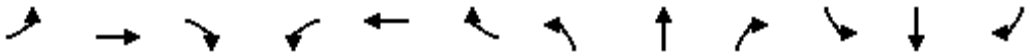
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2115	256	6	2109	408	4
Future Volume (vph)	2115	256	6	2109	408	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted	1.00	1.00	0.07	1.00	0.95	1.00
Satd. Flow (perm)	3500	1566	122	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2299	278	7	2292	443	4
RTOR Reduction (vph)	0	81	0	0	0	3
Lane Group Flow (vph)	2299	197	7	2292	443	1
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	60.3	60.3	60.3	60.3	29.3	29.3
Effective Green, g (s)	60.3	60.3	60.3	60.3	29.3	29.3
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.29	0.29
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2110	944	73	2110	512	458
v/s Ratio Prot	c0.66			0.65		
v/s Ratio Perm		0.13	0.06		c0.25	0.00
v/c Ratio	1.09	0.21	0.10	1.09	0.87	0.00
Uniform Delay, d1	19.9	9.0	8.4	19.9	33.5	25.0
Progression Factor	1.00	1.00	1.00	1.00	1.14	1.15
Incremental Delay, d2	48.9	0.5	2.6	47.6	12.6	0.0
Delay (s)	68.7	9.5	11.0	67.4	50.7	28.7
Level of Service	E	A	B	E	D	C
Approach Delay (s)	62.3			67.3	50.5	
Approach LOS	E			E	D	

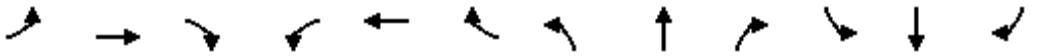
Intersection Summary			
HCM 2000 Control Delay	63.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	11	0	28	0	527	14	13	622	0
Future Volume (vph)	0	0	0	11	0	28	0	527	14	13	622	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.904			0.996				
Flt Protected					0.986						0.999	
Satd. Flow (prot)	0	1842	0	0	1642	0	0	3486	0	0	3496	0
Flt Permitted					0.986						0.999	
Satd. Flow (perm)	0	1842	0	0	1642	0	0	3486	0	0	3496	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			172.3	
Travel Time (s)		6.7			5.9			19.3			12.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	12	0	30	0	573	15	14	676	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	42	0	0	588	0	0	690	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

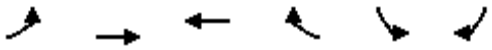
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	28	0	527	14	13	622	0
Future Volume (Veh/h)	0	0	0	11	0	28	0	527	14	13	622	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	12	0	30	0	573	15	14	676	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	1020	1292	338	946	1284	294	676			588		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	928	1212	338	851	1205	168	676			476		
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	100	95	100	96	100			99		
cM capacity (veh/h)	203	170	658	240	172	809	911			1035		

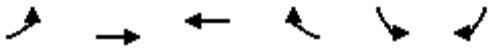
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	42	286	302	352	338
Volume Left	0	12	0	0	14	0
Volume Right	0	30	0	15	0	0
cSH	1700	482	911	1700	1035	1700
Volume to Capacity	0.00	0.09	0.00	0.18	0.01	0.20
Queue Length 95th (m)	0.0	2.2	0.0	0.0	0.3	0.0
Control Delay (s)	0.0	13.2	0.0	0.0	0.5	0.0
Lane LOS	A	B			A	
Approach Delay (s)	0.0	13.2	0.0		0.2	
Approach LOS	A	B				

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	36.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	129	362	0	0	0
Future Volume (vph)	0	129	362	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	0	1842
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	0	1842
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	140	393	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	140	393	0	0	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		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 22.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	129	362	0	0	0
Future Volume (Veh/h)	0	129	362	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	140	393	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	393				533	393
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183				350	183
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1170				544	722

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	140	393	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.08	0.23	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2113	0	0	2121	0	0
Future Volume (vph)	2113	0	0	2121	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3500	0	1842	3500	1842	1842
Flt Permitted						
Satd. Flow (perm)	3500	0	1842	3500	1842	1842
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2297	0	0	2305	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2297	0	0	2305	0	0
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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2113	0	0	2121	0	0
Future Volume (Veh/h)	2113	0	0	2121	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2297	0	0	2305	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2297		3450	1148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2297		3450	1148
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			216		5	192

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1531	766	0	1152	1152	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.90	0.45	0.00	0.68	0.68	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A	A
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS						A	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2030 AM FB]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	21	2.0	0.916	67.0	LOS F	7.3	52.1	0.96	1.52	3.22	28.7
2	T1	276	2.0	0.916	67.0	LOS F	7.3	52.1	0.96	1.52	3.22	28.6
3	R2	365	2.0	1.035	92.6	LOS F	14.3	102.1	1.00	2.03	5.18	23.3
Approach		663	2.0	1.035	81.1	LOS F	14.3	102.1	0.98	1.80	4.30	25.5
East: William Halton												
4	L2	291	2.0	1.668	319.5	LOS F	219.5	1563.0	1.00	5.79	12.25	9.8
5	T1	2633	2.0	1.668	319.4	LOS F	222.5	1583.9	1.00	5.83	12.34	9.8
6	R2	66	2.0	1.668	319.3	LOS F	222.5	1583.9	1.00	5.86	12.42	9.8
Approach		2990	2.0	1.668	319.4	LOS F	222.5	1583.9	1.00	5.82	12.34	9.8
North: Sixth												
7	L2	56	2.0	0.490	26.2	LOS D	1.7	11.9	0.85	0.96	1.33	40.9
8	T1	230	2.0	0.490	25.0	LOS C	1.7	11.9	0.84	0.95	1.32	41.8
9	R2	11	2.0	0.490	24.2	LOS C	1.7	11.8	0.83	0.95	1.31	41.5
Approach		298	2.0	0.490	25.2	LOS D	1.7	11.9	0.84	0.95	1.32	41.6
West: William Halton												
10	L2	9	2.0	1.683	327.9	LOS F	190.6	1357.4	1.00	6.24	15.35	9.6
11	T1	2650	2.0	1.683	327.7	LOS F	194.7	1386.1	1.00	6.30	15.51	9.6
12	R2	25	2.0	1.683	327.6	LOS F	194.7	1386.1	1.00	6.35	15.67	9.6
Approach		2684	2.0	1.683	327.7	LOS F	194.7	1386.1	1.00	6.30	15.51	9.6
All Vehicles		6634	2.0	1.683	285.8	LOS F	222.5	1583.9	0.99	5.39	12.32	10.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2030 PM FB]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	33	2.0	0.797	43.6	LOS E	4.8	33.8	0.91	1.25	2.24	34.9
2	T1	286	2.0	0.797	43.4	LOS E	4.8	34.1	0.91	1.24	2.24	34.8
3	R2	277	2.0	0.797	41.2	LOS E	4.8	34.1	0.90	1.24	2.24	34.6
Approach		596	2.0	0.797	42.4	LOS E	4.8	34.1	0.90	1.24	2.24	34.7
East: William Halton												
4	L2	325	2.0	1.497	245.0	LOS F	163.6	1165.1	1.00	5.18	11.28	12.2
5	T1	2233	2.0	1.497	244.8	LOS F	166.1	1182.4	1.00	5.22	11.37	12.2
6	R2	51	2.0	1.497	244.7	LOS F	166.1	1182.4	1.00	5.25	11.44	12.1
Approach		2608	2.0	1.497	244.8	LOS F	166.1	1182.4	1.00	5.21	11.36	12.2
North: Sixth												
7	L2	22	2.0	0.493	25.7	LOS D	1.7	12.1	0.84	0.96	1.33	41.7
8	T1	276	2.0	0.493	24.7	LOS C	1.7	12.1	0.83	0.95	1.32	42.2
9	R2	8	2.0	0.493	23.8	LOS C	1.7	12.0	0.82	0.94	1.31	41.7
Approach		306	2.0	0.493	24.7	LOS C	1.7	12.1	0.83	0.95	1.32	42.1
West: William Halton												
10	L2	35	2.0	1.529	260.7	LOS F	144.7	1030.1	1.00	5.57	14.04	11.6
11	T1	2224	2.0	1.529	260.5	LOS F	148.0	1054.1	1.00	5.63	14.20	11.6
12	R2	83	2.0	1.529	260.2	LOS F	148.0	1054.1	1.00	5.69	14.37	11.5
Approach		2342	2.0	1.529	260.5	LOS F	148.0	1054.1	1.00	5.63	14.20	11.6
All Vehicles		5853	2.0	1.529	219.0	LOS F	166.1	1182.4	0.98	4.75	11.04	13.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Appendix K

2030 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)	64	120	34	91	273	33	212	597	79	60	462	22
Future Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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	0.98	0.99		0.97	0.99		0.91	0.98		0.97	0.99	
Frt		0.967			0.984			0.983			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1775	0	1770	1818	0	1770	3399	0	1770	3472	0
Flt Permitted	0.222			0.656			0.469			0.303		
Satd. Flow (perm)	407	1775	0	1185	1818	0	794	3399	0	545	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			6			16			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
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
Adj. Flow (vph)	66	124	35	94	281	34	219	615	81	62	476	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	159	0	94	315	0	219	696	0	62	499	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	30.2	28.6		20.9	20.9		51.6	51.6		61.8	60.7	
Actuated g/C Ratio	0.30	0.29		0.21	0.21		0.52	0.52		0.62	0.61	
v/c Ratio	0.33	0.31		0.38	0.82		0.54	0.40		0.15	0.24	
Control Delay	35.0	31.8		37.8	54.6		26.0	17.3		10.2	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.0	31.8		37.8	54.6		26.0	17.3		10.2	10.1	
LOS	C	C		D	D		C	B		B	B	
Approach Delay		32.7			50.7			19.4			10.1	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	9.9	22.8		15.5	56.6		30.3	45.0		4.8	23.2	
Queue Length 95th (m)	22.4	43.7		29.6	#84.9		60.5	63.9		10.7	33.3	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	199	606		284	440		409	1761		520	2112	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.26		0.33	0.72		0.54	0.40		0.12	0.24	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.4	Intersection LOS: C

Intersection Capacity Utilization 78.7% 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: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Future Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.97	1.00		0.91	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		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)	1764	1774		1716	1817		1607	3404		1753	3473	
Flt Permitted	0.22	1.00		0.66	1.00		0.47	1.00		0.30	1.00	
Satd. Flow (perm)	413	1774		1186	1817		794	3404		560	3473	
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)	66	124	35	94	281	34	219	615	81	62	476	23
RTOR Reduction (vph)	0	11	0	0	5	0	0	8	0	0	3	0
Lane Group Flow (vph)	66	148	0	94	310	0	219	688	0	62	496	0
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.4	29.4		20.9	20.9		50.0	50.0		59.9	59.9	
Effective Green, g (s)	29.4	29.4		20.9	20.9		50.0	50.0		59.9	59.9	
Actuated g/C Ratio	0.29	0.29		0.21	0.21		0.50	0.50		0.60	0.60	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	182	521		247	379		397	1702		405	2080	
v/s Ratio Prot	c0.02	0.08			c0.17			0.20		0.01	c0.14	
v/s Ratio Perm	0.09			0.08			c0.28			0.08		
v/c Ratio	0.36	0.28		0.38	0.82		0.55	0.40		0.15	0.24	
Uniform Delay, d1	27.1	27.2		34.0	37.7		17.3	15.7		9.1	9.4	
Progression Factor	1.33	1.28		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.3		1.0	12.9		5.4	0.7		0.2	0.3	
Delay (s)	37.4	35.0		35.0	50.6		22.7	16.4		9.3	9.6	
Level of Service	D	D		C	D		C	B		A	A	
Approach Delay (s)		35.7			47.0			17.9			9.6	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	78.7%	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)	2255	217	2	2123	507	6
Future Volume (vph)	2255	217	2	2123	507	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.86			0.99	0.95
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.064		0.950	
Satd. Flow (perm)	3539	1367	119	3539	1752	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		189				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2451	236	2	2308	551	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2451	236	2	2308	551	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	67.0	67.0	67.0	67.0	33.0	33.0
Total Split (%)	67.0%	67.0%	67.0%	67.0%	33.0%	33.0%
Maximum Green (s)	62.1	62.1	62.1	62.1	27.5	27.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	62.1	62.1	62.1	62.1	27.5	27.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.28	0.28
v/c Ratio	1.12	0.26	0.03	1.05	1.15	0.02
Control Delay	79.9	2.8	8.5	54.4	121.2	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.9	2.8	8.5	54.4	121.2	20.0
LOS	E	A	A	D	F	B
Approach Delay	73.1			54.4	119.9	
Approach LOS	E			D	F	
Queue Length 50th (m)	~288.6	3.3	0.1	~258.1	~127.9	0.4
Queue Length 95th (m)	#330.2	12.2	1.1	#299.8	#189.8	m2.6
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2197	920	73	2197	481	417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.26	0.03	1.05	1.15	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 70.0	Intersection LOS: E

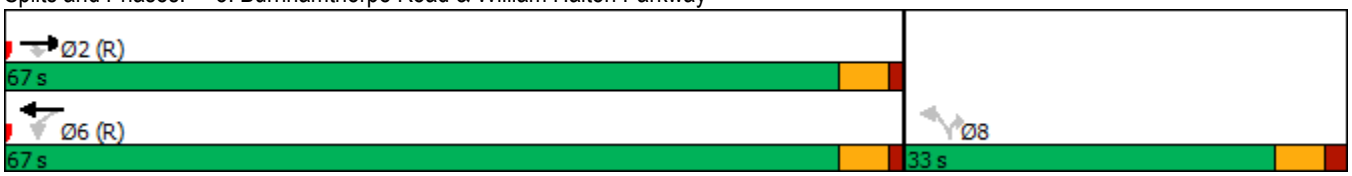
Intersection Capacity Utilization 99.1%	ICU Level of Service F
Analysis Period (min) 15	

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

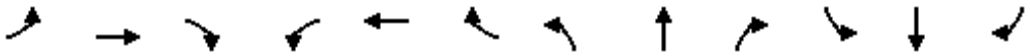
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2255	217	2	2123	507	6
Future Volume (vph)	2255	217	2	2123	507	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.86	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1367	1770	3539	1752	1507
Flt Permitted	1.00	1.00	0.06	1.00	0.95	1.00
Satd. Flow (perm)	3539	1367	120	3539	1752	1507
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2451	236	2	2308	551	7
RTOR Reduction (vph)	0	72	0	0	0	3
Lane Group Flow (vph)	2451	164	2	2308	551	4
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	62.1	62.1	62.1	62.1	27.5	27.5
Effective Green, g (s)	62.1	62.1	62.1	62.1	27.5	27.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.28	0.28
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2197	848	74	2197	481	414
v/s Ratio Prot	c0.69			0.65		
v/s Ratio Perm		0.12	0.02		c0.31	0.00
v/c Ratio	1.12	0.19	0.03	1.05	1.15	0.01
Uniform Delay, d1	18.9	8.2	7.3	18.9	36.2	26.4
Progression Factor	1.00	1.00	1.00	1.00	0.98	0.99
Incremental Delay, d2	59.0	0.5	0.7	34.1	86.8	0.0
Delay (s)	77.9	8.7	8.0	53.0	122.5	26.2
Level of Service	E	A	A	D	F	C
Approach Delay (s)	71.9			53.0	121.3	
Approach LOS	E			D	F	

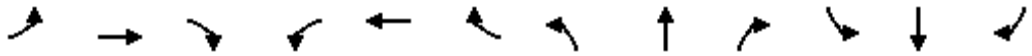
Intersection Summary			
HCM 2000 Control Delay	69.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
Future Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.881			0.946			0.998			0.966	
Flt Protected		0.998			0.989			0.989			0.998	
Satd. Flow (prot)	0	1638	0	0	1743	0	0	3493	0	0	3412	0
Flt Permitted		0.998			0.989			0.989			0.998	
Satd. Flow (perm)	0	1638	0	0	1743	0	0	3493	0	0	3412	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			101.2			268.3			412.8	
Travel Time (s)		6.7			7.3			19.3			29.7	
Confl. Peds. (#/hr)	45		30	30		45	136		30	30		136
Confl. Bikes (#/hr)			29			44			29			131
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	18	234	13	22	23	170	584	9	21	401	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	58	0	0	763	0	0	545	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

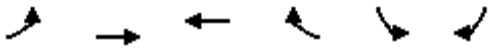
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	17	215	12	20	21	156	537	8	19	369	113
Future Volume (Veh/h)	12	17	215	12	20	21	156	537	8	19	369	113
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	18	234	13	22	23	170	584	9	21	401	123
Pedestrians		136			30			30			45	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.0			1.0			1.0			1.0	
Percent Blockage		14			3			3			4	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1352	1604	428	1474	1660	372	660			623		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1186	1463	428	1320	1526	107	660			384		
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 %	78	76	51	57	68	97	79			98		
cM capacity (veh/h)	58	75	482	30	69	780	798			1032		

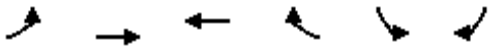
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	265	58	462	301	222	324
Volume Left	13	13	170	0	21	0
Volume Right	234	23	0	9	0	123
cSH	279	74	798	1700	1032	1700
Volume to Capacity	0.95	0.78	0.21	0.18	0.02	0.19
Queue Length 95th (m)	69.3	28.6	6.1	0.0	0.5	0.0
Control Delay (s)	81.6	143.8	5.7	0.0	1.0	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	81.6	143.8	3.4		0.4	
Approach LOS	F	F				

Intersection Summary				
Average Delay	20.1			
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	217	286	220	0	84
Future Volume (vph)	0	217	286	220	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.941			0.865
Flt Protected						
Satd. Flow (prot)	0	1863	1753	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	1863	1753	0	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Confl. Peds. (#/hr)				106		
Confl. Bikes (#/hr)				102		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	236	311	239	0	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	550	0	0	91
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	217	286	220	0	84
Future Volume (Veh/h)	0	217	286	220	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	236	311	239	0	91
Pedestrians					106	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.0	
Percent Blockage					11	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	656				772	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	434				581	283
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	83
cM capacity (veh/h)	797				337	535

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	236	550	91
Volume Left	0	0	0
Volume Right	0	239	91
cSH	1700	1700	535
Volume to Capacity	0.14	0.32	0.17
Queue Length 95th (m)	0.0	0.0	4.6
Control Delay (s)	0.0	0.0	13.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2205	66	99	2106	9	13
Future Volume (vph)	2205	66	99	2106	9	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.996					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3525	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3525	0	1770	3539	1770	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2397	72	108	2289	10	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2469	0	108	2289	10	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

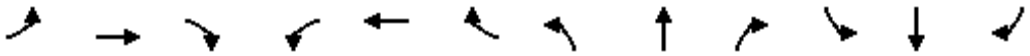
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2205	66	99	2106	9	13
Future Volume (Veh/h)	2205	66	99	2106	9	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2397	72	108	2289	10	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2469		3794	1234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2469		3794	1234
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			42		0	92
cM capacity (veh/h)			185		1	168

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1598	871	108	1144	1144	10	14
Volume Left	0	0	108	0	0	10	0
Volume Right	0	72	0	0	0	0	14
cSH	1700	1700	185	1700	1700	1	168
Volume to Capacity	0.94	0.51	0.58	0.67	0.67	8.36	0.08
Queue Length 95th (m)	0.0	0.0	24.1	0.0	0.0	Err	2.0
Control Delay (s)	0.0	0.0	48.8	0.0	0.0	Err	28.3
Lane LOS			E			F	D
Approach Delay (s)	0.0		2.2			4182.8	
Approach LOS						F	

Intersection Summary				
Average Delay	21.6			
Intersection Capacity Utilization	81.9%	ICU Level of Service		D
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Future Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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	0.98	0.99		0.97	0.99		0.91	0.98		0.96	0.99	
Frt		0.967			0.984			0.983			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1775	0	1770	1819	0	1770	3403	0	1770	3472	0
Flt Permitted	0.230			0.656			0.469			0.305		
Satd. Flow (perm)	421	1775	0	1185	1819	0	794	3403	0	548	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			6			18			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
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
Adj. Flow (vph)	66	124	35	94	281	34	219	615	81	62	476	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	159	0	94	315	0	219	696	0	62	499	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

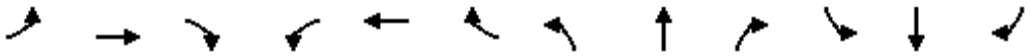


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	40.5		31.0	31.0		49.4	49.4		10.1	59.5	
Total Split (%)	9.5%	40.5%		31.0%	31.0%		49.4%	49.4%		10.1%	59.5%	
Maximum Green (s)	5.5	34.9		25.4	25.4		44.3	44.3		6.1	54.4	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	30.5	28.9		21.3	21.3		52.0	52.0		61.5	60.4	
Actuated g/C Ratio	0.30	0.29		0.21	0.21		0.52	0.52		0.62	0.60	
v/c Ratio	0.33	0.30		0.37	0.80		0.53	0.39		0.15	0.24	
Control Delay	26.8	24.6		36.9	52.2		25.3	16.8		10.5	10.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.8	24.6		36.9	52.2		25.3	16.8		10.5	10.4	
LOS	C	C		D	D		C	B		B	B	
Approach Delay		25.3			48.7			18.9			10.4	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	8.8	20.5		15.5	56.7		30.1	44.6		4.8	23.0	
Queue Length 95th (m)	17.2	34.6		28.9	83.1		59.0	62.1		11.0	34.5	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	202	629		300	466		413	1779		414	2100	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.25		0.31	0.68		0.53	0.39		0.15	0.24	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 23.1	Intersection LOS: C

Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Future Volume (vph)	64	120	34	91	273	33	212	597	79	60	462	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.97	1.00		0.91	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		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)	1764	1774		1716	1817		1607	3404		1752	3473	
Flt Permitted	0.23	1.00		0.66	1.00		0.47	1.00		0.30	1.00	
Satd. Flow (perm)	426	1774		1186	1817		794	3404		562	3473	
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)	66	124	35	94	281	34	219	615	81	62	476	23
RTOR Reduction (vph)	0	11	0	0	5	0	0	9	0	0	3	0
Lane Group Flow (vph)	66	148	0	94	310	0	219	687	0	62	496	0
Confl. Peds. (#/hr)	30		30	30		30	121		76	76		121
Confl. Bikes (#/hr)			29			29			73			117
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.7	29.7		21.3	21.3		50.4	50.4		59.6	59.6	
Effective Green, g (s)	29.7	29.7		21.3	21.3		50.4	50.4		59.6	59.6	
Actuated g/C Ratio	0.30	0.30		0.21	0.21		0.50	0.50		0.60	0.60	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	185	526		252	387		400	1715		396	2069	
v/s Ratio Prot	c0.02	0.08			c0.17			0.20		0.01	c0.14	
v/s Ratio Perm	0.09			0.08			c0.28			0.08		
v/c Ratio	0.36	0.28		0.37	0.80		0.55	0.40		0.16	0.24	
Uniform Delay, d1	26.9	27.0		33.6	37.3		17.0	15.4		9.2	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.3		0.9	11.3		5.3	0.7		0.2	0.3	
Delay (s)	28.1	27.3		34.6	48.7		22.3	16.1		9.4	9.8	
Level of Service	C	C		C	D		C	B		A	A	
Approach Delay (s)		27.5			45.4			17.6			9.7	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	78.7%	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)	2255	217	2	2123	507	6
Future Volume (vph)	2255	217	2	2123	507	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.84			0.99	0.95
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.053		0.950	
Satd. Flow (perm)	3539	1337	99	3539	1748	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		159				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2451	236	2	2308	551	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2451	236	2	2308	551	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	80.0	80.0	80.0	80.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)	75.1	75.1	75.1	75.1	34.5	34.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	75.1	75.1	75.1	75.1	34.5	34.5
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.29	0.29
v/c Ratio	1.11	0.26	0.03	1.04	1.10	0.02
Control Delay	79.1	4.1	10.0	54.5	110.0	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.1	4.1	10.0	54.5	110.0	23.2
LOS	E	A	A	D	F	C
Approach Delay	72.5			54.4	108.9	
Approach LOS	E			D	F	
Queue Length 50th (m)	~346.5	6.7	0.2	~309.6	~146.9	0.5
Queue Length 95th (m)	#386.7	16.9	1.4	#350.6	#213.0	4.1
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2214	896	61	2214	502	434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.26	0.03	1.04	1.10	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 68.6	Intersection LOS: E

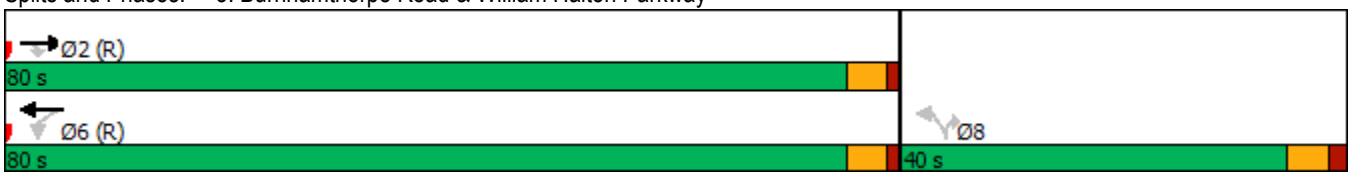
Intersection Capacity Utilization 99.1% ICU Level of Service F

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.

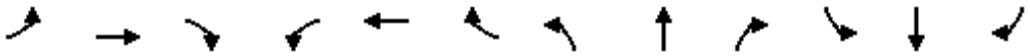
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2255	217	2	2123	507	6
Future Volume (vph)	2255	217	2	2123	507	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.84	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1337	1770	3539	1748	1500
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3539	1337	99	3539	1748	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2451	236	2	2308	551	7
RTOR Reduction (vph)	0	59	0	0	0	3
Lane Group Flow (vph)	2451	177	2	2308	551	4
Confl. Peds. (#/hr)		36	36		6	15
Confl. Bikes (#/hr)		35				15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	75.1	75.1	75.1	75.1	34.5	34.5
Effective Green, g (s)	75.1	75.1	75.1	75.1	34.5	34.5
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.29	0.29
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2214	836	61	2214	502	431
v/s Ratio Prot	c0.69			0.65		
v/s Ratio Perm		0.13	0.02		c0.32	0.00
v/c Ratio	1.11	0.21	0.03	1.04	1.10	0.01
Uniform Delay, d1	22.5	9.7	8.6	22.5	42.8	30.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.5	0.6	1.0	31.3	69.4	0.0
Delay (s)	77.9	10.3	9.6	53.7	112.2	30.6
Level of Service	E	B	A	D	F	C
Approach Delay (s)	72.0			53.7	111.2	
Approach LOS	E			D	F	

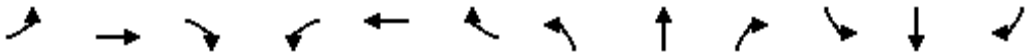
Intersection Summary			
HCM 2000 Control Delay	68.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
Future Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
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	75.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.881			0.946			0.998			0.966	
Flt Protected		0.998			0.989			0.989			0.998	
Satd. Flow (prot)	0	1638	0	0	1743	0	0	3493	0	0	3412	0
Flt Permitted		0.998			0.989			0.989			0.998	
Satd. Flow (perm)	0	1638	0	0	1743	0	0	3493	0	0	3412	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			101.2			268.3			412.8	
Travel Time (s)		6.7			7.3			19.3			29.7	
Confl. Peds. (#/hr)	45		30	30		45	136		30	30		136
Confl. Bikes (#/hr)			29			44			29			131
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	18	234	13	22	23	170	584	9	21	401	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	58	0	0	763	0	0	545	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
Future Volume (vph)	12	17	215	12	20	21	156	537	8	19	369	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	18	234	13	22	23	170	584	9	21	401	123

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	265	58	462	301	222	324
Volume Left (vph)	13	13	170	0	21	0
Volume Right (vph)	234	23	0	9	0	123
Hadj (s)	-0.49	-0.16	0.22	0.01	0.08	-0.23
Departure Headway (s)	6.4	7.5	6.7	6.5	6.9	6.6
Degree Utilization, x	0.47	0.12	0.86	0.55	0.43	0.59
Capacity (veh/h)	543	437	528	542	505	523
Control Delay (s)	14.9	11.5	37.7	15.9	13.7	17.5
Approach Delay (s)	14.9	11.5	29.1		16.0	
Approach LOS	B	B	D		C	

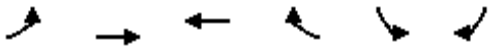
Intersection Summary				
Delay	21.8			
Level of Service	C			
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	17	215	12	20	21	156	537	8	19	369	113
Future Vol, veh/h	12	17	215	12	20	21	156	537	8	19	369	113
Peak Hour Factor	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	2	2	2	2	2	2	2
Mvmt Flow	13	18	234	13	22	23	170	584	9	21	401	123
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

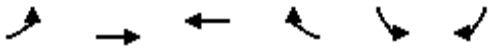
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	15.3	11.7	30.6	17
HCM LOS	C	B	D	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	37%	0%	5%	23%	9%	0%
Vol Thru, %	63%	97%	7%	38%	91%	62%
Vol Right, %	0%	3%	88%	40%	0%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	425	277	244	53	204	298
LT Vol	156	0	12	12	19	0
Through Vol	269	269	17	20	185	185
RT Vol	0	8	215	21	0	113
Lane Flow Rate	461	301	265	58	221	323
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.869	0.548	0.478	0.122	0.426	0.594
Departure Headway (Hd)	6.778	6.569	6.493	7.61	6.932	6.612
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	535	550	557	471	520	546
Service Time	4.494	4.285	4.506	5.659	4.67	4.35
HCM Lane V/C Ratio	0.862	0.547	0.476	0.123	0.425	0.592
HCM Control Delay	39.4	17	15.3	11.7	14.7	18.6
HCM Lane LOS	E	C	C	B	B	C
HCM 95th-tile Q	9.5	3.3	2.6	0.4	2.1	3.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	217	286	220	0	84
Future Volume (vph)	0	217	286	220	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.941			0.865
Flt Protected						
Satd. Flow (prot)	0	1863	1753	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	1863	1753	0	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Confl. Peds. (#/hr)				106		
Confl. Bikes (#/hr)				102		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	236	311	239	0	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	550	0	0	91
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	217	286	220	0	84
Future Volume (Veh/h)	0	217	286	220	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	236	311	239	0	91
Pedestrians					106	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.0	
Percent Blockage					11	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	656				772	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436				583	286
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	83
cM capacity (veh/h)	797				337	534

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	236	550	91
Volume Left	0	0	0
Volume Right	0	239	91
cSH	1700	1700	534
Volume to Capacity	0.14	0.32	0.17
Queue Length 95th (m)	0.0	0.0	4.6
Control Delay (s)	0.0	0.0	13.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2205	66	99	2106	9	13
Future Volume (vph)	2205	66	99	2106	9	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.996					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3525	0	1770	3539	1770	1583
Flt Permitted			0.046		0.950	
Satd. Flow (perm)	3525	0	86	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					14
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2397	72	108	2289	10	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2469	0	108	2289	10	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	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	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases			8		2	2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0

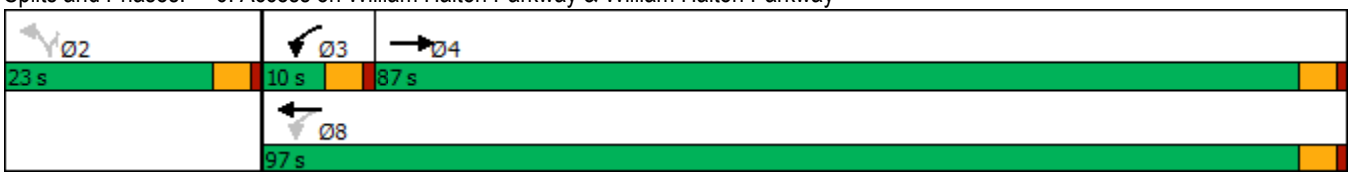
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5
Total Split (s)	87.0		10.0	97.0	23.0	23.0
Total Split (%)	72.5%		8.3%	80.8%	19.2%	19.2%
Maximum Green (s)	82.5		5.5	92.5	18.5	18.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	82.5		92.5	92.5	18.5	18.5
Actuated g/C Ratio	0.69		0.77	0.77	0.15	0.15
v/c Ratio	1.02		0.76	0.84	0.04	0.05
Control Delay	42.4		50.9	12.7	43.8	20.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	42.4		50.9	12.7	43.8	20.1
LOS	D		D	B	D	C
Approach Delay	42.4			14.4	30.0	
Approach LOS	D			B	C	
Queue Length 50th (m)	~323.9		9.5	155.2	2.0	0.0
Queue Length 95th (m)	#364.8		#38.6	190.2	7.0	6.0
Internal Link Dist (m)	886.1			87.6	47.0	
Turn Bay Length (m)						
Base Capacity (vph)	2425		143	2727	272	255
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	1.02		0.76	0.84	0.04	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 84.0%		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: 6: Access on William Halton Parkway & William Halton Parkway

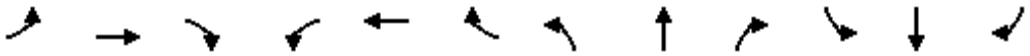


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2205	66	99	2106	9	13
Future Volume (vph)	2205	66	99	2106	9	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3524		1770	3539	1770	1583
Flt Permitted	1.00		0.05	1.00	0.95	1.00
Satd. Flow (perm)	3524		86	3539	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2397	72	108	2289	10	14
RTOR Reduction (vph)	2	0	0	0	0	12
Lane Group Flow (vph)	2467	0	108	2289	10	2
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases			8		2	2
Actuated Green, G (s)	82.5		92.5	92.5	18.5	18.5
Effective Green, g (s)	82.5		92.5	92.5	18.5	18.5
Actuated g/C Ratio	0.69		0.77	0.77	0.15	0.15
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2422		143	2727	272	244
v/s Ratio Prot	c0.70		0.03	c0.65		
v/s Ratio Perm			0.55		c0.01	0.00
v/c Ratio	1.02		0.76	0.84	0.04	0.01
Uniform Delay, d1	18.8		38.2	8.9	43.2	43.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	23.1		20.0	2.4	0.3	0.1
Delay (s)	41.9		58.3	11.4	43.4	43.1
Level of Service	D		E	B	D	D
Approach Delay (s)	41.9			13.5	43.2	
Approach LOS	D			B	D	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	84.0%	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)	27	75	41	139	304	22	106	532	77	72	760	24
Future Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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	0.99		0.99	1.00		0.98	0.99		0.99	1.00	
Frt		0.947			0.990			0.981			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1727	0	1750	1820	0	1750	3400	0	1750	3472	0
Flt Permitted	0.194			0.677			0.338			0.325		
Satd. Flow (perm)	356	1727	0	1235	1820	0	612	3400	0	592	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			3			18			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
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
Adj. Flow (vph)	29	80	44	148	323	23	113	566	82	77	809	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	124	0	148	346	0	113	648	0	77	835	0
Enter Blocked Intersection	No	No	No	No	No	No	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	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.6	39.2		29.6	29.6		41.8	41.8		19.0	60.8	
Total Split (%)	9.6%	39.2%		29.6%	29.6%		41.8%	41.8%		19.0%	60.8%	
Maximum Green (s)	5.6	33.6		24.0	24.0		36.7	36.7		15.0	55.7	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	29.4	27.8		22.1	22.1		52.0	52.0		62.6	61.5	
Actuated g/C Ratio	0.29	0.28		0.22	0.22		0.52	0.52		0.63	0.62	
v/c Ratio	0.16	0.25		0.54	0.86		0.36	0.36		0.17	0.39	
Control Delay	30.6	25.4		42.1	57.8		22.4	16.7		10.0	11.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.6	25.4		42.1	57.8		22.4	16.7		10.0	11.4	
LOS	C	C		D	E		C	B		A	B	
Approach Delay		26.4			53.1			17.6			11.3	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	4.1	13.9		24.9	62.5		14.6	42.8		6.3	46.4	
Queue Length 95th (m)	11.8	32.2		44.3	#104.3		31.4	59.4		12.7	60.2	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	182	600		296	439		318	1778		543	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	0.21		0.50	0.79		0.36	0.36		0.14	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 23.2		Intersection LOS: C	

Intersection Capacity Utilization 69.0% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Future Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
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	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		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)	1749	1726		1733	1820		1719	3403		1744	3473	
Flt Permitted	0.19	1.00		0.68	1.00		0.34	1.00		0.32	1.00	
Satd. Flow (perm)	358	1726		1236	1820		611	3403		596	3473	
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)	29	80	44	148	323	23	113	566	82	77	809	26
RTOR Reduction (vph)	0	21	0	0	2	0	0	9	0	0	2	0
Lane Group Flow (vph)	29	103	0	148	344	0	113	639	0	77	833	0
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.5	29.5		22.1	22.1		49.6	49.6		59.8	59.8	
Effective Green, g (s)	29.5	29.5		22.1	22.1		49.6	49.6		59.8	59.8	
Actuated g/C Ratio	0.29	0.29		0.22	0.22		0.50	0.50		0.60	0.60	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	509		273	402		303	1687		427	2076	
v/s Ratio Prot	0.01	c0.06			c0.19			0.19		0.01	c0.24	
v/s Ratio Perm	0.05			0.12			0.19			0.10		
v/c Ratio	0.19	0.20		0.54	0.85		0.37	0.38		0.18	0.40	
Uniform Delay, d1	26.7	26.4		34.5	37.4		15.6	15.6		9.1	10.6	
Progression Factor	1.29	1.27		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		2.2	16.1		3.5	0.6		0.2	0.6	
Delay (s)	35.1	33.6		36.7	53.5		19.1	16.3		9.3	11.2	
Level of Service	D	C		D	D		B	B		A	B	
Approach Delay (s)		33.9			48.5			16.7			11.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	69.0%	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)	2152	270	6	2165	501	4
Future Volume (vph)	2152	270	6	2165	501	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.94			1.00	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.062		0.950	
Satd. Flow (perm)	3500	1478	114	3500	1744	1527
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		263				4
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	293	7	2353	545	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2339	293	7	2353	545	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	69.5	69.5	69.5	69.5	30.5	30.5
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%
Maximum Green (s)	64.6	64.6	64.6	64.6	25.0	25.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	64.6	64.6	64.6	64.6	25.0	25.0
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.25	0.25
v/c Ratio	1.03	0.28	0.10	1.04	1.25	0.01
Control Delay	47.5	2.0	10.3	49.6	163.7	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	2.0	10.3	49.6	163.7	18.5
LOS	D	A	B	D	F	B
Approach Delay	42.5			49.5	162.6	
Approach LOS	D			D	F	
Queue Length 50th (m)	~257.9	1.9	0.5	~260.9	~136.5	0.3
Queue Length 95th (m)	#299.5	10.6	2.5	#302.7 m	#196.7	m0.9
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2261	1047	73	2261	436	384
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.28	0.10	1.04	1.25	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 57.4	Intersection LOS: E

Intersection Capacity Utilization 96.3% ICU Level of Service F

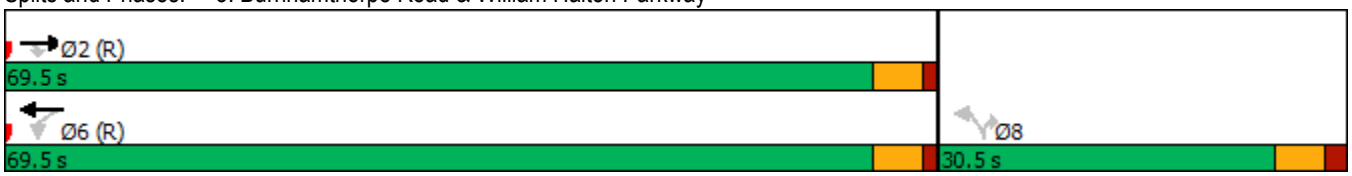
Analysis Period (min) 15

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

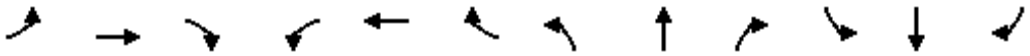
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2152	270	6	2165	501	4
Future Volume (vph)	2152	270	6	2165	501	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.94	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1478	1750	3500	1744	1527
Flt Permitted	1.00	1.00	0.06	1.00	0.95	1.00
Satd. Flow (perm)	3500	1478	114	3500	1744	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	293	7	2353	545	4
RTOR Reduction (vph)	0	93	0	0	0	3
Lane Group Flow (vph)	2339	200	7	2353	545	1
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	64.6	64.6	64.6	64.6	25.0	25.0
Effective Green, g (s)	64.6	64.6	64.6	64.6	25.0	25.0
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.25	0.25
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2261	954	73	2261	436	381
v/s Ratio Prot	0.67			c0.67		
v/s Ratio Perm		0.14	0.06		c0.31	0.00
v/c Ratio	1.03	0.21	0.10	1.04	1.25	0.00
Uniform Delay, d1	17.7	7.2	6.7	17.7	37.5	28.1
Progression Factor	1.00	1.00	1.00	1.00	1.05	1.03
Incremental Delay, d2	28.5	0.5	2.6	30.5	128.7	0.0
Delay (s)	46.2	7.7	9.3	48.2	168.0	29.0
Level of Service	D	A	A	D	F	C
Approach Delay (s)	41.9			48.1	167.0	
Approach LOS	D			D	F	

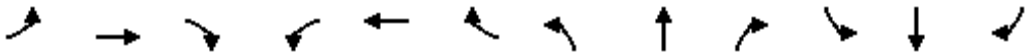
Intersection Summary			
HCM 2000 Control Delay	57.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
Future Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.887			0.921			0.997			0.992	
Flt Protected		0.995			0.988			0.996			0.999	
Satd. Flow (prot)	0	1626	0	0	1676	0	0	3475	0	0	3468	0
Flt Permitted		0.995			0.988			0.996			0.999	
Satd. Flow (perm)	0	1626	0	0	1676	0	0	3475	0	0	3468	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			412.8	
Travel Time (s)		6.7			5.9			19.3			29.7	
Confl. Peds. (#/hr)	14		9	9		14	42		9	9		42
Confl. Bikes (#/hr)			9			14			9			41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	17	214	12	9	30	59	579	15	14	714	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	51	0	0	653	0	0	767	0
Enter Blocked Intersection	No	No	No	No	No	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			Free			Free	

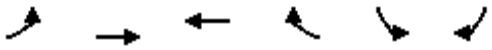
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	16	197	11	8	28	54	533	14	13	657	36
Future Volume (Veh/h)	22	16	197	11	8	28	54	533	14	13	657	36
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	17	214	12	9	30	59	579	15	14	714	39
Pedestrians		42			9			9			14	
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		4			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								268				
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1260	1524	428	1330	1536	320	795			603		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1114	1401	428	1190	1414	96	795			403		
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 %	79	85	61	81	92	96	93			99		
cM capacity (veh/h)	116	111	547	63	109	850	789			1054		

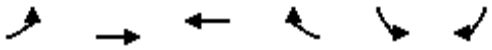
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	255	51	348	304	371	396
Volume Left	24	12	59	0	14	0
Volume Right	214	30	0	15	0	39
cSH	339	165	789	1700	1054	1700
Volume to Capacity	0.75	0.31	0.07	0.18	0.01	0.23
Queue Length 95th (m)	44.3	9.4	1.8	0.0	0.3	0.0
Control Delay (s)	41.6	36.2	2.4	0.0	0.5	0.0
Lane LOS	E	E	A		A	
Approach Delay (s)	41.6	36.2	1.3		0.2	
Approach LOS	E	E				

Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	143	362	71	0	93
Future Volume (vph)	0	143	362	71	0	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1802	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1802	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Confl. Peds. (#/hr)				33		
Confl. Bikes (#/hr)				32		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	155	393	77	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	155	470	0	0	101
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 36.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	143	362	71	0	93
Future Volume (Veh/h)	0	143	362	71	0	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	155	393	77	0	101
Pedestrians					33	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.82				0.82	0.82
vC, conflicting volume	503				620	464
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288				430	241
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	84
cM capacity (veh/h)	1014				464	635

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	155	470	101
Volume Left	0	0	0
Volume Right	0	77	101
cSH	1700	1700	635
Volume to Capacity	0.09	0.28	0.16
Queue Length 95th (m)	0.0	0.0	4.3
Control Delay (s)	0.0	0.0	11.7
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

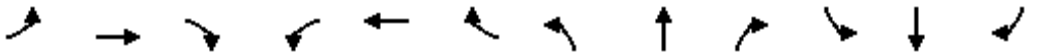
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2141	9	14	2121	56	85
Future Volume (vph)	2141	9	14	2121	56	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3496	0	1750	3500	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3496	0	1750	3500	1750	1566
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2327	10	15	2305	61	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2337	0	15	2305	61	92
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	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

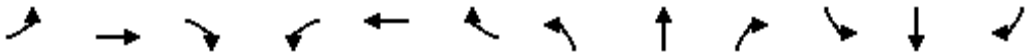
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2141	9	14	2121	56	85
Future Volume (Veh/h)	2141	9	14	2121	56	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2327	10	15	2305	61	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2337		3514	1168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2337		3514	1168
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		0	51
cM capacity (veh/h)			208		4	186

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1551	786	15	1152	1152	61	92
Volume Left	0	0	15	0	0	61	0
Volume Right	0	10	0	0	0	0	92
cSH	1700	1700	208	1700	1700	4	186
Volume to Capacity	0.91	0.46	0.07	0.68	0.68	14.38	0.49
Queue Length 95th (m)	0.0	0.0	1.8	0.0	0.0	Err	18.5
Control Delay (s)	0.0	0.0	23.6	0.0	0.0	Err	41.9
Lane LOS			C			F	E
Approach Delay (s)	0.0		0.2			4011.7	
Approach LOS						F	

Intersection Summary			
Average Delay	127.7		
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Future Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	50.0		40.0	50.0		20.0	60.0		15.0
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	0.99		0.99	1.00		0.98	0.99		0.99	1.00	
Frt		0.947			0.990			0.981			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1727	0	1750	1820	0	1750	3401	0	1750	3472	0
Flt Permitted	0.224			0.677			0.338			0.321		
Satd. Flow (perm)	411	1727	0	1235	1820	0	612	3401	0	585	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			4			19			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		169.9			629.3			302.6			268.3	
Travel Time (s)		12.2			45.3			21.8			19.3	
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
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
Adj. Flow (vph)	29	80	44	148	323	23	113	566	82	77	809	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	124	0	148	346	0	113	648	0	77	835	0
Enter Blocked Intersection	No	No	No	No	No	No	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	

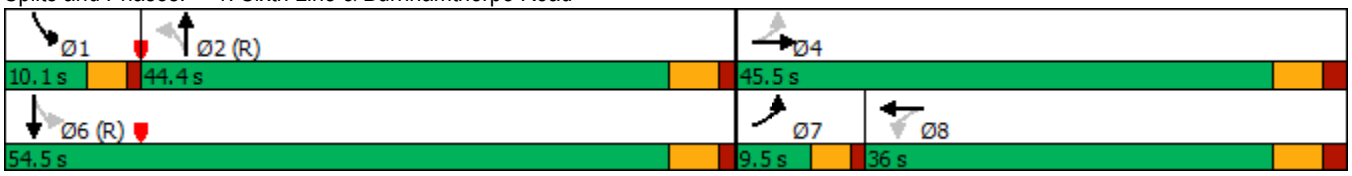


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	1.0		5.0	5.0	
Minimum Split (s)	9.5	29.6		29.6	29.6		38.1	38.1		10.1	38.1	
Total Split (s)	9.5	45.5		36.0	36.0		44.4	44.4		10.1	54.5	
Total Split (%)	9.5%	45.5%		36.0%	36.0%		44.4%	44.4%		10.1%	54.5%	
Maximum Green (s)	5.5	39.9		30.4	30.4		39.3	39.3		6.1	49.4	
Yellow Time (s)	3.0	3.7		3.7	3.7		3.7	3.7		3.0	3.7	
All-Red Time (s)	1.0	1.9		1.9	1.9		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)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
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	
Flash Dont Walk (s)		17.0		17.0	17.0		26.0	26.0			26.0	
Pedestrian Calls (#/hr)		0		0	0		0	0			0	
Act Effct Green (s)	31.1	29.5		23.8	23.8		51.0	51.0		60.9	59.8	
Actuated g/C Ratio	0.31	0.30		0.24	0.24		0.51	0.51		0.61	0.60	
v/c Ratio	0.14	0.23		0.51	0.80		0.36	0.37		0.18	0.40	
Control Delay	21.4	17.8		38.1	48.6		24.1	17.8		11.6	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.4	17.8		38.1	48.6		24.1	17.8		11.6	12.9	
LOS	C	B		D	D		C	B		B	B	
Approach Delay		18.5			45.5			18.7			12.8	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	3.7	12.3		24.8	62.3		14.6	42.7		6.3	46.5	
Queue Length 95th (m)	8.6	22.7		40.2	86.1		33.3	62.8		14.9	70.1	
Internal Link Dist (m)		145.9			605.3			278.6			244.3	
Turn Bay Length (m)	60.0			50.0			50.0			60.0		
Base Capacity (vph)	201	708		375	556		312	1743		436	2078	
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	0.18		0.39	0.62		0.36	0.37		0.18	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 22.1	Intersection LOS: C

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

Splits and Phases: 1: Sixth Line & Burnhamthorpe Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Future Volume (vph)	27	75	41	139	304	22	106	532	77	72	760	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
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	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		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)	1748	1726		1733	1820		1719	3403		1744	3473	
Flt Permitted	0.22	1.00		0.68	1.00		0.34	1.00		0.32	1.00	
Satd. Flow (perm)	413	1726		1236	1820		611	3403		590	3473	
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)	29	80	44	148	323	23	113	566	82	77	809	26
RTOR Reduction (vph)	0	23	0	0	3	0	0	10	0	0	2	0
Lane Group Flow (vph)	29	101	0	148	343	0	113	638	0	77	833	0
Confl. Peds. (#/hr)	9		9	9		9	37		23	23		37
Confl. Bikes (#/hr)			9			9			23			36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	31.1	31.1		23.8	23.8		48.6	48.6		58.2	58.2	
Effective Green, g (s)	31.1	31.1		23.8	23.8		48.6	48.6		58.2	58.2	
Actuated g/C Ratio	0.31	0.31		0.24	0.24		0.49	0.49		0.58	0.58	
Clearance Time (s)	4.0	5.6		5.6	5.6		5.1	5.1		4.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	536		294	433		296	1653		408	2021	
v/s Ratio Prot	0.01	c0.06			c0.19			0.19		0.01	c0.24	
v/s Ratio Perm	0.05			0.12			0.19			0.10		
v/c Ratio	0.17	0.19		0.50	0.79		0.38	0.39		0.19	0.41	
Uniform Delay, d1	25.5	25.2		33.0	35.8		16.2	16.3		9.8	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		1.4	9.6		3.7	0.7		0.2	0.6	
Delay (s)	26.0	25.4		34.3	45.3		19.9	16.9		10.0	12.1	
Level of Service	C	C		C	D		B	B		B	B	
Approach Delay (s)		25.5			42.0			17.4			11.9	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	69.0%	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)	2152	270	6	2165	501	4
Future Volume (vph)	2152	270	6	2165	501	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		75.0	75.0		150.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.93			1.00	0.97
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3500	1566	1750	3500	1750	1566
Flt Permitted			0.045		0.950	
Satd. Flow (perm)	3500	1459	83	3500	1742	1523
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		179				3
Link Speed (k/h)	50			50	50	
Link Distance (m)	165.7			125.2	87.0	
Travel Time (s)	11.9			9.0	6.3	
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	293	7	2353	545	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2339	293	7	2353	545	4
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	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	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)	0.6	2.0	2.0	0.6	2.0	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		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.9	22.9	22.9	22.9	23.5	23.5
Total Split (s)	93.0	93.0	93.0	93.0	47.0	47.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%
Maximum Green (s)	88.1	88.1	88.1	88.1	41.5	41.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.2	1.2	1.2	1.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	88.1	88.1	88.1	88.1	41.5	41.5
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.30	0.30
v/c Ratio	1.06	0.30	0.13	1.07	1.06	0.01
Control Delay	64.5	5.1	17.8	66.8	102.2	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	5.1	17.8	66.8	102.2	24.5
LOS	E	A	B	E	F	C
Approach Delay	57.9			66.7	101.6	
Approach LOS	E			E	F	
Queue Length 50th (m)	~374.2	12.0	0.7	~378.4	~164.8	0.2
Queue Length 95th (m)	#413.2	25.1	3.7	#417.4	#234.3	3.2
Internal Link Dist (m)	141.7			101.2	63.0	
Turn Bay Length (m)		75.0	75.0		150.0	
Base Capacity (vph)	2202	984	52	2202	516	453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.30	0.13	1.07	1.06	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 66.0	Intersection LOS: E

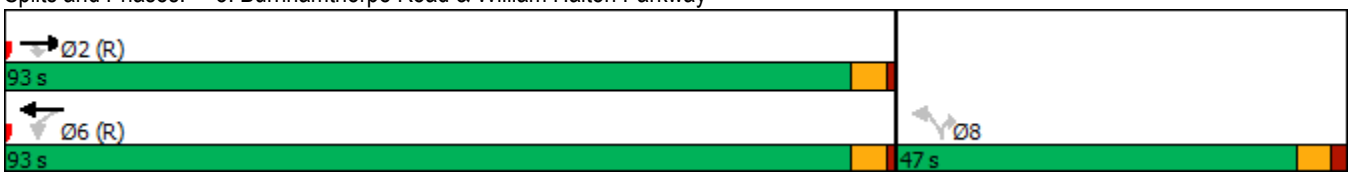
Intersection Capacity Utilization 96.3% ICU Level of Service F

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.

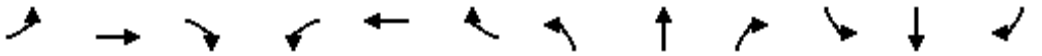
Splits and Phases: 3: Burnhamthorpe Road & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2152	270	6	2165	501	4
Future Volume (vph)	2152	270	6	2165	501	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.93	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1459	1750	3500	1742	1523
Flt Permitted	1.00	1.00	0.05	1.00	0.95	1.00
Satd. Flow (perm)	3500	1459	84	3500	1742	1523
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2339	293	7	2353	545	4
RTOR Reduction (vph)	0	66	0	0	0	2
Lane Group Flow (vph)	2339	227	7	2353	545	2
Confl. Peds. (#/hr)		11	11		2	5
Confl. Bikes (#/hr)		11				5
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	88.1	88.1	88.1	88.1	41.5	41.5
Effective Green, g (s)	88.1	88.1	88.1	88.1	41.5	41.5
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.30	0.30
Clearance Time (s)	4.9	4.9	4.9	4.9	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2202	918	52	2202	516	451
v/s Ratio Prot	0.67			c0.67		
v/s Ratio Perm		0.16	0.08		c0.31	0.00
v/c Ratio	1.06	0.25	0.13	1.07	1.06	0.00
Uniform Delay, d1	26.0	11.4	10.5	26.0	49.2	34.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.2	0.6	5.3	40.6	55.3	0.0
Delay (s)	64.2	12.0	15.8	66.5	104.5	34.7
Level of Service	E	B	B	E	F	C
Approach Delay (s)	58.4			66.4	104.0	
Approach LOS	E			E	F	

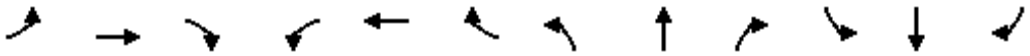
Intersection Summary			
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.4
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
Future Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.887			0.921			0.997			0.992	
Flt Protected		0.995			0.988			0.996			0.999	
Satd. Flow (prot)	0	1626	0	0	1676	0	0	3475	0	0	3468	0
Flt Permitted		0.995			0.988			0.996			0.999	
Satd. Flow (perm)	0	1626	0	0	1676	0	0	3475	0	0	3468	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		93.7			81.5			268.3			412.8	
Travel Time (s)		6.7			5.9			19.3			29.7	
Confl. Peds. (#/hr)	14		9	9		14	42		9	9		42
Confl. Bikes (#/hr)			9			14			9			41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	17	214	12	9	30	59	579	15	14	714	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	51	0	0	653	0	0	767	0
Enter Blocked Intersection	No	No	No	No	No	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 63.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
Future Volume (vph)	22	16	197	11	8	28	54	533	14	13	657	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	17	214	12	9	30	59	579	15	14	714	39

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	255	51	349	305	371	396
Volume Left (vph)	24	12	59	0	14	0
Volume Right (vph)	214	30	0	15	0	39
Hadj (s)	-0.45	-0.27	0.12	0.00	0.05	-0.03
Departure Headway (s)	6.5	7.5	6.9	6.8	6.7	6.6
Degree Utilization, x	0.46	0.11	0.67	0.57	0.69	0.73
Capacity (veh/h)	532	427	507	512	520	532
Control Delay (s)	14.8	11.4	21.4	17.2	22.0	23.9
Approach Delay (s)	14.8	11.4	19.5		23.0	
Approach LOS	B	B	C		C	

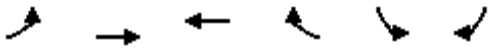
Intersection Summary				
Delay	20.1			
Level of Service	C			
Intersection Capacity Utilization	63.1%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	16	197	11	8	28	54	533	14	13	657	36
Future Vol, veh/h	22	16	197	11	8	28	54	533	14	13	657	36
Peak Hour Factor	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	2	2	2	2	2	2	2
Mvmt Flow	24	17	214	12	9	30	59	579	15	14	714	39
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

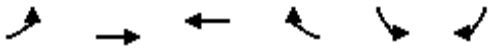
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	15.1	11.5	20.6	23.6
HCM LOS	C	B	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	17%	0%	9%	23%	4%	0%
Vol Thru, %	83%	95%	7%	17%	96%	90%
Vol Right, %	0%	5%	84%	60%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	321	281	235	47	342	365
LT Vol	54	0	22	11	13	0
Through Vol	267	267	16	8	329	329
RT Vol	0	14	197	28	0	36
Lane Flow Rate	348	305	255	51	371	396
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.67	0.576	0.462	0.108	0.683	0.719
Departure Headway (Hd)	6.924	6.802	6.51	7.61	6.738	6.648
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	526	534	549	473	538	547
Service Time	4.624	4.502	4.602	5.623	4.438	4.348
HCM Lane V/C Ratio	0.662	0.571	0.464	0.108	0.69	0.724
HCM Control Delay	22.6	18.3	15.1	11.5	22.7	24.5
HCM Lane LOS	C	C	C	B	C	C
HCM 95th-tile Q	4.9	3.6	2.4	0.4	5.2	5.9



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	143	362	71	0	93
Future Volume (vph)	0	143	362	71	0	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978			0.865
Flt Protected						
Satd. Flow (prot)	0	1842	1802	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	1842	1802	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		826.9	169.9		123.2	
Travel Time (s)		59.5	12.2		8.9	
Confl. Peds. (#/hr)				33		
Confl. Bikes (#/hr)				32		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	155	393	77	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	155	470	0	0	101
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	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	143	362	71	0	93
Future Volume (Veh/h)	0	143	362	71	0	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	155	393	77	0	101
Pedestrians					33	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			170			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	503				620	464
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292				433	245
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	84
cM capacity (veh/h)	1014				463	634

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	155	470	101
Volume Left	0	0	0
Volume Right	0	77	101
cSH	1700	1700	634
Volume to Capacity	0.09	0.28	0.16
Queue Length 95th (m)	0.0	0.0	4.3
Control Delay (s)	0.0	0.0	11.8
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.8
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

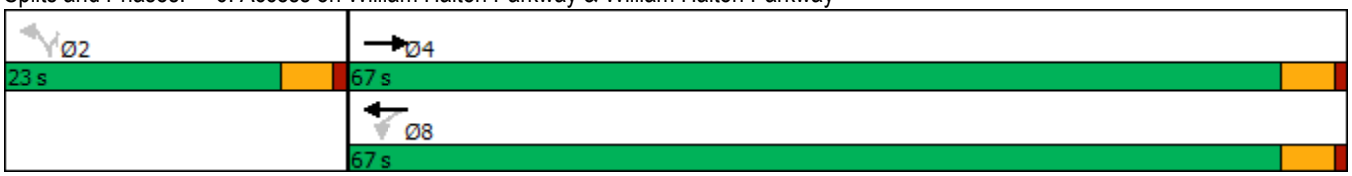
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2141	9	14	2121	56	85
Future Volume (vph)	2141	9	14	2121	56	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	75.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			15.0		15.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3496	0	1750	3500	1750	1566
Flt Permitted			0.065		0.950	
Satd. Flow (perm)	3496	0	120	3500	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					11
Link Speed (k/h)	50			50	50	
Link Distance (m)	910.1			111.6	71.0	
Travel Time (s)	65.5			8.0	5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2327	10	15	2305	61	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2337	0	15	2305	61	92
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		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	4		8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5
Total Split (s)	67.0		67.0	67.0	23.0	23.0
Total Split (%)	74.4%		74.4%	74.4%	25.6%	25.6%
Maximum Green (s)	62.5		62.5	62.5	18.5	18.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	62.0		62.0	62.0	18.5	18.5
Actuated g/C Ratio	0.69		0.69	0.69	0.21	0.21
v/c Ratio	0.96		0.18	0.95	0.17	0.28
Control Delay	25.5		10.8	23.3	31.0	29.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.5		10.8	23.3	31.0	29.1
LOS	C		B	C	C	C
Approach Delay	25.5			23.2	29.8	
Approach LOS	C			C	C	
Queue Length 50th (m)	168.6		0.8	161.7	8.7	11.8
Queue Length 95th (m)	#257.1		3.9	#250.2	19.1	25.1
Internal Link Dist (m)	886.1			87.6	47.0	
Turn Bay Length (m)			75.0			
Base Capacity (vph)	2441		83	2443	361	332
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	0.96		0.18	0.94	0.17	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 72.2%		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: 6: Access on William Halton Parkway & William Halton Parkway



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2141	9	14	2121	56	85
Future Volume (vph)	2141	9	14	2121	56	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3498		1750	3500	1750	1566
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	3498		119	3500	1750	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2327	10	15	2305	61	92
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	2337	0	15	2305	61	83
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	62.0		62.0	62.0	18.5	18.5
Effective Green, g (s)	62.0		62.0	62.0	18.5	18.5
Actuated g/C Ratio	0.69		0.69	0.69	0.21	0.21
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2423		82	2424	361	323
v/s Ratio Prot	c0.67			0.66		
v/s Ratio Perm			0.13		0.03	c0.05
v/c Ratio	0.96		0.18	0.95	0.17	0.26
Uniform Delay, d1	12.7		4.8	12.4	29.2	29.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1		1.1	9.3	1.0	1.9
Delay (s)	23.8		5.9	21.7	30.2	31.7
Level of Service	C		A	C	C	C
Approach Delay (s)	23.8			21.6	31.1	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2030 AM FT]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	73	2.0	1.009	86.1	LOS F	12.6	89.9	1.00	1.90	4.60	25.0
2	T1	284	2.0	1.009	86.0	LOS F	13.1	93.5	1.00	1.90	4.60	24.9
3	R2	373	2.0	1.009	82.7	LOS F	13.1	93.5	1.00	1.94	4.75	24.8
Approach		729	2.0	1.009	84.3	LOS F	13.1	93.5	1.00	1.92	4.68	24.9
East: William Halton												
4	L2	301	2.0	1.769	364.7	LOS F	233.8	1664.4	1.00	6.36	14.44	8.8
5	T1	2674	2.0	1.769	364.6	LOS F	237.6	1691.5	1.00	6.41	14.57	8.8
6	R2	66	2.0	1.769	364.5	LOS F	237.6	1691.5	1.00	6.46	14.68	8.7
Approach		3041	2.0	1.769	364.6	LOS F	237.6	1691.5	1.00	6.41	14.56	8.8
North: Sixth												
7	L2	56	2.0	0.577	30.5	LOS D	2.2	15.4	0.87	1.02	1.50	39.2
8	T1	256	2.0	0.577	29.3	LOS D	2.2	15.4	0.86	1.01	1.49	39.9
9	R2	43	2.0	0.577	28.3	LOS D	2.2	15.3	0.85	1.00	1.48	39.6
Approach		355	2.0	0.577	29.3	LOS D	2.2	15.4	0.86	1.01	1.49	39.8
West: William Halton												
10	L2	13	2.0	1.789	374.7	LOS F	212.8	1515.2	1.00	6.67	16.81	8.6
11	T1	2655	2.0	1.789	374.6	LOS F	217.6	1549.3	1.00	6.74	16.99	8.6
12	R2	139	2.0	1.789	374.4	LOS F	217.6	1549.3	1.00	6.81	17.19	8.5
Approach		2806	2.0	1.789	374.5	LOS F	217.6	1549.3	1.00	6.74	17.00	8.6
All Vehicles		6931	2.0	1.789	322.0	LOS F	237.6	1691.5	0.99	5.80	13.84	9.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [WH & 6th - 2030 PM FT]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sixth												
1	L2	39	2.0	0.814	44.8	LOS E	5.2	36.8	0.91	1.28	2.34	34.5
2	T1	305	2.0	0.814	44.4	LOS E	5.2	37.2	0.91	1.27	2.34	34.4
3	R2	282	2.0	0.814	42.3	LOS E	5.2	37.2	0.90	1.27	2.35	34.2
Approach		626	2.0	0.814	43.5	LOS E	5.2	37.2	0.91	1.27	2.34	34.4
East: William Halton												
4	L2	328	2.0	1.544	265.8	LOS F	169.4	1205.9	1.00	5.49	12.47	11.4
5	T1	2238	2.0	1.544	265.6	LOS F	172.2	1226.1	1.00	5.54	12.59	11.4
6	R2	51	2.0	1.544	265.5	LOS F	172.2	1226.1	1.00	5.57	12.68	11.3
Approach		2617	2.0	1.544	265.7	LOS F	172.2	1226.1	1.00	5.53	12.57	11.4
North: Sixth												
7	L2	22	2.0	0.492	25.0	LOS D	1.7	12.2	0.84	0.95	1.32	42.0
8	T1	281	2.0	0.492	24.0	LOS C	1.7	12.2	0.83	0.94	1.31	42.5
9	R2	12	2.0	0.492	23.2	LOS C	1.7	12.0	0.82	0.94	1.30	41.9
Approach		315	2.0	0.492	24.1	LOS C	1.7	12.2	0.83	0.94	1.31	42.4
West: William Halton												
10	L2	57	2.0	1.607	294.8	LOS F	163.1	1161.4	1.00	5.95	15.11	10.5
11	T1	2254	2.0	1.607	294.6	LOS F	167.0	1188.9	1.00	6.01	15.29	10.5
12	R2	149	2.0	1.607	294.4	LOS F	167.0	1188.9	1.00	6.07	15.47	10.4
Approach		2460	2.0	1.607	294.6	LOS F	167.0	1188.9	1.00	6.01	15.29	10.5
All Vehicles		6018	2.0	1.607	241.8	LOS F	172.2	1226.1	0.98	5.04	12.03	12.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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