TRANSPORTATION IMPACT STUDY

560 WINSTON CHURCHILL BOULEVARD

TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON
REGIONAL MUNICIPALITY OF PEEL

PREPARED FOR:

BLACKWOOD PARTNERS INC.

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC.
2800 HIGH POINT DRIVE, SUITE 100
MILTON, ON L9T 6P4

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CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev.0	July 2019	Issued for Review
Rev.1	July 2019	Issued for Submission
Rev.2	September 2020	Issued for Client Review
Rev.3	March 2021	Issued for Submission

1.0 Executive Summary

Blackwood Partners Inc. retained C.F. Crozier & Associates Inc. (Crozier) to undertake a Transportation Impact Study to support the Site Plan Application (SPA) for the proposed industrial development at 560 Winston Churchill Boulevard (site), in the Town of Oakville, Regional Municipality of Halton (Halton Region). The study aims to assess the impacts of the proposed development on the boundary road network and recommend required mitigation measures if warranted.

Per the Site Plan prepared by Baldassarra Architects Inc (Issued for Coordination on September 17, 2020), the elements envisioned for this development include three industrial use warehouse buildings with a combined GFA of 59,412.27 m^2, 417 at-ground parking spaces, one 2.14 acres of a Stormwater management facility and two accesses from Winston Churchill Boulevard.

Under existing conditions, the intersection of Royal Windsor Drive at Winston Churchill Boulevard operates at a Level of Service "C" during the weekday peak periods. The signalized intersection of Lakeshore Road at Winston Churchill Boulevard operates at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak periods.

Under the 2022 and 2027 future background conditions, the boundary road network is expected to operate well under capacity and with an acceptable Level of Services and delays. The intersection of Royal Windsor Drive at Winston Churchill Boulevard is projected to operate at a Level of Service "C" during the weekday peak periods. The signalized intersection of Lakeshore Road at Winston Churchill Boulevard operates at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak period. The intersections are expected to operate below capacity for the peak hours studied in this report.

To forecast the trips generated by the proposed development, the Institute of Transportation Engineers (ITE) 10th edition data was used. The proposed development is expected to generate approximately 86 and 96 total two-way passenger car trips during the weekday a.m. and p.m. peak hours, respectively, and approximately 22 and 25 total two-way heavy truck trips during the weekday a.m. and p.m. peak hours, respectively. These trips have been distributed per existing travel patterns and added to the future background to generate future total trips.

Under the 2022 and 2027 future total conditions, the boundary road network is expected to operate under capacity and with an acceptable Level of Services and delays. As indicated in Table 6, the intersection of Royal Windsor Drive at Winston Churchill Boulevard is projected to operate at a Level of Service "C" during the weekday a.m. and p.m. peak periods. The signalized intersection of Lakeshore Road at Winston Churchill Boulevard operates at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak period. The un-signalized intersection of Winston Churchill Boulevard at the North Site Access is anticipated to operate with a level of service "B" during the weekday a.m. and "C" during the weekday p.m. peak period. The un-signalized intersection of Winston Churchill Boulevard at the South Site Access is anticipated to operate with Level of Service "B" during the weekday a.m. and "A" during weekday p.m. peak periods.

The proposed total supply of 417 parking spaces exceeds the minimum requirement of 410 parking spaces for warehouses per Town of Oakville's By-Law 2014-014.

The development application can be supported from a traffic operations perspective.

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2.0 Introduction

Blackwood Partners Inc. retained C.F. Crozier & Associates Inc. (Crozier) to undertake a Transportation Impact Study to support the Site Plan Application (SPA) for the proposed industrial development at 560 Winston Churchill Boulevard (site) in the Town of Oakville, Regional Municipality of Halton (Halton Region). The study aims to assess the impacts of the proposed development on the boundary road network and recommend required mitigation measures if warranted.

The study has been completed following the procedures set out in Halton Regions Transportation Impact Study Guidelines (December 2015), Region of Peel's Transportation Impact Study Terms of Reference, and the Development Application Guidelines for Transportation Impact Analysis out by the Town of Oakville. A scope of work outlining the work plan for the study was sent to the Region of Peel, Halton Region, and the Town of Oakville Staff and is provided in Appendix A.

3.0 Existing Conditions

3.1 Development Lands and Proposal

The subject lands cover approximately 13 ha and currently consist of agricultural land with landscaped areas and some residential units. The property, located in a mostly industrial area, is bounded by an open lot to the north, mixed residential and landscaped areas to the south and west and Winston Churchill Boulevard to the east. Clearview Creek flows in an east-west manner to the north of the subject property.

Per the Site Plan prepared by Baldassarra Architects Inc (Issued for Coordination on September 17, 2020), the elements envisioned for this development include three industrial use warehouse buildings with a combined GFA of 59, 412.27 m^2, 417 at-ground parking spaces, one 2.14 acres of a Stormwater management facility and two accesses from Winston Churchill Boulevard. Refer to Figure 1 for the Site Plan.

3.2 Boundary Road Network

The boundary road network is summarized in Table 1 below.

Table 1: Boundary Road Network Summary

Road	Lanes	Posted Speed (km/h)	Classification	Jurisdiction
Winston Churchill Boulevard	2 (rural)	60 km/h	Regional Arterial	Regional Municipality of Halton / Regional Municipality of Peel
Lakeshore Road West (East of Winston Churchill Boulevard)	2 (urban)	60 km/h	Arterial	City of Mississauga
Lakeshore Road East (West of Winston Churchill Boulevard)	2 (urban)	60 km/h	Major Road	Town of Oakville
Deer Run Avenue	2 (emergency only)	40 km/h	Local Road	Town of Oakville

It is important to note that Deer Run Avenue is directly adjacent to the site and is only accessible by emergency vehicles from Winston Churchill Boulevard. The Deer Run Avenue intersection with Winston Churchill Boulevard is gated and not open to the Public

3.3 Traffic Data

Turning movement counts at the intersections of Royal Windsor Drive at Winston Churchill Boulevard were conducted by Spectrum Traffic Inc. on Wednesday, March 27, 2019, between the weekday a.m. peak hours of 7:00 a.m. and 9:00 a.m. and weekday p.m. peak hours of 4:00 p.m. and 7:00 p.m. under overcast conditions. There was no construction on the roadways during the turning movement counts collection.

Turning movement counts at the intersections of Lakeshore Road at Winston Churchill Boulevard were provided by Halton Region and were conducted on Wednesday, November 15, 2017, between the weekday a.m. peak hours of 7:00 a.m. and 9:00 a.m. and weekday p.m. peak hours of 3:00 p.m. and 6:00 p.m. under overcast/dry conditions.

The traffic data surveyed before 2021 were grown by using an industry-standard growth rate of two percent. Traffic data contained in Appendix B provides a summary of the turning movement counts. Refer to Figure 2 for the existing traffic volumes.

3.4 Traffic Modeling

The intersection assessment is based on the method outlined in the "Highway Capacity Manual, 2010" using Synchro 10 modelling software. Intersections are assessed using a Level of Service metric, with ranges of delay assigned a letter from "A" to "F". For stop-controlled intersections, a Level of Service "A" or "B" would typically be measured during off-peak hours when lesser traffic volumes are on the roadways. Levels of Service "C" through "F" would typically be measured in the commuter peak hours when greater vehicle volumes cause longer travel times. The Level of Service (LOS) definitions for signalized and stop-control intersections are included in Appendix C.

The boundary road network was modelled using the modelling parameters specified in the Region of Peel's "Regional Guidelines for Using Synchro Version 7.73 Rev 8". Table 2 summarizes the Synchro modelling parameters applied to the analysis.

Table 2: Synchro Modelling Parameters

Parameter	Region of Peel Guidelines
Ideal (base) saturation flow rate	1,900 veh/hr/lane
Lost Time [1]	Default Parameters (no adjustment)
Peak Hour Factor	1.00 for all intersections
Lane width	3.7 metres for through and shared through/turn lanes 3.5 metres for exclusive turn lanes

Note 1: Lost time refers to the total lost time for the respective phase (inter-green minus lost time adjustment).

3.5 Intersection Operations

The traffic operations at the study intersections were analyzed based on the traffic volumes recorded, shown in Figure 2. Detailed capacity analyses are included in Appendix D. The signal timings for the intersection of Royal Windsor Drive at Winston Churchill Boulevard and Lakeshore Road at Winston Churchill Boulevard were provided by Halton Region and can be found in Appendix B. Table 3 outlines the existing traffic Levels of Service.

Table 3: 2020 Existing Levels of Service

Intersection	Control	Peak Hour	Level of Service (Average Delay per Vehicle(s))	Max V/C and V/C Ratio(s) > 0.85 (Approach)
Royal Windsor Drive at Winston Churchill Boulevard	Signal	Weekday A.M.	C (27.3 s)	0.75 (SBL)
		Weekday P.M.	C (28.9 s)	0.65 (SBL&WBR)
Lakeshore Road at Winston Churchill Boulevard	Signal	Weekday A.M.	B (13.3 s)	0.59 (SBL)
		Weekday P.M.	A (6.3 s)	0.40 (SBR)

As indicated in Table 3, the intersection of Royal Windsor Drive at Winston Churchill Boulevard operates at a Level of Service "C" during the weekday a.m. and p.m. peak periods, with average delays per vehicle of 27.3 and 28.9 seconds respectively. A maximum volume-to-capacity ratio of 0.75 is observed for the southbound left-turn movement during the weekday a.m. peak period. No individual movements are operating with a volume to capacity ratio above 0.85.

The intersection of Lakeshore Road at Winston Churchill Boulevard operates at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak period, with average delays per vehicle of 13.3 and 6.3 seconds, respectively. A maximum volume-to-capacity ratio of 0.59 is observed for the southbound left-turn movement during the weekday a.m. peak period. No individual movements are operating with a volume to capacity ratio above 0.85.

Operational analyses of existing traffic volumes indicate that reserve capacity is available for future traffic volume growth on the boundary road network.

4.0 Future Background Conditions

Future background traffic volumes for the 2022 and 2027 horizon years consist of the following components:

- Background traffic growth from outside the study area
- Traffic generated within the study area from other proposed developments

4.1 Study Horizons

Per direction from Halton Region Staff, horizon years corresponding to the opening year and five years from the opening year were considered for the analysis. A study horizon year of 2022 and 2027 was selected to assess the development's full operations on the boundary road network.

4.2 Traffic Growth Rates

A 2.0% growth rate per annum was applied to all traffic during the weekday peak hours along Winston Churchill Boulevard. Figure 3 and Figure 4 illustrate the future background traffic volumes for the 2022 and 2027 horizon years, respectively, and reflect the traffic growth rate applied to Winston Churchill Boulevard's traffic volumes.

4.3 Background Developments

After reviewing the study area and the Town development application database, the following developments were identified adjacent to the study area:

1. Reference Number: 1602.013/01→ 2400 Cornwall Road

However, per discussions with the Town Staff, the development's site statistics did not warrant a Traffic Impact Study. Therefore, no additional traffic was included in the analysis.

Additionally, a proposed development is located directly north of the subject site at 772 Winston Churchill Boulevard but is not included in the analysis since no official application for the development has been submitted.

4.4 Intersection Operations

Traffic operations at the study intersections were analyzed with the growth rates and traffic from background developments. The future background volumes in the horizon years 2022 and 2027 are presented in Figure 3 and Figure 4, respectively. Table 4 outlines the future background Levels of Service. Detailed capacity analysis worksheets are included in Appendix D.

Table 4: Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service (Average Delay per Vehicle(s))		Max V/C and V/C Ratio(s) > 0.85 (Approach)	
			Horizon Year 2022	Horizon Year 2027	Horizon Year 2022	Horizon Year 2027
Royal Windsor Drive at Winston Churchill Boulevard	Signal	Weekday A.M.	C (27.8 s)	C (31.2 s)	0.76 (SBL)	0.78 (SBL)
		Weekday P.M.	C (29.4 s)	D (35.2 s)	0.67 (WBR)	0.77 (WBR)
Lakeshore Road at Winston Churchill Boulevard	Signal	Weekday A.M.	B (13.4 s)	B (14.0 s)	0.60 (SBL)	0.63 (SBL)
		Weekday P.M.	A (6.4 s)	A (6.7 s)	0.40 (SBR)	0.43 (SBR)

Note 1: The Level of Service of a Stop-Controlled intersection is based on the critical approach's delay. The Level of Service of a signalized intersection is based on the average control delay per vehicle.
Note 2: All v/c ratios greater than 0.85 are highlighted.

Under the 2022 and 2027 future background conditions, the boundary road network is expected to operate under capacity and with an acceptable Level of Services and delays. The intersection of Royal Windsor Drive at Winston Churchill Boulevard is projected to operate at a Level of Service "C" during the weekday peak periods, with average delays per vehicle of 31.2 and 35.2 seconds, respectively, in the horizon year 2027. A maximum volume-to-capacity ratio of 0.78 is projected for the southbound left-turn movement during the weekday a.m. peak period in the horizon year 2027. No individual movements are operating with a volume to capacity ratio above 0.85.

The intersection of Lakeshore Road at Winston Churchill Boulevard is expected to operate at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak period, with average delays per vehicle of 14.0 and 6.7 seconds, respectively in the horizon year 2027. A maximum volume-to-capacity ratio of 0.63 is projected for the southbound left-turn movement during the weekday a.m. peak period in the horizon year 2027. No individual movements are operating with a volume to capacity ratio above 0.85.

5.0 Development Proposal

The subject lands cover approximately 13 ha and currently consist of agricultural land with landscaped areas and some residential units. The property, located in a mostly industrial area, is bounded by an open lot to the north, mixed residential and landscaped areas to the south and west, and Winston Churchill Boulevard to the east. Clearview Creek flows in an east-west manner to the north of the subject property.

Per the Site Plan prepared by Baldassarra Architects Inc. (Issued for Coordination on September 17, 2020), the elements envisioned for this development include:

- Three industrial use warehouse buildings with a combined GFA of 59,412.27 m^2
- Associated at-ground parking (417 spaces)
- Two (2) site accesses from Winston Churchill Boulevard (full movement access at the north end of the property and right-in-right-out access at the south end)
- Stormwater management facility (approximately 2.14 acres.)

6.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The development will also result in additional turning movements at the intersections.

6.1 ITE Trip Generation

Site generated traffic for the proposed development was calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, using Land Use Category (LUC) 150 "Warehousing". The average rate was used for the peak period calculations for a conservative analysis. Per the ITE Trip Generation Manual, 8th Edition, approximately 20% of the net generated site traffic generated by LUC 150 "Warehousing" during the weekday a.m. and p.m. peak hours is heavy truck traffic. The heavy truck volumes were applied to the future total road network.

The site-generated trips from the proposed development are tabulated in Table 5.

Table 5: Site Generated Trips

Land Use	Parameter	Weekday a.m. Peak Hour			Weekday p.m. Peak Hour		
		In	Out	Total	In	Out	Total
Warehousing (150) 639,508.35 ft²	ITE Generated Passenger Car Trips	66	20	86	26	70	96
	ITE Generated Heavy Vehicular Trips	17	5	22	7	18	25
	Net Generated Trips	83	25	108	33	88	121

The proposed development is expected to generate approximately 86 and 96 total two-way passenger car trips during the weekday a.m. and p.m. peak hours, respectively, and approximately 22 and 25 total two-way heavy truck trips during the weekday a.m. and p.m. peak hours, respectively.

6.2 Trip Distribution and Assignment

Vehicles entering and exiting the proposed site were distributed based on existing travel patterns. Trip distribution was applied among the study intersections. All heavy vehicular traffic was assigned to the northern site access. It was assumed that all heavy truck traffic from the site would head north on Winston Churchill Boulevard.

The site trip distribution for primary trips and heavy vehicular trips is illustrated in Figure 5. The trips generated by the proposed development were assigned to the boundary road network as per the noted trip distribution. The total primary trip assignment is illustrated in Figure 6.

7.0 Site Access Review

7.1 Access Spacing

Per the Geometric Design Guide for Canadian Roads, published by the Transportation Association of Canada (TAC), dated June 2017, the recommended minimum spacing downstream and upstream of an access from a signalized intersection on arterial roads is 70 metres and 15 metres from an unsignalized signalized (Figure 8.8.2).

The Halton Region Access Management Guidelines (January 2015) state in Section 3.3 that the general spacing guidelines for full movement access are 300 to 400 meters. This spacing range is based on various factors, including posted Speed, traffic signal coordination, and storage requirements for left-turning vehicles. For right in/right out accesses, the desired spacing is 115 to 140 metres between accesses. However, a spacing of 30 metres to 60 metres can also be considered if the spacing is not conducive due to physical or economic reasons.

The subject site's northern access on Winston Churchill Boulevard is proposed to be situated approximately 620 meters south of the rail crossing and approximately 285 meters (centre to centre) from the future Orr Road Extension north of the subject site.

The proposed southern site access is located approximately 75 meters from the nearest road, Deer Run Avenue, which is only accessible to emergency vehicles and approximately 180 meters(centre to centre) from the northern access. Accordingly, both proposed accesses are sufficiently spaced from the stop-controlled intersections and the signalized intersections per guidelines stated in TAC and Halton Regions Access Management Guidelines.

7.2 Access Configuration

Per the Geometric Design Guide for Canadian Roads, the recommended number of driveways for a property frontage greater than 150 metres is four or more (Table 8.9.2). TAC also states that it is good to practice for industrial uses to provide separate driveways for loading and parking areas.

The property frontage for the subject site is approximately 460 metres. Given the spacing constraints and the property frontage, it is recommended that two accesses be provided. The northern access to operate as full movement access is to be utilized only by heavy vehicles entering and exiting the site. The southern access is recommended to operate as full movement access for only passenger vehicles.

Per discussions with the Region of Peel, the following storage and taper lengths are provided for the accesses.

- Northern Site Access: a northbound left-turn lane with 30 metres of storage length, 66.3 metres of deceleration and 52.5 metres of taper
- Northern Site Access: a northbound right turn lane with 20 metres of storage length, 97.9 metres of taper
- Northern Site Access: a southbound left-turn lane with 30 metres of storage length, 52.5 metres of deceleration and 52.5 metres of taper
- Northern Site Access: 20 metres of a raised median on north and south of the main access
- Southern Site Access: a northbound right turn lane with 30 metres storage length and 60 metres of taper
- Southern Site Access: a right-in, right-out channelized island.

8.0 Total Traffic Conditions

The future total traffic volumes for the two (2) horizon years consist of the following components:

- Future Background traffic volumes from the corresponding year
- Proposed development site generated traffic volumes

The resulting total volumes in the horizon years 2022 and 2027 are presented in Figure 8 and Figure 9, respectively.

8.1 Intersection Operations

The results of the 2022 and 2027 future total traffic conditions are summarized in Table 6. Detailed capacity analysis worksheets are included in Appendix D.

Table 6: Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service (Average Delay per Vehicle(s))		Max V/C and V/C Ratio(s) > 0.85 (Approach)	
			Horizon Year 2022	Horizon Year 2027	Horizon Year 2022	Horizon Year 2027
Royal Windsor Drive at Winston Churchill Boulevard	Signal	Weekday A.M.	C (29.1 s)	C (32.6 s)	0.76 (SBL)	0.79 (SBL)
		Weekday P.M.	C (30.0 s)	C (33.9 s)	0.67 (WBR)	0.77 (WBR)
Lakeshore Road at Winston Churchill Boulevard	Signal	Weekday A.M.	B (13.4 s)	B (14.1 s)	0.61 (SBL)	0.63 (SBL)
		Weekday P.M.	A (6.3 s)	A (6.7 s)	0.40 (SB)	0.43 (SBL)
Winston Churchill Boulevard at North Access	Stop (Minor Street)	Weekday A.M.	B (12.5 s)	B (14.8 s)	0.04 (EB)	0.05 (EB)
		Weekday P.M.	B (13.3 s)	C (16.3 s)	0.05 (EB)	0.07 (EB)
Winston Churchill Boulevard at South Access	Stop (Minor Street)	Weekday A.M.	B (10.0 s)	B (10.2 s)	0.01 (EB)	0.01 (EB)
		Weekday P.M.	A (9.3 s)	A (9.4 s)	0.01 (EB)	0.01 (EB)

Note 1: The Level of Service of a Stop-Controlled intersection is based on the critical approach's delay. The Level of Service of a signalized intersection is based on the average control delay per vehicle.
Note 2: All v/c ratios greater than 0.85 are highlighted.

Under the 2022 and 2027 future total conditions, the boundary road network is expected to operate under capacity and with an acceptable Level of Services and delays. As indicated in Table 6, the intersection of Royal Windsor Drive at Winston Churchill Boulevard is projected to operate at a Level of Service "C" during the weekday a.m. and p.m. peak periods, with average delays per vehicle of 32.6 and 33.9 seconds, respectively, in the horizon year 2027. A maximum volume-to-capacity ratio of 0.79 is projected for the southbound left-turn movement during the weekday a.m. peak period in the horizon year 2027. No individual movements are operating with a volume to capacity ratio above 0.85.

The intersection of Lakeshore Road at Winston Churchill Boulevard operates at a Level of Service "B" during the weekday a.m. peak period and with a Level of Service "A" during the p.m. peak period,

with average delays per vehicle of 14.1 and 6.7 seconds, respectively in the horizon year 2027. A maximum volume-to-capacity ratio of 0.63 is projected for the southbound left-turn movement during the weekday a.m. peak period in the horizon year 2027. No individual movements are operating with a volume to capacity ratio above 0.85.

The analysis also indicated that under the future total conditions, the unsignalized intersection of Winston Churchill Boulevard at the North Site Access is anticipated to operate with a level of service "B" during the weekday a.m. and "C" during the weekday p.m. peak period, with average delays per vehicle of 14.8 and 16.3 seconds, respectively, in the horizon year 2027. No individual movements are expected to operate with a volume to capacity ratio above 0.85.

The unsignalized intersection of Winston Churchill Boulevard at the South Site Access is anticipated to operate with a level of service "B" during the weekday a.m. and "A" during weekday p.m. peak periods, with a maximum delay of 10.2 seconds during the weekday p.m. peak period in the horizon year 2027. No individual movements are expected to operate with a volume to capacity ratio above 0.85.

Table 7 compares the future background and future total traffic operations on the boundary road network. As shown in the table, the average delay per vehicle and the volume to capacity ratios between the two scenarios are comparable. The site-generated traffic does not significantly impact intersection operations.

Table 7: Comparison Table

Intersection	Peak Hour	Scenario	Level of Service (Average Delay per Vehicle(s))		Max V/C (Approach)	
			Horizon Year 2022	Horizon Year 2027	Horizon Year 2022	Horizon Year 2027
Royal Windsor Drive at Winston Churchill Boulevard	Weekday AM	Future Background	C (27.8 s)	C (31.2 s)	0.76 (SBL)	0.78 (SBL)
		Future Total	C (29.1 s)	C (32.6 s)	0.76 (SBL)	0.79 (SBL)
	Weekday PM	Future Background	C (29.4 s)	D (35.2 s)	0.67 (WBR)	0.77 (WBR)
		Future Total	C (30.0 s)	C (33.9 s)	0.67 (WBR)	0.77 (WBR)
Lakeshore Road at Winston Churchill Boulevard	Weekday AM	Future Background	B (13.4 s)	B (14.0 s)	0.60 (SBL)	0.63 (SBL)
		Future Total	B (13.4 s)	B (14.1 s)	0.61 (SBL)	0.63 (SBL)
	Weekday PM	Future Background	A (6.4 s)	A (6.7 s)	0.40 (SBR)	0.43 (SBR)
		Future Total	A (6.3 s)	A (6.7 s)	0.40 (SB)	0.43 (SBL)

9.0 Parking Review

This section discusses the parking requirements per the Town of Oakville Zoning By-Law (ZBA) and compares the forecasted peak parking demand based on standard analysis criteria.

9.1 Zoning By-Law Parking Requirements

Table 5.2.1 of the Town of Oakville Zoning By-Law 2014-014 was used to calculate the number of parking spaces required for the proposed development. The "Warehousing" parking rate was used to calculate the required parking for the proposed development.

Table 8 summarizes the Town of Oakville Zoning By-Law parking requirements for the proposed development.

Table 8: Parking Review

Use		Parking Requirements	Parking Required	Total Parking Provided
Warehouse	Building 'A' 16, 205.91 m^2	1/100m^2 for first 7500 m^2 plus 1 /200m^2 for remaining space	119	417 Parking Spaces
	Building 'B' 12,790.65 m^2		101	
	Building 'C' 30, 415.71 m^2		190	

As outlined in Table 8, the proposed development meets the Zoning By-Law for the Town of Oakville. A total of 410 parking spaces are required for the entire development. The Site Plan proposes a collective total of 417 parking spaces, resulting in a parking surplus of 7 parking spaces based on the Town of Oakville Zoning By-law requirements.

10.0 On-Site Circulation Review

An AutoTURN analysis was undertaken to confirm the turning radii and that a WB-20 truck and passenger car can manoeuvre throughout the site. Figure TT-01, TT-01A and Figure TT-02 illustrate the manoeuvres of a WB-20 truck and a passenger car, through the site.

11.0 Conclusions and Recommendations

The development application can be supported from a traffic operations perspective. All boundary intersections are expected to operate with an acceptable level of services and under capacity with no signal optimization.

All site accesses are projected to operate with an acceptable level of services and well under capacity during the weekday peak periods.

It is recommended that the Regions continue to monitor the signal timing plan at the signalized intersections of Royal Windsor Drive at Winston Churchill Boulevard and Lakeshore Road at Winston Churchill Boulevard in the future to determine if changes are warranted for optimal performance of the study intersection.

It is also recommended that the proposed northern site access be approved as a full movement stop-controlled access and the southern site access as a right-in left-out.

The proposed total supply of 417 parking spaces exceeds the minimum requirement of 410 parking spaces for warehouses per Town of Oakville's By-Law 2014-014.

We trust that this review satisfies any access and transportation concerns associated with the site plan. Please feel free to contact the undersigned for any further information required.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

Aaron Wignall
Associate, Transportation

C.F. CROZIER & ASSOCIATES INC.

Michael Linton M.A.Sc., P.Eng.
Associate, Transportation

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APPENDIX A

City/Region Correspondence

Kavleen Sachdeva

From: Gariscsak, Anne <Anne.Gariscsak@halton.ca>
Sent: Thursday, March 7, 2019 10:12 AM
To: Kavleen Sachdeva
Cc: Matt Krusto; Walter Scattolon
Subject: FW: 560 Winston Churchill ToR (CFC#0756-5105)
Attachments: 560 Winston Churchill Plan.pdf

Importance: High

Halton Region staff have reviewed the proposed Terms of Reference and offer the following comments:

Data Requests:

-Data requests for Halton Region information (traffic counts/signal timing) should be completed via the data request process with a request to accesshalton@halton.ca or from the Town of Oakville. **If traffic data is older than 2 years, then updated turning movement counts are required.**

-Town of Oakville will provide area development details (background development), as well as details related to planned town roadway improvements.

-Region of Peel must review and approve the scope of work, as Winston Churchill Boulevard is a boundary road between Halton & Peel Regions.

Transportation Impact Study Requirements (TIS):

-The following intersections have been proposed for the Transportation Impact Study area, and are acceptable:

- Winston Churchill at Lakeshore
- Winston Churchill at Royal Windsor
- South site access directly on Winston Churchill (only one access (south access) can be supported)
- Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.

Analysis Assumptions:

-Horizon years: The proposed horizon year analysis of 2019, 2021 (opening) and 2026 (5 year horizon) is acceptable.

-Growth Rate: For Winston Churchill, a 2% growth rate will be acceptable.

-Winston Churchill Capital Works: Halton does not have any capital works proposed along this section of Winston Churchill. **Peel Region** must also be consulted regarding any capital works along this section of Winston Churchill.

The TIS report shall include:

- Site Plan and Map,
- Size & Number of Development Phases,
- 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 (5 years Ahead),
- 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

Should you have any detailed technical questions regarding the above comments , please contact Matt or Walter (cc;'d) .

Thank you,
Anne Gariscsak.

Anne Gariscsak, MCIP RPP
Planner
Planning Services
Legislative & Planning Services
Halton Region
905-825-6000, ext. 7109 | 1-866-442-5866

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Monday, February 25, 2019 11:44 AM
To: Krusto, Matt
Cc: Aaron Wignall
Subject: 560 Winston Churchill ToR (CFC#0756-5105)

Good Morning Matt,

We have been retained to prepare a **Transportation Impact Study (TIS)**, and **Truck Turning Plan** in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard. Per the attached Site Plan prepared by Baldassarra Architects Inc. (dated November 2018), elements envisioned for this development include:

- One (1) industrial use building with an approximate G.F.A of 62,849.54 m^2
- Associated at-ground parking (approximately 459 spaces)

- Two (2) site accesses from Winston Churchill Boulevard
- Stormwater management facility (approximate area of 2.32 acres).

Since the proposed site has two accesses onto Winston Churchill Boulevard, which is a boundary road between Peel Region and Halton Region, the following scope of work is prepared per the Halton Regions Transportation Impact Study Guidelines (January 2015) and Region of Peel Traffic Impact Study Terms of Reference.

We request your feedback regarding our study assumptions.

Study Methodology for the Traffic Impact Study

Study Area and Intersections to Assess

The following intersections will be analyzed:

- Existing:
  - Lakeshore Road East at Winston Churchill Boulevard, and
  - Royal Windsor Drive at Winston Churchill Boulevard
- Future
  - Winston Churchill Boulevard and Site Access (1), and
  - Winston Churchill Boulevard and Site Access (2)

We will collect the traffic counts at the existing signalized intersections on a typical weekday during the morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak periods.

- Please provide the existing Signal Timing Plan for the intersections of Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Analysis Periods and Scenarios

The weekday AM and PM peak hours for 2019 existing conditions, considering an opening year of 2021, a 5-year horizon year after full build-out (2026) will be considered for background and total traffic conditions.

Background Developments and Growth Rates

- Please provide developments that should be included in our analysis along with the associated traffic impact studies for the developments.

- Please provide the growth rate that can be used for Lakeshore Road East, Winston Churchill Boulevard, and Royal Windsor Drive. Should this information not be available, an industry standard of two percent will be applied to through movements along the study intersections.

Trip Generation

Trip generation for the proposed development will be based on the Trip Generation Manual, 10th Edition prepared by the Institute of Transportation Engineers (ITE) for Warehousing (150). To be conservative, the fitted curve equation will be used. Transit and active transportation modal split ratios will be considered per the Transportation Survey Data.

Transportation Tomorrow Survey data will be used for trip distribution and assignment.

Roadway Improvements

- Please provide details of the timings and phasing of the planned road widening on Winston Churchill Boulevard.

Analysis Procedures

Weekday AM and PM peak hours will be analyzed using the Synchro 10.0 and Highway Capacity Manual (HCM) procedures.

We will use a peak hour factor of 1.00 per Region of Peel's Synchro Guidelines.

Transportation Demand Management Plan

We will provide several transportation demand management measures to support active transportation and transit as an attempt to reduce the number of auto trips to/from the proposed development.

Truck Turning Plan

We will use AutoTURN to illustrate how delivery trucks and garbage trucks will load and unload materials on the site and the location of travel through the site.

Could you please provide any comments you may have on the above ToR and provide the following information for inclusion in the study:

1. Please provide the existing Signal Timing Plan for the intersections of Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard
2. Please provide the growth rate that can be used for Lakeshore Road East, Winston Churchill Boulevard, and Royal Windsor Drive.
3. Please provide details of the timings and phasing of the road widening planned on Winston Churchill Boulevard.
4. Please provide developments that should be included in our analysis along with the associated traffic impact studies for the developments.

Lastly, it is our understanding that you can assist with coordinating with Peel Region to get their approval on the above workplan, if this is not the case could you kindly refer me to your counterparts in Peel?

I hope the above is acceptable. Should you have any questions or concerns, please feel free to contact myself or my colleague Aaron Wignall copied on this email.

Regards,

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

Kavleen Sachdeva

From: Asadullah Yousfani <asad.yousfani@oakville.ca>
Sent: Friday, March 15, 2019 10:31 AM
To: Kavleen Sachdeva
Subject: RE: 560 Winston Churchill (CFC#0756-5105)
Attachments: 560 Winston Churchill Plan.pdf

Hi Kavleen,

I've attached Town map, which highlights all of the active development applications - https://maps.oakville.ca/gxmaps/default.aspx?map=map06.

Are you aware of the requirements from Mississauga? Road widening along Winston Churchill? During precon, I identified substandard throat lengths on concept plan, and recommended requirements as per the TAC guidelines and or per the analysis. Please ensure you address that.

Please let me know if you have any questions.

Thanks-ASAD

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

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Tuesday, March 12, 2019 11:11 AM
To: Asadullah Yousfani <asad.yousfani@oakville.ca>
Subject: FW: 560 Winston Churchill (CFC#0756-5105)

Hi Asad,

We have been retained to prepare a Transportation Impact Study (TIS), and Truck Turning Plan in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard.

I was wondering if you could help me get information about any background developments that should be added in our analysis. Our study horizon years are 2019, 2021, and 2026. Our study intersections are Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Please let me know what other information you would need from my end for providing information (preferably the Traffic Impact Studies) about the surrounding developments that should be included.

Thank you

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

From: Heinz Hecht <heinz.hecht@oakville.ca>
Sent: Friday, March 8, 2019 4:35 PM
To: Kavleen Sachdeva <ksachdeva@cfcrozier.ca>
Cc: Asadullah Yousfani <asad.yousfani@oakville.ca>
Subject: RE: 560 Winston Churchill (CFC#0756-5105)

Please contact Asad Yousfani for further assistance. Also, please note that the attached site plan was discussed at a recent pre-consultation meeting. The proposed plan does not conform to the Zoning by-law (orientation of loading dock doors) and it was strongly recommended that the proposal be revised accordingly as it would not be supported by Town staff.

Regards

Heinz Hecht, MCIP, RPP
Manager- Planning, Current Planning - East District
Planning Services
Town of Oakville | 905-845-6601, ext.3311 | f: 905-338-4414 | www.oakville.ca

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From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Friday, March 08, 2019 3:23 PM
To: Heinz Hecht <heinz.hecht@oakville.ca>
Subject: 560 Winston Churchill (CFC#0756-5105)

Hi Heinz,

We have been retained to prepare a Transportation Impact Study (TIS), and Truck Turning Plan in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard.

Anne Gariscsak from Halton Region suggested I contact you to receive information about any background developments that should be added in our analysis. I have attached the Site Plan for your reference. Our study horizon years are 2019, 2021, and 2026. Our study intersections are Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Please let me know what other information you would need from my end for providing information (preferably the Traffic Impact Studies) about the surrounding developments that should be included.

Thank you,

Best Regards

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

Kavleen Sachdeva

From: Papiez-Lopata, Brittany <Brittany.Papiez-Lopata@halton.ca>
Sent: Monday, March 18, 2019 12:21 PM
To: Kavleen Sachdeva
Subject: RE: TMC/Signal Timing Plans
Attachments: 10334201 - WINSTON CHURCHILL @ LAKESHORE.xls; 10334201 - WINSTON CHURCHILL @ LAKESHORE.pdf; 19_WCB_@_Royal_Windsor_Dr.xls; 19 _WCB_@_Lakeshore_Rd.xls

Good afternoon,
I have attached the data, please let me know you have received it. If you have any other questions or concerns feel free to ask.

Regards,
Britt

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Monday, March 18, 2019 11:45 AM
To: Papiez-Lopata, Brittany
Subject: RE: TMC/Signal Timing Plans

Thank you Brittany

Please proceed with the signal timing plan for both the intersections, and the turning movement counts for the intersection of Lakeshore Road East at Winston Churchill Boulevard.

Regards

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

From: Papiez-Lopata, Brittany <Brittany.Papiez-Lopata@halton.ca>
Sent: Friday, March 15, 2019 11:19 AM
To: Kavleen Sachdeva <ksachdeva@cfcrozier.ca>
Subject: TMC/Signal Timing Plans

Hello,

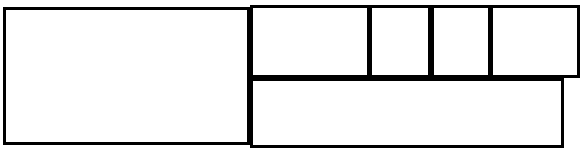
The costing per TMC is $72.85, while signal timing plan is $62.11, both before tax. As for billing you will receive and invoice from Halton Region within a few weeks, once its processed at our finance department.

As for most recent TMC , I have listed the date below for each intersection.
Lakeshore Road East at Winston Churchill Boulevard – 2018, most UTD count
Royal Windsor Drive at Winston Churchill Boulevard-2016, most UTD count

Let me know if you have any questions and if you wish to proceed with the request.

Regards,
Britt

Brittany Papiez-Lopata
Traffic Ops & Safety Co-Op Student
Waste Management & Road Operations
Public Works
Halton Region
905-825-6000, ext. 7174 | 1-866-442-5866



Kavleen Sachdeva

From: Kol, Rani <rani.kol@peelregion.ca>
Sent: Monday, March 18, 2019 1:20 PM
To: Kavleen Sachdeva
Cc: Ambrico, Angelo; Alex Martino
Subject: Traffic Engineering Comments - Terms of Reference - 560 Winston Churchill Boulevard - D-01901300W

Kavleen,

The Traffic Engineering section has reviewed the Terms of Reference for the above noted property received on March 8, 2019 and wishes to offer the following:

- We are in support of the comments and position regarding access provided by Halton Region staff;
- We do not have any record of any Capital Projects along Winston Churchill at this time.
- Please contact Roman Kuczynski, Supervisor, Transportation Planning at extension 4381 to obtain the Growth Rates along Winston Churchill Boulevard;
- Please contact Damian Jamroz, Supervisor, Traffic Operations at extension 7856 for most recent average annual daily traffic (AADT) and TMCs required for the study; and
- Please contact Rick Laing, Supervisor, Traffic Signals and Streetlighting at extension 7859 for the most up-to-date Traffic Signal Timing Parameters and ensure that the information includes the appropriate walk/don't walk splits, recall modes and offsets.
- Please contact Development Services Planning staff to obtain details on surrounding developments in the area that would affect traffic capacity in the planning horizon year(s).

Also, for your use please see the below standard Terms of Reference outline;

Full Description

The study must provide a full description of the proposed development. This includes, but is not limited to:

- Municipal address.
- Existing land uses that are permitted and use provisions in an Official Plan Amendment, Zoning By-law, etc.
- Proposed land uses.
- Floor space, including a summary of each type of use and/or number of residential units (where applicable).
- Anticipated date of occupancy.
- Approximate hour of operation.
- Planned phasing of the development.
- Nearby Regional intersections and access to adjacent developments, including type of control (signalized or unsignalized).
- Number of lanes, width and configuration:
  - The requirements for auxiliary turn lanes shall be reviewed. Adequate spacing must be provided between access points in accordance with the Region of Peel's current Controlled Access By-law, as amended. All design standards must be in accordance with those outlined in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads and the Ministry of Transportation, Ontario (MTO) Geometric Design Standards for Ontario Highways.
- Proposed access points and type of access:
  - When determining the location of an access, consideration should be given to how the access will affect the surrounding road network, area residents and area businesses. All proposed site access points on Regional roads should be evaluated for capacity, safety and adequacy of queue storage capacity. Approval of the proposed access will be evaluated using the Region of Peel's current Controlled Access By-law, as amended and sound engineering judgement.
- Nearby transit facilities/stops.
- Bike paths.

- A combination of maps and other documentation, which will identify all relevant information.

Traffic Volume Analysis

A traffic volume analysis must include:

- Horizon of 5 years is acceptable.
- AM and PM peak periods are acceptable.
- Background, site-generated and total traffic volumes.
- "Worst case" combination of site-related and background traffic.

Trip Generation and Distribution

A trip distribution and trip generation analysis must include:

- Trip generation surveys from similar developments in the Region which have similar operating characteristics as the proposed development.
- Latest edition of the Institute of Transportation Engineers (ITE) trip generation rates are acceptable (use the greater of the average rate method or the fitted line equation).
- A table summarizing your findings.
- Trip distribution assumptions must be supported by one or more of the following:
  - Transportation Tomorrow Survey
  - Origin-destination surveys
  - Comprehensive travel surveys
  - Existing/anticipated travel patterns
  - Output from the Region of Peel Travel Demand Forecasting Model
  - Market studies

Capacity Analysis

The report must include capacity analysis completed in Synchro (version 7.0 preferred, but version 8.0 will be accepted as per the Highway Capacity Manual (HCM) 2000 standards and not the new HCM 2010 module). Unsignalized analysis can be completed in either Synchro or CCG Intercalc (2008 version at a minimum).

The following parameters must be used in either software:

- Saturation flow rate of 1,900 vehicles per hour
- 3.7 metre lane width on Regional roads; and
- 3.5 metre lane width on the intersecting street(s) and/or access(es)

For Synchro analysis, see Regional Guidelines for Using Synchro 7.0 for other individual parameters. For CCG Intercalc analysis, saturation adjustments should include a complete breakdown of vehicle types by percentage (based on available data) and is to be documented in a table in the report.

The analysis must also include the identification of signalized intersections, unsignalized intersections and unsignalized accesses where:

- Volume/capacity (V/C) ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above.
- V/C ratios for exclusive movements that will exceed 1.00.
- 95th percentile queue lengths for individual movements and do they exceed available lane storage.

All intersections that are modelled as signalized intersections (other than existing signalized intersections) must be supported by an Ontario Traffic Manual (OTM) Book 12 traffic control signals warrant, each one required to be included in the appendix of the TIS.

If traffic control signals are found to be warranted at a particular intersection in an earlier horizon year (e.g. 5 year horizon), a warrant is not required for the subsequent horizon year (e.g. 10 year horizon). The horizon year in which a particular intersection is warranted for traffic control signals must be documented in the text of the TIS. A roundabout feasibility analysis may also be required at the direction of Regional staff.

In Synchro unsignalized intersection analysis, if an unacceptable LOS ("E" or higher) and v/c ratio results on the minor approach in existing conditions analysis, the consultant shall conduct a gap study to establish an average value for gaps accepted (in seconds) and override the resultant value for the HCM-calculated critical gap in the Signing window.

For horizon year analysis with an existing two- lane road, if the road is forecasted to be widened to four lanes by the respective horizon year, the consultant shall override the resultant value for the HCM-calculated critical gap in the Signing window by inputting recommended values for critical gap of left-turning and right-turning movements onto a four-lane road as identified in the Ministry of Transportation, Ontario (MTO) Geometric Design Standards for Ontario Highways.

Sight Distance Evaluation

A review and analysis of the sight distance availability for all proposed accesses or roads is required. The sight distance requirements must be determined based on the most current standards and guidelines used by the Region of Peel. Available sight distance should be taken from actual field measurements to ensure accurate conditions.

Assess the sightlines based on the Region of Peel's standard practice, eye height and object height of 1.05 metres and 0.38 metres above road surface, respectively. The Region requires the access to meet the following sightline requirements:

1. Stopping sight distance; and
2. Turning sight distance.

Sight distances must be in accordance with the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads methodology. Folded full size and to scale drawings of the sightline analysis are required for our review and comment.

Safety

Identification of potential safety or operational issues must be reviewed that are associated with:

- weaving
- merging
- corner clearances
- sight distances
- vehicle/pedestrian conflicts
- traffic infiltration
- access conflicts
- cyclist movements
- heavy truck movement conflicts

In addition, should the development be determined by Regional staff to be adjacent to a Regional intersection or road segment with significant collision history, most recent five-year collision data for the intersection(s) and/or road segment (s) must be reviewed and an assessment of the impact of the proposed development provided. Such information may be helpful to minimize any additional problems through the design or location of access points along the subject Regional road(s). Please contact William Toy, Supervisor, Traffic Safety at extension 7869 for collision information.

Functional Design

A functional design detailing a recommended access configuration and/or proposed intersection geometrics may be required at the discretion of Regional staff.

Final Report

The following study structure is suggested:

- Site/development description
- Study area, including map
- Existing conditions - exhibit required
- Analysis periods
- Background, existing, future background and future total traffic demand - exhibit required
- Site generated traffic - exhibit required
- Improvement alternatives
- Traffic impacts for future background and total traffic with and without mitigation (tabular summaries)
- Access considerations
- Recommendations

The TIS should consist of a main document, supplemented by technical appendices containing detailed analyses as required.

The Region of Peel will require 1 copy to be in electronic format and 1 hard copy complete with the appropriate supporting documentation. This shall be submitted to the Traffic Engineering section of Public Works for our review, comment and approval.

All information submitted to Regional staff in connection with any Traffic Impact Study will be considered to be in the public domain.

Appendix

The appendix must include:

- 1. Turning movement counts (include date counted) with breakdown of heavy vehicle counts;
- 2. Signal timing plan(s) for signalized intersections; and
- 3. For submissions using Synchro, generated Synchro reports showing HCM 2000 results and queuing, as well as electronic Synchro files (CD copy or sent concurrently with the TIS via email); or
- 4. For submissions using CCG Intercalc, a CCG Intercalc summary report.

Study Updates

From the date of submission, the Traffic Impact Study will have a "shelf life" of 5 years.
Where timing of subsequent development approvals exceeds 5 years, a new study will be required at the discretion of the Region of Peel.

I trust the above is satisfactory.

Regards,

Rani Kol
Technical Analyst
Traffic Development & Permits
Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9
(905) 791-7800 ext. 7858

Region of Peel
working with you

APPENDIX B

Existing Information

Winston Churchill Blvd @ Lakeshore Rd

Morning Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

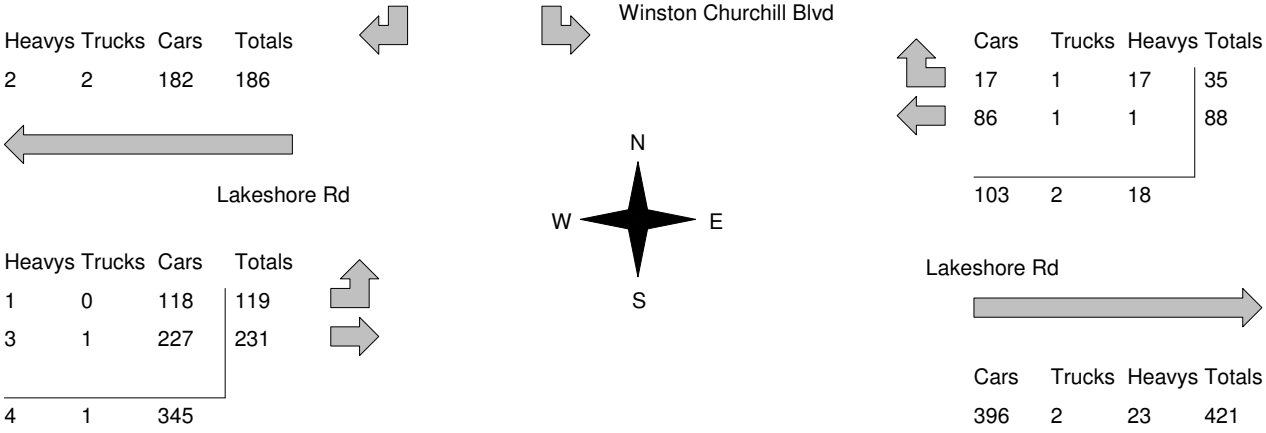
Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total:	442		
North Entering:	288		
North Peds:	1		
Peds Cross:	⋈		
Heavys	1	20	21
Trucks	1	1	2
Cars	96	169	265
Totals	98	190	
Heavys	18		
Trucks	1		
Cars	135		
Totals	154		
East Leg Total:	544		
East Entering:	123		
East Peds:	0		
Peds Cross:	⧖		



Peds Cross:	⧖
West Peds:	0
West Entering:	350
West Leg Total:	536

Comments

Winston Churchill Blvd @ Lakeshore Rd

Mid-day Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

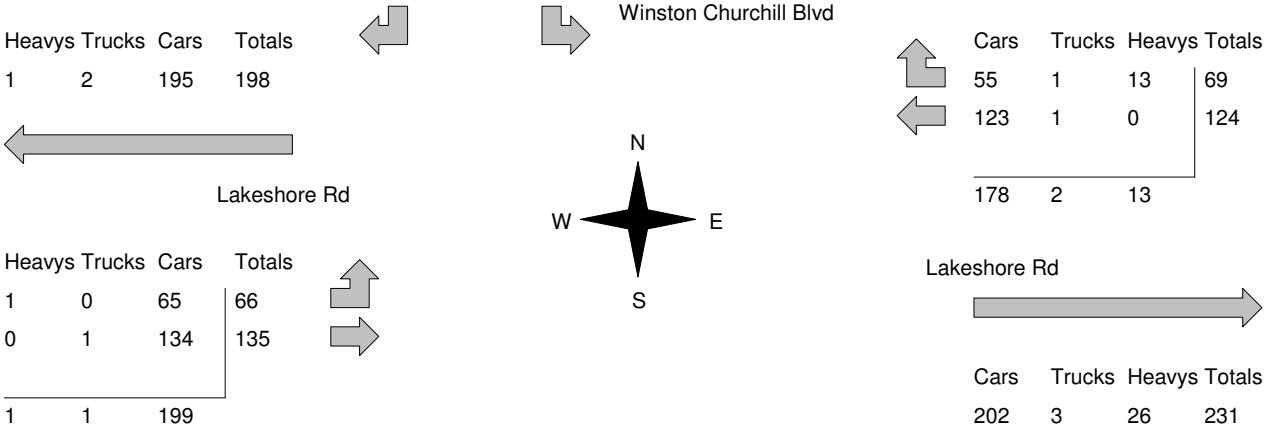
Major Road: Lakeshore Rd runs W/E

North Leg Total:	305		
North Entering:	170		
North Peds:	1		
Peds Cross:	⋈		

Heavys	1	26	27
Trucks	1	2	3
Cars	72	68	140
Totals	74	96	

Heavys	14		
Trucks	1		
Cars	120		
Totals	135		

East Leg Total:	424
East Entering:	193
East Peds:	0
Peds Cross:	⧖



Peds Cross:	⧖
West Peds:	0
West Entering:	201
West Leg Total:	399

Comments

Winston Churchill Blvd @ Lakeshore Rd

Afternoon Peak Diagram

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

One Hour Peak
From: 15:45:00
To: 16:45:00

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

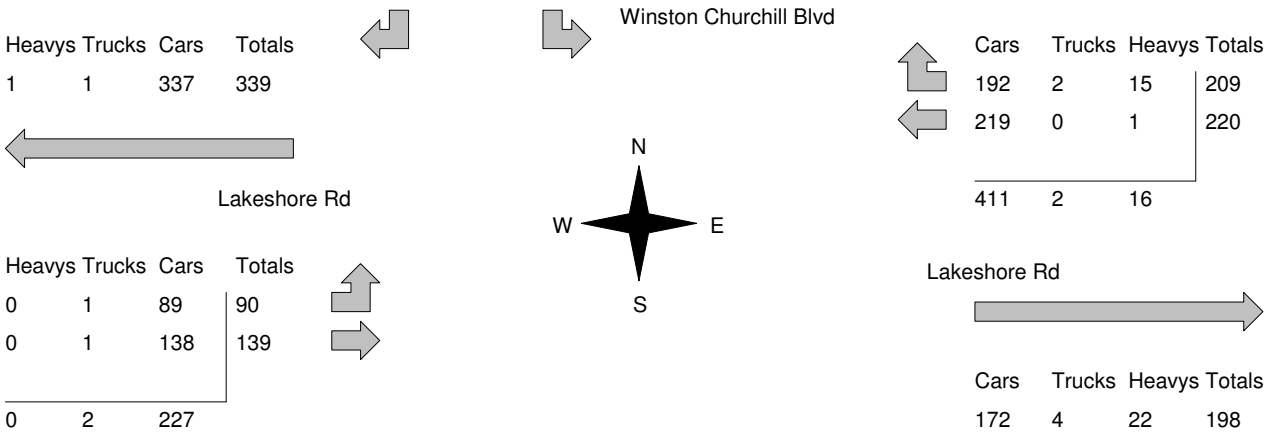
Major Road: Lakeshore Rd runs W/E

North Leg Total:	477		
North Entering:	178		
North Peds:	1		
Peds Cross:	⋈		

Heavys	0	22	22
Trucks	1	3	4
Cars	118	34	152
Totals	119	59	

Heavys	15	
Trucks	3	
Cars	281	
Totals	299	

East Leg Total:	627
East Entering:	429
East Peds:	0
Peds Cross:	⧖



Peds Cross:	⧖
West Peds:	0
West Entering:	229
West Leg Total:	568

Comments

Winston Churchill Blvd @ Lakeshore Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total:	2961
North Entering:	1485
North Peds:	10
Peds Cross:	⋈

Heavys	8	162	170
Trucks	8	14	22
Cars	732	561	1293
Totals	748	737	

Heavys	126
Trucks	26
Cars	1324
Totals	1476

East Leg Total:	3899
East Entering:	1935
East Peds:	0
Peds Cross:	⧖

Winston Churchill Blvd

Heavys	Trucks	Cars	Totals
12	13	1808	1833

Lakeshore Rd

Heavys	Trucks	Cars	Totals
6	10	610	626
8	11	1208	1227
14	21	1818	

N
W E
S

Cars	Trucks	Heavys	Totals
714	16	120	850
1076	5	4	1085
1790	21	124	

Lakeshore Rd

Cars	Trucks	Heavys	Totals
1769	25	170	1964

Peds Cross:	⧖
West Peds:	0
West Entering:	1853
West Leg Total:	3686

Comments

Turning Movement Count (1 . ROYAL WINDSOR DR & WINSTON CHURCHILL BLVD) CustID: 01902061 MioID: 636402

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	13	39	78	0	0	130	38	59	4	0	1	101	17	10	10	0	0	37	17	159	19	0	0	195	463	
07:15:00	29	33	100	0	0	162	25	86	6	0	0	117	22	21	4	0	0	47	11	234	25	0	0	270	596	
07:30:00	39	60	118	0	0	217	40	118	3	0	2	161	14	26	7	0	0	47	26	218	23	0	1	267	692	
07:45:00	48	59	164	0	0	271	48	115	4	0	0	167	25	35	9	0	0	69	25	258	30	0	2	313	820	2571
08:00:00	56	53	138	0	0	247	49	132	8	0	0	189	19	26	5	0	0	50	8	222	35	0	1	265	751	2859
08:15:00	58	64	184	0	0	306	56	120	6	0	0	182	33	45	7	0	0	85	25	229	31	0	0	285	858	3121
08:30:00	51	67	108	0	1	226	47	143	11	0	1	201	31	38	7	0	0	76	24	219	40	0	0	283	786	3215
08:45:00	47	66	122	0	0	235	47	128	12	0	2	187	18	34	8	0	0	60	29	189	28	0	0	246	728	3123
BREAK																										
16:00:00	39	50	59	0	0	148	90	188	16	0	1	294	17	56	23	0	1	96	11	122	32	0	1	165	703	
16:15:00	39	50	54	0	1	143	77	155	9	0	0	241	17	55	26	0	0	98	7	130	43	0	1	180	662	
16:30:00	31	47	49	1	2	128	127	156	18	0	0	301	26	87	34	0	0	147	13	159	37	0	0	209	785	
16:45:00	37	44	55	1	1	137	133	205	21	0	0	359	12	57	27	0	0	96	11	122	35	0	0	168	760	2910
17:00:00	36	50	79	0	1	165	138	186	15	0	2	339	20	78	41	0	0	139	12	136	46	0	1	194	837	3044
17:15:00	28	55	81	0	0	164	109	183	15	0	1	307	27	78	26	0	0	131	21	178	49	0	0	248	850	3232
17:30:00	31	44	75	0	0	150	204	230	23	0	1	457	19	59	27	0	0	105	9	143	40	0	1	192	904	3351
17:45:00	29	37	44	0	1	110	160	221	33	0	1	414	16	53	19	0	1	88	10	157	42	0	1	209	821	3412
18:00:00	33	48	47	0	0	128	136	176	21	0	0	333	13	32	31	0	0	76	16	118	33	1	0	168	705	3280
18:15:00	24	46	45	0	0	115	107	130	21	0	0	258	11	45	16	0	0	72	18	120	34	0	0	172	617	3047
18:30:00	27	34	40	0	0	101	118	185	28	0	1	331	11	22	9	0	0	42	20	103	30	0	0	153	627	2770
18:45:00	17	37	57	0	0	111	84	92	7	0	0	183	10	28	16	0	0	54	9	109	32	0	0	150	498	2447
Grand Total	712	983	1697	2	7	3394	1833	3008	281	0	13	5122	378	885	352	0	2	1615	322	3325	684	1	9	4332	**14463**	-
Approach%	21%	29%	50%	0.1%		-	35.8%	58.7%	5.5%	0%		-	23.4%	54.8%	21.8%	0%		-	7.4%	76.8%	15.8%	0%		-	**-**	-
Totals %	4.9%	6.8%	11.7%	0%		23.5%	12.7%	20.8%	1.9%	0%		35.4%	2.6%	6.1%	2.4%	0%		11.2%	2.2%	23%	4.7%	0%		30%	**-**	-
Heavy	12	21	10	0		-	16	75	2	0		-	3	9	29	0		-	28	103	9	0		-	**-**	-
Heavy %	1.7%	2.1%	0.6%	0%		-	0.9%	2.5%	0.7%	0%		-	0.8%	1%	8.2%	0%		-	8.7%	3.1%	1.3%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

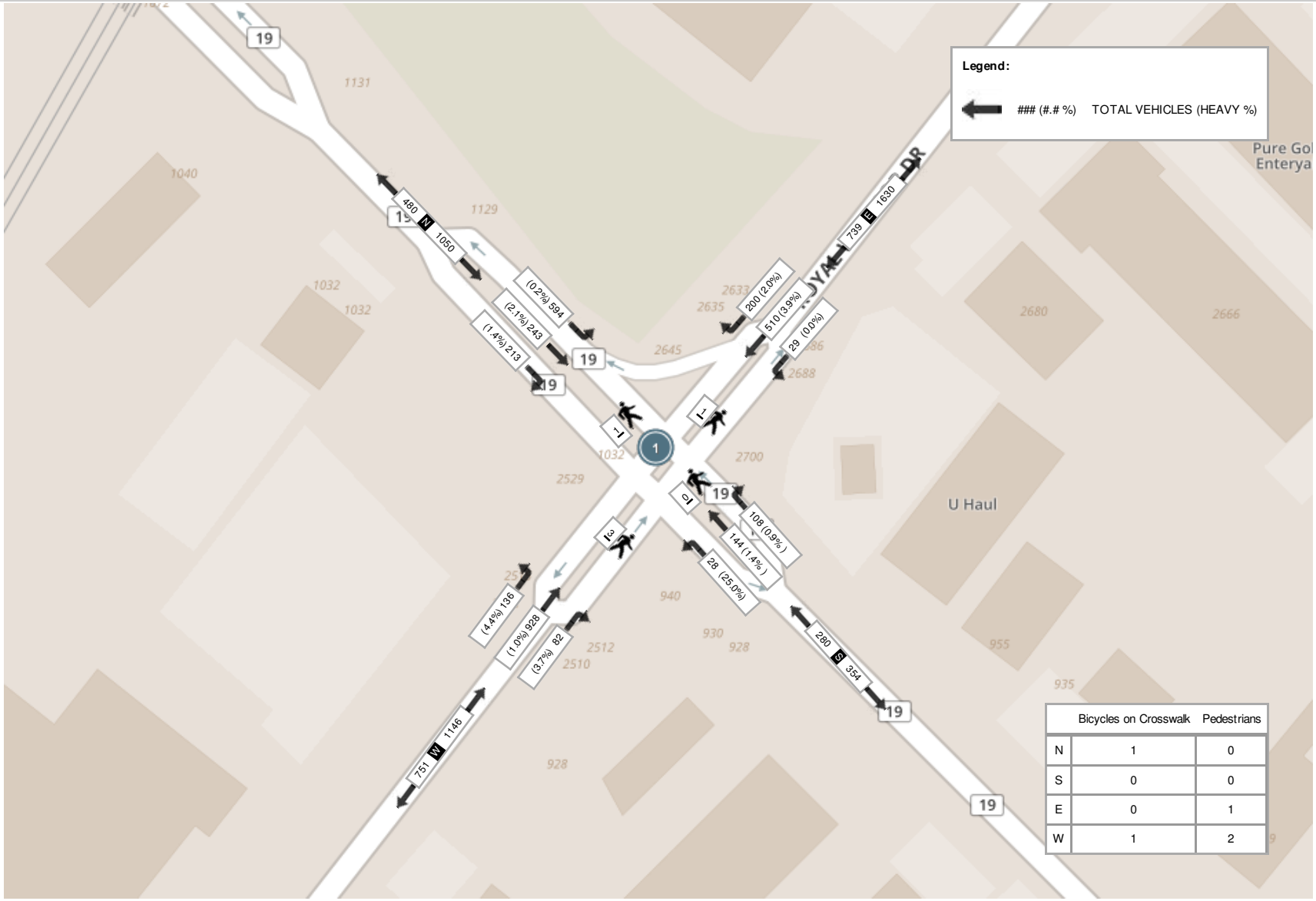
Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.68 °C)

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	48	59	164	0	0	271	48	115	4	0	0	167	25	35	9	0	0	69	25	258	30	0	2	313	820
08:00:00	56	53	138	0	0	247	49	132	8	0	0	189	19	26	5	0	0	50	8	222	35	0	1	265	751
08:15:00	58	64	184	0	0	306	56	120	6	0	0	182	33	45	7	0	0	85	25	229	31	0	0	285	858
08:30:00	51	67	108	0	1	226	47	143	11	0	1	201	31	38	7	0	0	76	24	219	40	0	0	283	786
Grand Total	213	243	594	0	1	1050	200	510	29	0	1	739	108	144	28	0	0	280	82	928	136	0	3	1146	**3215**
Approach%	20.3%	23.1%	56.6%	0%		-	27.1%	69%	3.9%	0%		-	38.6%	51.4%	10%	0%		-	7.2%	81%	11.9%	0%		-	**-**
Totals %	6.6%	7.6%	18.5%	0%		32.7%	6.2%	15.9%	0.9%	0%		23%	3.4%	4.5%	0.9%	0%		8.7%	2.6%	28.9%	4.2%	0%		35.6%	**-**
PHF	0.92	0.91	0.81	0		0.86	0.89	0.89	0.66	0		0.92	0.82	0.8	0.78	0		0.82	0.82	0.9	0.85	0		0.92	**-**
Heavy	3	5	1	0		9	4	20	0	0		24	1	2	7	0		10	3	9	6	0		18	**-**
Heavy %	1.4%	2.1%	0.2%	0%		0.9%	2%	3.9%	0%	0%		3.2%	0.9%	1.4%	25%	0%		3.6%	3.7%	1%	4.4%	0%		1.6%	**-**
Lights	207	227	574	0		1008	180	476	29	0		685	101	138	19	0		258	76	904	129	0		1109	**-**
Lights %	97.2%	93.4%	96.6%	0%		96%	90%	93.3%	100%	0%		92.7%	93.5%	95.8%	67.9%	0%		92.1%	92.7%	97.4%	94.9%	0%		96.8%	**-**
Mediums	3	11	19	0		33	16	14	0	0		30	6	4	2	0		12	3	15	1	0		19	**-**
Mediums %	1.4%	4.5%	3.2%	0%		3.1%	8%	2.7%	0%	0%		4.1%	5.6%	2.8%	7.1%	0%		4.3%	3.7%	1.6%	0.7%	0%		1.7%	**-**
Articulated Trucks	3	5	1	0		9	4	20	0	0		24	1	2	7	0		10	3	9	6	0		18	**-**
Articulated Trucks %	1.4%	2.1%	0.2%	0%		0.9%	2%	3.9%	0%	0%		3.2%	0.9%	1.4%	25%	0%		3.6%	3.7%	1%	4.4%	0%		1.6%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	20%		-	-	-	-	0%		-	-	-	-	40%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	20%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	20%		**-**

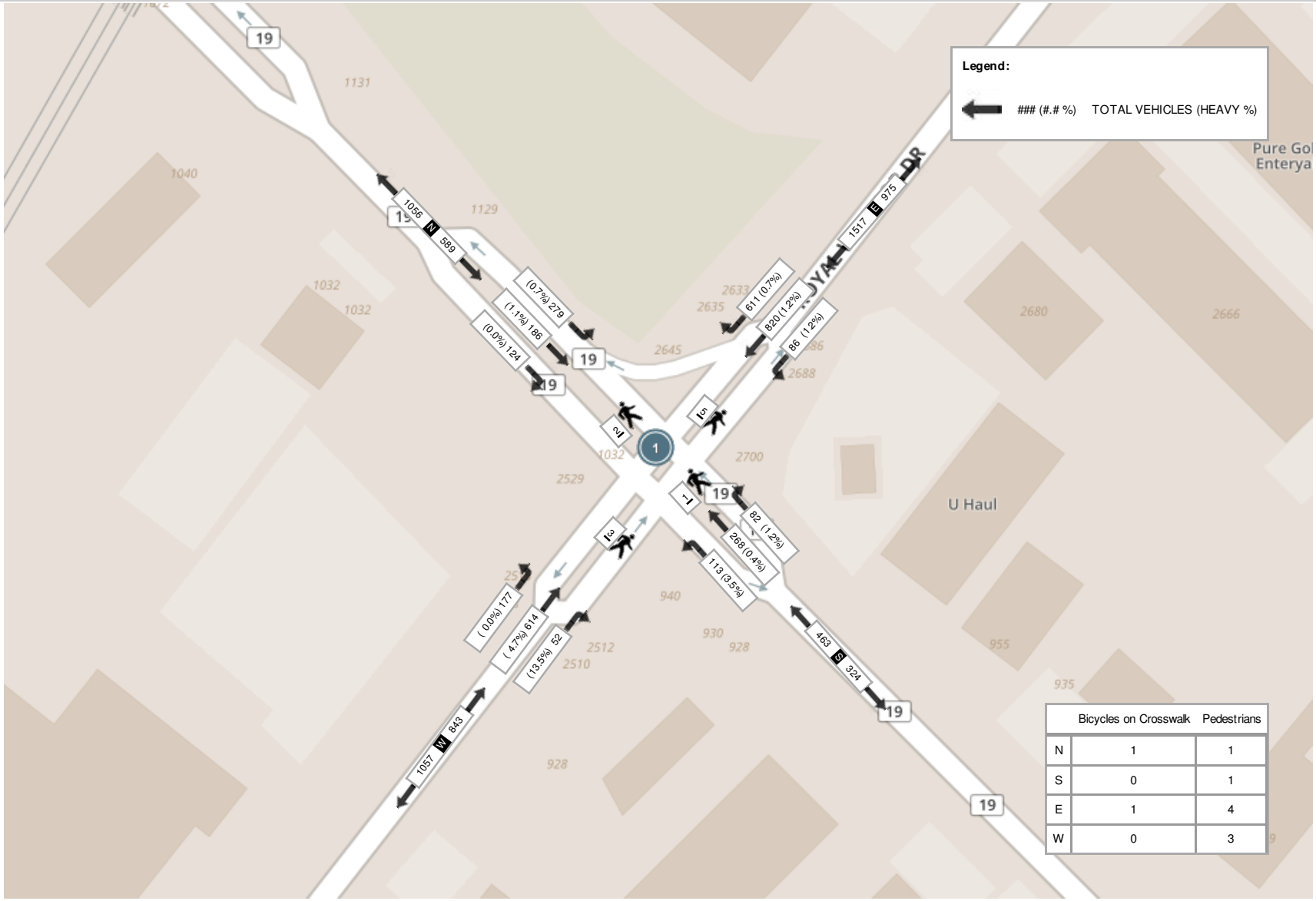
Peak Hour: 05:00 PM - 06:00 PM Weather:

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	36	50	79	0	1	165	138	186	15	0	2	339	20	78	41	0	0	139	12	136	46	0	1	194	837
17:15:00	28	55	81	0	0	164	109	183	15	0	1	307	27	78	26	0	0	131	21	178	49	0	0	248	850
17:30:00	31	44	75	0	0	150	204	230	23	0	1	457	19	59	27	0	0	105	9	143	40	0	1	192	904
17:45:00	29	37	44	0	1	110	160	221	33	0	1	414	16	53	19	0	1	88	10	157	42	0	1	209	821
Grand Total	124	186	279	0	2	589	611	820	86	0	5	1517	82	268	113	0	1	463	52	614	177	0	3	843	**3412**
Approach%	21.1%	31.6%	47.4%	0%		-	40.3%	54.1%	5.7%	0%		-	17.7%	57.9%	24.4%	0%		-	6.2%	72.8%	21%	0%		-	**-**
Totals %	3.6%	5.5%	8.2%	0%		17.3%	17.9%	24%	2.5%	0%		44.5%	2.4%	7.9%	3.3%	0%		13.6%	1.5%	18%	5.2%	0%		24.7%	**-**
PHF	0.86	0.85	0.86	0		0.89	0.75	0.89	0.65	0		0.83	0.76	0.86	0.69	0		0.83	0.62	0.86	0.9	0		0.85	**-**
Heavy	0	2	2	0		4	4	10	1	0		15	1	1	4	0		6	7	29	0	0		36	**-**
Heavy %	0%	1.1%	0.7%	0%		0.7%	0.7%	1.2%	1.2%	0%		1%	1.2%	0.4%	3.5%	0%		1.3%	13.5%	4.7%	0%	0%		4.3%	**-**
Lights	124	176	268	0		568	592	802	83	0		1477	78	263	105	0		446	38	578	175	0		791	**-**
Lights %	100%	94.6%	96.1%	0%		96.4%	96.9%	97.8%	96.5%	0%		97.4%	95.1%	98.1%	92.9%	0%		96.3%	73.1%	94.1%	98.9%	0%		93.8%	**-**
Mediums	0	8	9	0		17	15	8	2	0		25	3	4	4	0		11	7	7	2	0		16	**-**
Mediums %	0%	4.3%	3.2%	0%		2.9%	2.5%	1%	2.3%	0%		1.6%	3.7%	1.5%	3.5%	0%		2.4%	13.5%	1.1%	1.1%	0%		1.9%	**-**
Articulated Trucks	0	2	2	0		4	4	10	1	0		15	1	1	4	0		6	7	29	0	0		36	**-**
Articulated Trucks %	0%	1.1%	0.7%	0%		0.7%	0.7%	1.2%	1.2%	0%		1%	1.2%	0.4%	3.5%	0%		1.3%	13.5%	4.7%	0%	0%		4.3%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	9.1%		-	-	-	-	36.4%		-	-	-	-	9.1%		-	-	-	-	27.3%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	9.1%		-	-	-	-	9.1%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.68 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather:



Signal Timing Report

Runtime:

Device: 0401

Region: Mississauga **Signal ID:** 0401 **Location:** ROYAL WINDSOR DRIVE E at Winston Chi

Phase	Units	1 EBLT	2 EB/WB	3 SBLT	4 NB/SB	5		7
Walk	Sec	0	11	0	14	0	0	0
Ped Clear	Sec	0	17	0	23	0	0	0
Min Green	Sec	5	8	8	8	0	0	0
Passage	Sec	3.0	5.0	4.0	5.0	0.0	0.0	0.0
Maximum 1	Sec	10	22	15	35	0	0	0
Maximum 2	Sec	10	22	15	35	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0
Red Clearance	Sec	0.0	3.0	2.0	3.3	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det	0	0	0
[P2] Ring	Ring	1	1	1	1	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7
Cycle Time	Sec	140	120	140	0	0	0	0
Offset	Sec	108	2	108	0	0	0	0
Split	Split	1	2	3	0	0	0	0
Sequence	Sequence	1	1	1	0	0	0	0

Coord Split	Units	1	2	3	4	5		7
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none
Split 1 - Time	Sec	0	56	49	35	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false
Split 2 - Mode	Enum	phaseOmitted	none	none	none	none	none	none
Split 2 - Time	Sec	0	54	32	34	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	56	31	39	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	--M---------	----M----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWT
Day of Month	Bit	123456789012345678901234567890 1	12345678901234567890123456789 01	12345678901234567890123456789 01	1---------- ------	----------9---- -------	---------- ------0-	--------- ------
Day Plan	Number	1	3	2	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWT
Day of Month	Bit	-----6---------- ------	--3---------- ------	-------8---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0
Day Plan	Number	3	3	3	3	3	3	0

TB Dayplan	Units	1	2	3	4	5		7
Plan 1 Hour	Hour	0	6	9	15	19	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0

Signal Timing Report

Runtime: 07/11/2018 08:56:57

Device: 0401

Region: Mississauga **Signal ID:** 0401 **Location:** ROYAL WINDSOR DRIVE E at Winston Churchill Boulevard

Phase	Units	1 EBLT	2 EB/WB	3 SBLT	4 NB/SB	5		7	8
Walk	Sec	0	11	0	14	0	0	0	0
Ped Clear	Sec	0	17	0	23	0	0	0	0
Min Green	Sec	5	8	8	8	0	0	0	0
Passage	Sec	3.0	5.0	4.0	5.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	22	15	35	0	0	0	0
Maximum 2	Sec	10	22	15	35	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	2.0	3.3	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	other	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	1	1	1	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7	8
Cycle Time	Sec	140	120	140	0	0	0	0	0
Offset	Sec	108	2	108	0	0	0	0	0
Split	Split	1	2	3	0	0	0	0	0
Sequence	Sequence	1	1	1	0	0	0	0	0

Coord Split	Units	1	2	3	4	5		7	8
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	56	49	35	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	54	32	34	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	56	31	39	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F----------	--M---------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234 56789012345678 901	12345678901234 56789012345678 901	12345678901234 56789012345678 901	1---------- ------	----------9----- -------	---------- -----0-	----------1--- ------	-2---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6---------- ------	--3---------- ------	-------8-------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5		7	8
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0

TB Action	Units	1	2	3	4	5		7	8

Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX C

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

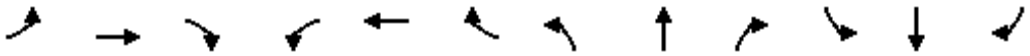
Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX D

Detailed Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Future Volume (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.396			0.164			0.491			0.950		
Satd. Flow (perm)	715	3562	0	247	3614	1560	920	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				208			70			222
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1050	0	30	530	208	29	150	112	618	253	222
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

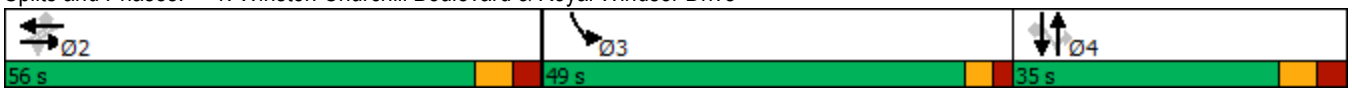


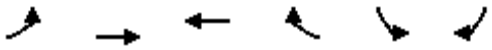
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.4	52.4		52.4	52.4	52.4	18.3	18.3	18.3	25.7	18.3	18.3
Actuated g/C Ratio	0.45	0.48		0.48	0.48	0.48	0.17	0.17	0.17	0.24	0.17	0.17
v/c Ratio	0.44	0.61		0.25	0.30	0.24	0.19	0.25	0.35	0.75	0.42	0.50
Control Delay	29.3	23.8		27.7	19.1	3.6	43.0	40.8	20.8	45.1	43.0	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	23.8		27.7	19.1	3.6	43.0	40.8	20.8	45.1	43.0	9.5
LOS	C	C		C	B	A	D	D	C	D	D	A
Approach Delay		24.5			15.2			33.3			37.4	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	19.8	81.3		3.6	34.2	0.0	5.3	14.5	7.6	62.3	25.2	0.0
Queue Length 95th (m)	47.3	132.6		13.9	59.4	14.0	14.6	25.7	24.6	87.5	40.5	20.4
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	318	1723		119	1745	860	264	1010	494	1447	1030	606
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.61		0.25	0.30	0.24	0.11	0.15	0.23	0.43	0.25	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 108.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 27.3		Intersection LOS: C	

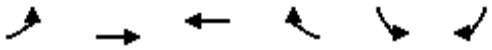
Intersection Capacity Utilization 73.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





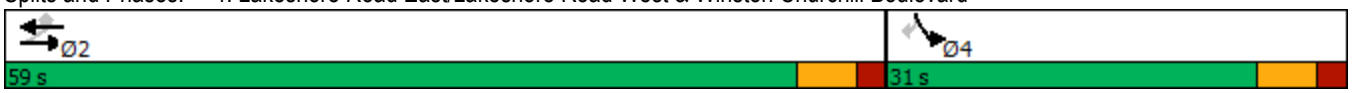
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	249	95	38	205	106
Future Volume (vph)	129	249	95	38	205	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				38		106
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	129	249	95	38	205	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	249	95	38	205	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	6.1	30.5	30.5	6.1	6.1	6.1
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)	6.1	1.8	1.8	6.1	6.1	6.1
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)		28.7	28.7			
Detector 2 Size(m)		1.8	1.8			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA	Perm	Prot	Perm

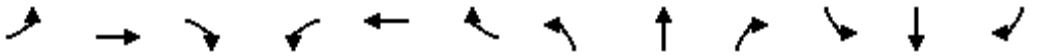


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.8	56.8	56.8	56.8	17.8	17.8
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.22	0.22
v/c Ratio	0.15	0.19	0.11	0.04	0.59	0.25
Control Delay	5.8	5.8	5.7	2.2	35.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	5.8	5.7	2.2	35.9	7.0
LOS	A	A	A	A	D	A
Approach Delay		5.8	4.7		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	5.9	11.8	4.2	0.0	28.3	0.0
Queue Length 95th (m)	15.2	26.1	11.6	3.2	48.1	11.2
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	888	1294	874	890	526	584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.11	0.04	0.39	0.18

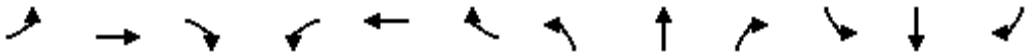
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 31.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard





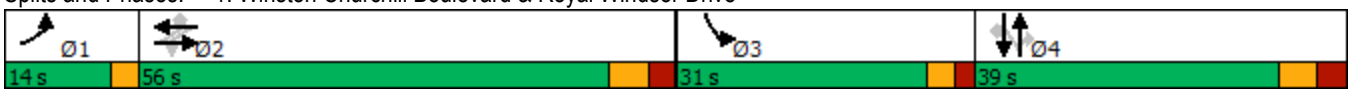
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Future Volume (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.229			0.309			0.630			0.950		
Satd. Flow (perm)	430	3406	0	574	3614	1558	1135	3650	1552	3397	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				550			94			129
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			2066.1			207.1	
Travel Time (s)		14.5			15.6			124.0			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	693	0	89	853	635	118	279	85	290	193	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												

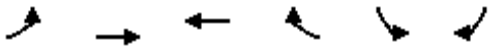


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.7	49.5		49.5	49.5	49.5	19.4	19.4	19.4	15.3	19.4	19.4
Actuated g/C Ratio	0.55	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.52	0.48		0.37	0.56	0.65	0.63	0.46	0.25	0.65	0.32	0.35
Control Delay	20.0	27.3		32.6	29.0	8.2	60.7	46.3	8.6	56.4	44.1	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	27.3		32.6	29.0	8.2	60.7	46.3	8.6	56.4	44.1	9.7
LOS	C	C		C	C	A	E	D	A	E	D	A
Approach Delay		25.8			20.8			43.2			42.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	18.9	59.0		13.7	76.6	11.7	25.5	30.7	0.0	32.9	20.7	0.0
Queue Length 95th (m)	41.4	95.6		34.9	121.1	57.2	46.5	45.6	11.3	51.9	32.7	15.9
Internal Link Dist (m)		217.7			235.4			2042.1			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	366	1448		243	1532	977	311	1001	493	771	991	524
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.48		0.37	0.56	0.65	0.38	0.28	0.17	0.38	0.19	0.25

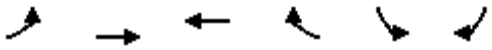
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 116.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 28.9		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





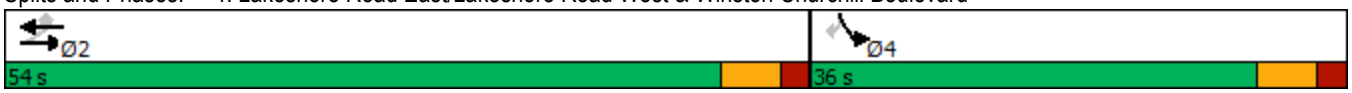
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	97	150	238	226	64	129
Future Volume (vph)	97	150	238	226	64	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				226		129
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		2066.1	
Travel Time (s)		48.8	53.1		124.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	97	150	238	226	64	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	150	238	226	64	129
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	6.1	30.5	30.5	6.1	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						

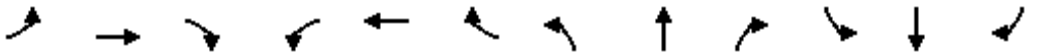


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.5	53.5	53.5	53.5	9.5	9.5
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.13	0.13
v/c Ratio	0.11	0.10	0.16	0.19	0.38	0.40
Control Delay	4.4	4.0	4.2	1.1	34.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	4.0	4.2	1.1	34.5	9.7
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.9	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.4	5.2	8.6	0.0	7.7	0.0
Queue Length 95th (m)	9.1	12.1	18.5	5.8	18.2	12.9
Internal Link Dist (m)		789.8	860.2		2042.1	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	855	1431	1445	1169	527	738
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.10	0.16	0.19	0.12	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.1			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



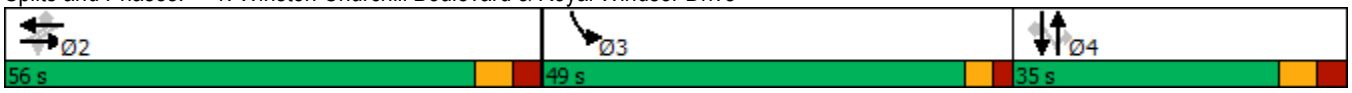


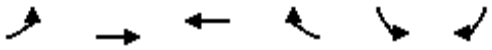
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Future Volume (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.388			0.156			0.484			0.950		
Satd. Flow (perm)	701	3562	0	234	3614	1560	907	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				212			70			226
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			236.2			207.1	
Travel Time (s)		14.5			15.6			14.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1071	0	31	541	212	30	153	114	630	258	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	48.4	52.4		52.4	52.4	52.4	18.5	18.5	18.5	26.2	18.5	18.5
Actuated g/C Ratio	0.44	0.48		0.48	0.48	0.48	0.17	0.17	0.17	0.24	0.17	0.17
v/c Ratio	0.46	0.63		0.28	0.31	0.25	0.20	0.26	0.36	0.76	0.43	0.50
Control Delay	30.5	24.6		29.6	19.5	3.6	43.5	41.0	21.2	45.3	43.3	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	24.6		29.6	19.5	3.6	43.5	41.0	21.2	45.3	43.3	9.5
LOS	C	C		C	B	A	D	D	C	D	D	A
Approach Delay		25.3			15.6			33.7			37.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	20.8	84.9		3.8	35.5	0.0	5.5	14.8	8.0	64.0	25.8	0.0
Queue Length 95th (m)	49.8	138.2		14.7	61.4	14.2	15.0	26.2	25.2	89.5	41.5	20.6
Internal Link Dist (m)		217.7			235.4			212.2			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	310	1713		112	1734	859	259	1004	492	1438	1024	606
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.63		0.28	0.31	0.25	0.12	0.15	0.23	0.44	0.25	0.37

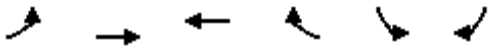
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 109.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





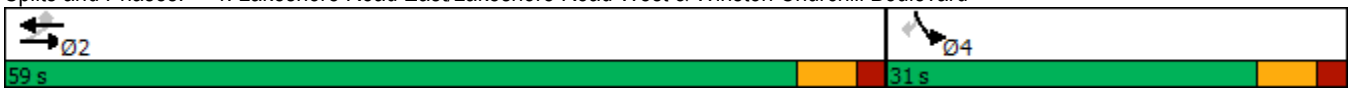
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	249	95	39	209	108
Future Volume (vph)	132	249	95	39	209	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				39		108
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1829.9	
Travel Time (s)		48.8	53.1		109.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	132	249	95	39	209	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	249	95	39	209	108
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	56.7	56.7	56.7	56.7	18.0	18.0

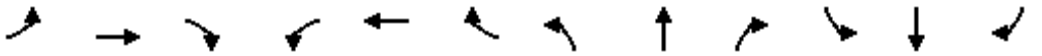


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.22	0.22
v/c Ratio	0.15	0.19	0.11	0.04	0.60	0.25
Control Delay	6.0	5.9	5.8	2.2	35.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	5.9	5.8	2.2	35.9	6.9
LOS	A	A	A	A	D	A
Approach Delay		5.9	4.8		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	6.2	12.0	4.3	0.0	28.9	0.0
Queue Length 95th (m)	15.7	26.5	11.8	3.3	49.0	11.1
Internal Link Dist (m)		789.8	860.2		1805.9	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	885	1289	871	887	525	584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.11	0.04	0.40	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



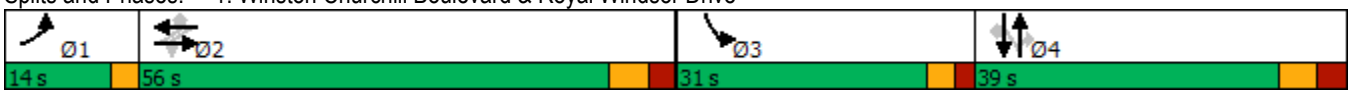


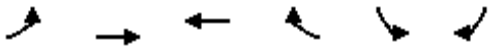
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Future Volume (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.220			0.301			0.628			0.950		
Satd. Flow (perm)	413	3406	0	560	3614	1558	1131	3650	1552	3397	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				544			94			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			236.1			207.1	
Travel Time (s)		14.5			15.6			14.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	707	0	91	870	648	120	285	87	296	197	132
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.8	49.5		49.5	49.5	49.5	19.6	19.6	19.6	15.5	19.6	19.6
Actuated g/C Ratio	0.54	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.55	0.49		0.39	0.57	0.67	0.64	0.47	0.26	0.65	0.33	0.35
Control Delay	21.0	27.8		33.6	29.5	9.2	61.4	46.5	9.0	56.7	44.3	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	27.8		33.6	29.5	9.2	61.4	46.5	9.0	56.7	44.3	9.7
LOS	C	C		C	C	A	E	D	A	E	D	A
Approach Delay		26.4			21.6			43.5			42.9	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.6	61.0		14.3	79.2	14.6	26.0	31.5	0.0	33.7	21.2	0.0
Queue Length 95th (m)	42.6	98.5		36.3	124.6	65.5	47.6	46.6	11.7	52.8	33.4	16.2
Internal Link Dist (m)		217.7			235.4			212.1			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	357	1440		236	1524	971	308	996	491	767	986	525
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.49		0.39	0.57	0.67	0.39	0.29	0.18	0.39	0.20	0.25

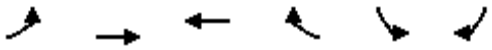
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 117.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	150	238	231	65	132
Future Volume (vph)	99	150	238	231	65	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				231		132
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1830.0	
Travel Time (s)		48.8	53.1		109.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	99	150	238	231	65	132
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	150	238	231	65	132
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.4	53.4	53.4	53.4	9.6	9.6
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.14	0.14
v/c Ratio	0.12	0.10	0.16	0.20	0.38	0.40
Control Delay	4.4	4.0	4.2	1.1	34.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	4.0	4.2	1.1	34.5	9.6
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.8	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.5	5.2	8.7	0.0	7.9	0.0
Queue Length 95th (m)	9.3	12.2	18.6	6.0	18.3	13.1
Internal Link Dist (m)		789.8	860.2		1806.0	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	854	1429	1443	1168	527	740
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.10	0.16	0.20	0.12	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

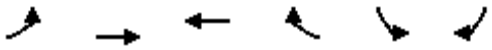
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Future Volume (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.346			0.108			0.446			0.950		
Satd. Flow (perm)	625	3562	0	162	3614	1560	836	3510	1545	3459	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				235			70			251
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1186	0	34	599	235	33	170	127	698	286	251
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	20.3	20.3	20.3	29.5	20.3	20.3
Actuated g/C Ratio	0.42	0.46		0.46	0.46	0.46	0.18	0.18	0.18	0.26	0.18	0.18
v/c Ratio	0.60	0.72		0.46	0.36	0.28	0.22	0.27	0.38	0.78	0.45	0.52
Control Delay	40.7	30.0		51.0	22.6	3.9	45.7	42.4	23.9	46.6	44.9	9.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	30.0		51.0	22.6	3.9	45.7	42.4	23.9	46.6	44.9	9.3
LOS	D	C		D	C	A	D	D	C	D	D	A
Approach Delay		31.3			18.7			35.6			38.6	
Approach LOS		C			B			D			D	
Queue Length 50th (m)	26.8	108.9		5.1	44.3	0.0	6.3	17.2	10.9	74.6	30.0	0.0
Queue Length 95th (m)	#68.6	175.1		#24.0	75.2	15.9	16.8	29.7	30.4	103.1	47.3	21.7
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	264	1639		74	1659	843	229	961	473	1376	979	608
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.72		0.46	0.36	0.28	0.14	0.18	0.27	0.51	0.29	0.41

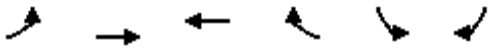
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 114.4
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



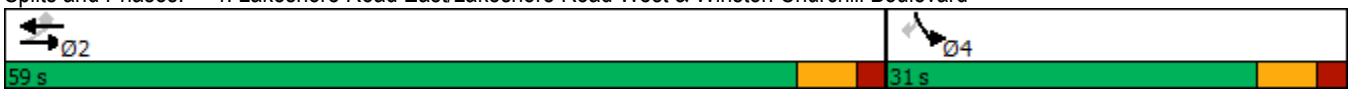
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	249	95	43	232	120
Future Volume (vph)	146	249	95	43	232	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				43		120
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	146	249	95	43	232	120
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	249	95	43	232	120
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	55.9	55.9	55.9	55.9	19.2	19.2
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.23	0.23
v/c Ratio	0.17	0.20	0.11	0.05	0.63	0.26
Control Delay	6.6	6.4	6.3	2.3	36.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	6.4	6.3	2.3	36.2	6.4
LOS	A	A	A	A	D	A
Approach Delay		6.5	5.1		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	7.4	12.8	4.6	0.0	32.6	0.0
Queue Length 95th (m)	18.4	28.2	12.5	3.6	54.2	11.7
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	869	1266	855	873	522	589
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.20	0.11	0.05	0.44	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



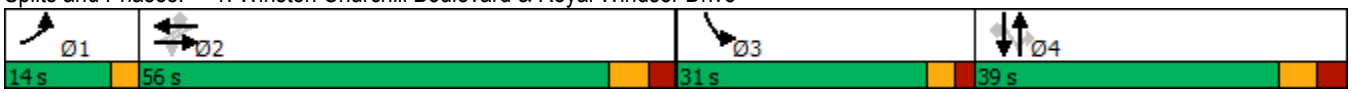
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Future Volume (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor		1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.161			0.245			0.492			0.950		
Satd. Flow (perm)	303	3406	0	456	3614	1558	887	3650	1552	3399	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				515			96			146
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	783	0	101	964	718	133	315	96	328	318	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

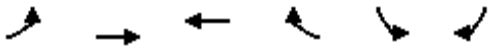
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	64.5	49.4		49.4	49.4	49.4	24.7	24.7	24.7	17.2	24.7	24.7
Actuated g/C Ratio	0.52	0.40		0.40	0.40	0.40	0.20	0.20	0.20	0.14	0.20	0.20
v/c Ratio	0.72	0.58		0.56	0.68	0.77	0.76	0.44	0.25	0.69	0.44	0.34
Control Delay	33.8	33.0		47.5	35.6	16.4	74.5	45.7	9.6	60.2	45.9	8.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	33.0		47.5	35.6	16.4	74.5	45.7	9.6	60.2	45.9	8.7
LOS	C	C		D	D	B	E	D	A	E	D	A
Approach Delay		33.2			28.5			46.4			45.0	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	27.2	81.3		19.9	106.2	45.8	31.0	35.9	0.0	41.1	36.3	0.0
Queue Length 95th (m)	#59.4	113.2		#47.9	144.5	113.2	#57.1	52.1	14.2	58.2	52.5	17.0
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	287	1351		180	1428	927	226	933	468	719	924	510
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.58		0.56	0.68	0.77	0.59	0.34	0.21	0.46	0.34	0.29

Intersection Summary

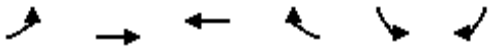
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 124.9
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 35.2 Intersection LOS: D
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





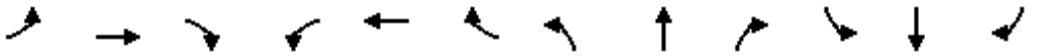
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	110	150	238	255	72	146
Future Volume (vph)	110	150	238	255	72	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				255		146
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	110	150	238	255	72	146
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	150	238	255	72	146
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	51.5	51.5	51.5	51.5	10.0	10.0
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.14	0.14
v/c Ratio	0.14	0.11	0.18	0.23	0.42	0.43
Control Delay	4.7	4.3	4.6	1.2	35.5	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.3	4.6	1.2	35.5	9.4
LOS	A	A	A	A	D	A
Approach Delay		4.5	2.8		18.0	
Approach LOS		A	A		B	
Queue Length 50th (m)	4.0	5.4	8.9	0.0	8.7	0.0
Queue Length 95th (m)	10.6	12.6	19.2	6.4	19.9	13.7
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	793	1328	1341	1109	510	728
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.11	0.18	0.23	0.14	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

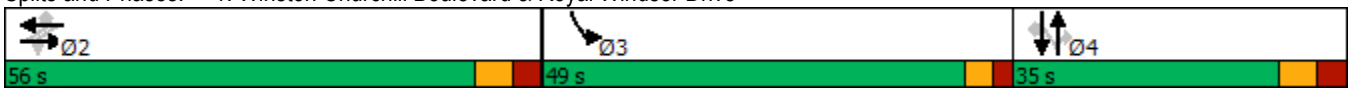


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Future Volume (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3554	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.385			0.146			0.434			0.950		
Satd. Flow (perm)	695	3554	0	219	3614	1560	813	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				212			70			226
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1085	0	36	541	212	31	161	120	630	301	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	20.3	20.3	20.3	26.7	20.3	20.3
Actuated g/C Ratio	0.43	0.47		0.47	0.47	0.47	0.18	0.18	0.18	0.24	0.18	0.18
v/c Ratio	0.48	0.65		0.35	0.32	0.25	0.21	0.25	0.36	0.76	0.46	0.48
Control Delay	32.5	26.3		35.9	20.7	3.8	43.7	40.6	21.7	46.4	43.5	8.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	26.3		35.9	20.7	3.8	43.7	40.6	21.7	46.4	43.5	8.9
LOS	C	C		D	C	A	D	D	C	D	D	A
Approach Delay		27.1			16.9			33.6			38.3	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	21.5	89.4		4.7	36.7	0.0	5.7	15.7	9.2	65.2	30.7	0.0
Queue Length 95th (m)	52.0	148.0		18.5	64.7	14.8	15.5	27.4	27.3	92.3	48.1	20.3
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	301	1677		103	1700	846	228	984	483	1410	1004	599
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.65		0.35	0.32	0.25	0.14	0.16	0.25	0.45	0.30	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 111.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	21	170	335	44
Future Vol, veh/h	15	5	21	170	335	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	20	20	2	2	20
Mvmt Flow	15	5	21	170	335	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	547	335	379	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	468	668	1087	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	459	668	1087	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1087	-	498	-	-
HCM Lane V/C Ratio	0.019	-	0.04	-	-
HCM Control Delay (s)	8.4	-	12.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

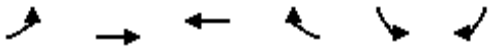
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	191	322	18
Future Vol, veh/h	0	5	0	191	322	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	2	0
Mvmt Flow	0	5	0	191	322	18

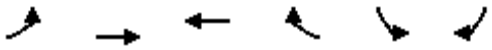
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	322	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	724	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	724	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	724	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	10	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-



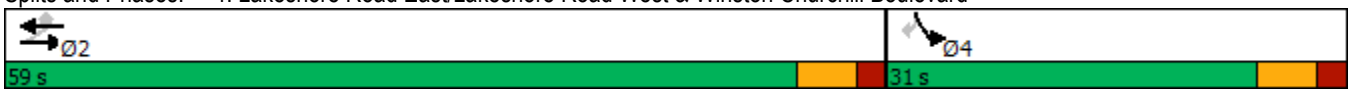
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	148	249	95	44	215	112
Future Volume (vph)	148	249	95	44	215	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				44		112
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		748.3	
Travel Time (s)		48.8	53.1		44.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	148	249	95	44	215	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	249	95	44	215	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0

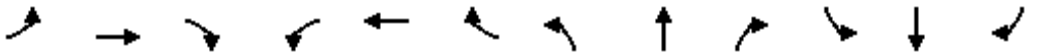


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.5	56.5	56.5	56.5	18.3	18.3
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22	0.22
v/c Ratio	0.17	0.19	0.11	0.05	0.61	0.26
Control Delay	6.2	6.0	5.9	2.2	36.0	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	6.0	5.9	2.2	36.0	6.8
LOS	A	A	A	A	D	A
Approach Delay		6.1	4.7		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	7.1	12.2	4.4	0.0	29.9	0.0
Queue Length 95th (m)	17.8	27.1	11.9	3.6	50.4	11.4
Internal Link Dist (m)		789.8	860.2		724.3	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	881	1283	867	885	525	587
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.19	0.11	0.05	0.41	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.8			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



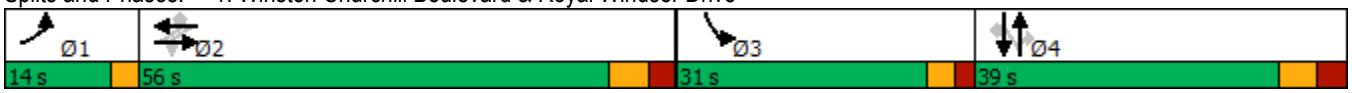


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Future Volume (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3404	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.218			0.297			0.621			0.950		
Satd. Flow (perm)	409	3404	0	552	3614	1558	1119	3650	1552	3398	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				537			94			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	710	0	97	870	648	125	299	91	296	208	132
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.8	49.5		49.5	49.5	49.5	20.3	20.3	20.3	15.6	20.3	20.3
Actuated g/C Ratio	0.54	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.55	0.50		0.42	0.57	0.67	0.65	0.48	0.26	0.65	0.34	0.35
Control Delay	21.5	28.3		35.3	30.0	9.6	62.2	46.5	9.7	57.1	44.2	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	28.3		35.3	30.0	9.6	62.2	46.5	9.7	57.1	44.2	9.5
LOS	C	C		D	C	A	E	D	A	E	D	A
Approach Delay		26.9			22.2			43.8			43.0	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	20.0	62.1		15.7	80.2	15.9	27.3	33.2	0.0	34.0	22.4	0.0
Queue Length 95th (m)	42.6	98.8		39.2	124.6	68.1	49.5	48.8	13.1	52.8	35.0	16.2
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	353	1430		231	1514	964	303	989	489	762	979	522
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.50		0.42	0.57	0.67	0.41	0.30	0.19	0.39	0.21	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 118.2			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	0	14	329	204	13
Future Vol, veh/h	23	0	14	329	204	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	0	20	2	2	20
Mvmt Flow	23	0	14	329	204	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	561	204	217	0	-	0
Stage 1	204	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	6.6	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.3	2.38	-	-	-
Pot Cap-1 Maneuver	460	842	1253	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	842	1253	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1253	-	455	-	-
HCM Lane V/C Ratio	0.011	-	0.051	-	-
HCM Control Delay (s)	7.9	-	13.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

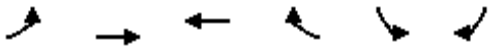
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	343	197	7
Future Vol, veh/h	0	2	0	343	197	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	2	0
Mvmt Flow	0	2	0	343	197	7

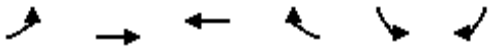
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	197	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	849	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	849	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	849	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	9.3	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	103	150	238	241	66	133
Future Volume (vph)	103	150	238	241	66	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				241		133
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		739.6	
Travel Time (s)		48.8	53.1		44.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	103	150	238	241	66	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	150	238	241	66	133
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.3	53.3	53.3	53.3	9.6	9.6
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.14	0.14
v/c Ratio	0.12	0.11	0.17	0.21	0.39	0.40
Control Delay	4.5	4.0	4.2	1.1	34.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	4.0	4.2	1.1	34.6	9.6
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.9	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.6	5.2	8.7	0.0	8.0	0.0
Queue Length 95th (m)	9.6	12.2	18.7	6.1	18.6	13.0
Internal Link Dist (m)		789.8	860.2		715.6	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	853	1428	1442	1170	528	741
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.11	0.17	0.21	0.13	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

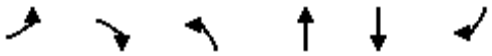
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Future Volume (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3554	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.342			0.098			0.401			0.950		
Satd. Flow (perm)	618	3554	0	147	3614	1560	752	3510	1545	3459	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				235			70			251
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1200	0	39	599	235	34	178	133	698	329	251
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	22.0	22.0	22.0	29.9	22.0	22.0
Actuated g/C Ratio	0.42	0.45		0.45	0.45	0.45	0.19	0.19	0.19	0.26	0.19	0.19
v/c Ratio	0.62	0.75		0.59	0.37	0.28	0.24	0.27	0.38	0.79	0.49	0.51
Control Delay	43.1	31.9		69.1	23.8	4.1	46.2	42.0	24.3	47.6	45.2	8.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	31.9		69.1	23.8	4.1	46.2	42.0	24.3	47.6	45.2	8.8
LOS	D	C		E	C	A	D	D	C	D	D	A
Approach Delay		33.2			20.5			35.6			39.4	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	27.8	114.6		6.4	45.7	0.0	6.6	18.2	12.1	76.1	35.2	0.0
Queue Length 95th (m)	#72.0	185.1		#30.4	78.2	16.4	17.3	31.0	32.1	105.7	54.2	21.6
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	257	1606		66	1628	832	202	943	466	1350	961	601
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.75		0.59	0.37	0.28	0.17	0.19	0.29	0.52	0.34	0.42

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 116.6
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 32.6 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	5	21	170	369	44
Future Volume (vph)	15	5	21	170	369	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	82.5			20.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		52.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966					0.850
Flt Protected	0.964		0.950			
Satd. Flow (prot)	1019	0	1789	1883	1883	799
Flt Permitted	0.964		0.950			
Satd. Flow (perm)	1019	0	1789	1883	1883	799
Link Speed (k/h)	40			60	60	
Link Distance (m)	160.4			178.4	960.1	
Travel Time (s)	14.4			10.7	57.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	2%	2%	2%	2%	100%
Adj. Flow (vph)	15	5	21	170	369	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	21	170	369	44
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.4%		ICU Level of Service A	
Analysis Period (min) 15			

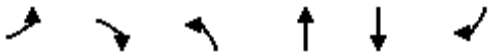
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	21	170	369	44
Future Vol, veh/h	15	5	21	170	369	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	2	2	2	2	100
Mvmt Flow	15	5	21	170	369	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	581	369	413	0	-	0
Stage 1	369	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	7.4	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	346	677	1146	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	340	677	1146	-	-	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1146	-	388	-	-
HCM Lane V/C Ratio	0.018	-	0.052	-	-
HCM Control Delay (s)	8.2	-	14.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	0	210	356	18
Future Volume (vph)	0	5	0	210	356	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1662	0	1883	1883	1597
Flt Permitted						
Satd. Flow (perm)	0	1662	0	1883	1883	1597
Link Speed (k/h)	40			60	60	
Link Distance (m)	176.7			741.2	178.4	
Travel Time (s)	15.9			44.5	10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Adj. Flow (vph)	0	5	0	210	356	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	5	0	210	356	18
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.7%		ICU Level of Service A	
Analysis Period (min) 15			

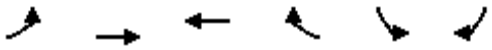
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	210	356	18
Future Vol, veh/h	0	5	0	210	356	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	0	5	0	210	356	18

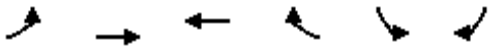
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	356	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	693	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	693	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	693	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	10.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-



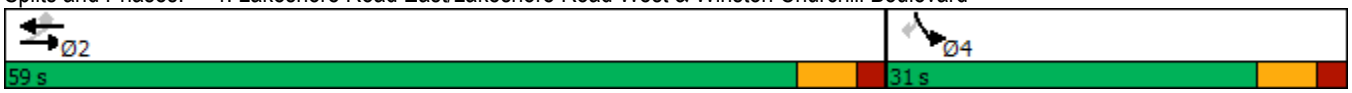
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	162	249	95	48	238	124
Future Volume (vph)	162	249	95	48	238	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				48		124
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		741.2	
Travel Time (s)		48.8	53.1		44.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	162	249	95	48	238	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	162	249	95	48	238	124
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0

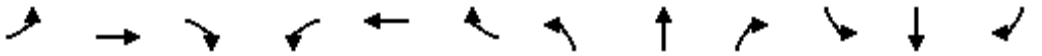


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	55.8	55.8	55.8	55.8	19.5	19.5
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.23	0.23
v/c Ratio	0.19	0.20	0.11	0.06	0.63	0.27
Control Delay	6.8	6.5	6.4	2.3	36.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	6.5	6.4	2.3	36.3	6.4
LOS	A	A	A	A	D	A
Approach Delay		6.6	5.0		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	8.4	13.0	4.6	0.0	33.6	0.0
Queue Length 95th (m)	20.5	28.4	12.6	3.9	55.7	11.8
Internal Link Dist (m)		789.8	860.2		717.2	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	865	1260	851	871	522	592
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.20	0.11	0.06	0.46	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.3			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



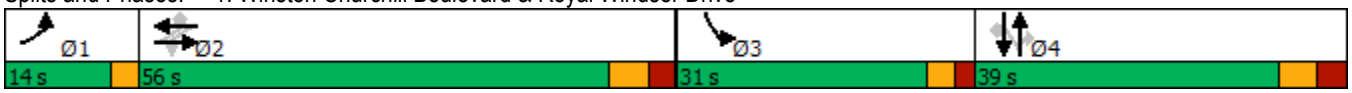


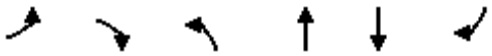
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Future Volume (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor		1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3405	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.167			0.248			0.609			0.950		
Satd. Flow (perm)	314	3405	0	461	3614	1558	1097	3650	1552	3399	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				510			100			146
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	786	0	107	964	718	138	329	100	328	229	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	64.5	49.4		49.4	49.4	49.4	22.5	22.5	22.5	17.0	22.5	22.5
Actuated g/C Ratio	0.53	0.40		0.40	0.40	0.40	0.18	0.18	0.18	0.14	0.18	0.18
v/c Ratio	0.70	0.57		0.58	0.66	0.77	0.69	0.49	0.27	0.69	0.35	0.36
Control Delay	30.9	31.8		47.1	34.2	16.1	64.6	47.2	9.8	59.0	44.8	9.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	31.8		47.1	34.2	16.1	64.6	47.2	9.8	59.0	44.8	9.0
LOS	C	C		D	C	B	E	D	A	E	D	A
Approach Delay		31.6			27.7			44.8			44.0	
Approach LOS		C			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 122.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 80.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	0	14	329	225	13
Future Volume (vph)	23	0	14	329	225	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	82.5			20.0
Storage Lanes	1	0	1			1
Taper Length (m)	2.5		52.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	913	0	1789	1883	1883	799
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	913	0	1789	1883	1883	799
Link Speed (k/h)	40			60	60	
Link Distance (m)	160.4			182.9	956.1	
Travel Time (s)	14.4			11.0	57.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	2%	2%	2%	100%
Adj. Flow (vph)	23	0	14	329	225	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	14	329	225	13
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3%		ICU Level of Service A	
Analysis Period (min) 15			

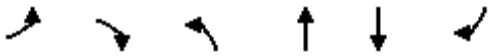
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	0	14	329	225	13
Future Vol, veh/h	23	0	14	329	225	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	2	2	2	100
Mvmt Flow	23	0	14	329	225	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	582	225	238	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	7.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	346	819	1329	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	819	1329	-	-	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1329	-	342	-	-
HCM Lane V/C Ratio	0.011	-	0.067	-	-
HCM Control Delay (s)	7.7	-	16.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	2	0	379	218	7
Future Volume (vph)	0	2	0	379	218	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.6		7.6			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1662	0	1921	1883	1597
Flt Permitted						
Satd. Flow (perm)	0	1662	0	1921	1883	1597
Link Speed (k/h)	40			60	60	
Link Distance (m)	176.7			740.7	182.9	
Travel Time (s)	15.9			44.4	11.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	2	0	379	218	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2	0	379	218	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.3%		ICU Level of Service A	
Analysis Period (min) 15			

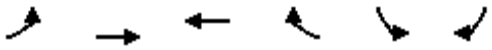
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	379	218	7
Future Vol, veh/h	0	2	0	379	218	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	0	2	0	379	218	7

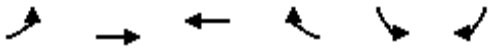
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	218	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	827	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	827	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	827	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	9.4	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	150	238	265	73	147
Future Volume (vph)	114	150	238	265	73	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				265		147
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		740.7	
Travel Time (s)		48.8	53.1		44.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	114	150	238	265	73	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	150	238	265	73	147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	51.4	51.4	51.4	51.4	10.0	10.0
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.14	0.14
v/c Ratio	0.14	0.11	0.18	0.24	0.43	0.43
Control Delay	4.8	4.3	4.6	1.2	35.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	4.3	4.6	1.2	35.7	9.4
LOS	A	A	A	A	D	A
Approach Delay		4.5	2.8		18.2	
Approach LOS		A	A		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

FIGURES

Kavleen Sachdeva

From: Gariscsak, Anne <Anne.Gariscsak@halton.ca>
Sent: Thursday, March 7, 2019 10:12 AM
To: Kavleen Sachdeva
Cc: Matt Krusto; Walter Scattolon
Subject: FW: 560 Winston Churchill ToR (CFC#0756-5105)
Attachments: 560 Winston Churchill Plan.pdf

Importance: High

Halton Region staff have reviewed the proposed Terms of Reference and offer the following comments:

Data Requests:

-Data requests for Halton Region information (traffic counts/signal timing) should be completed via the data request process with a request to accesshalton@halton.ca or from the Town of Oakville. **If traffic data is older than 2 years, then updated turning movement counts are required.**

-Town of Oakville will provide area development details (background development), as well as details related to planned town roadway improvements.

-Region of Peel must review and approve the scope of work, as Winston Churchill Boulevard is a boundary road between Halton & Peel Regions.

Transportation Impact Study Requirements (TIS):

-The following intersections have been proposed for the Transportation Impact Study area, and are acceptable:

- Winston Churchill at Lakeshore
- Winston Churchill at Royal Windsor
- South site access directly on Winston Churchill (only one access (south access) can be supported)
- Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.

Analysis Assumptions:

-Horizon years: The proposed horizon year analysis of 2019, 2021 (opening) and 2026 (5 year horizon) is acceptable.

-Growth Rate: For Winston Churchill, a 2% growth rate will be acceptable.

-Winston Churchill Capital Works: Halton does not have any capital works proposed along this section of Winston Churchill. **Peel Region** must also be consulted regarding any capital works along this section of Winston Churchill.

The TIS report shall include:

- Site Plan and Map,
- Size & Number of Development Phases,
- 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 (5 years Ahead),
- 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

Should you have any detailed technical questions regarding the above comments , please contact Matt or Walter (cc;'d) .

Thank you,
Anne Gariscsak.

Anne Gariscsak, MCIP RPP
Planner
Planning Services
Legislative & Planning Services
Halton Region
905-825-6000, ext. 7109 | 1-866-442-5866

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Monday, February 25, 2019 11:44 AM
To: Krusto, Matt
Cc: Aaron Wignall
Subject: 560 Winston Churchill ToR (CFC#0756-5105)

Good Morning Matt,

We have been retained to prepare a **Transportation Impact Study (TIS)**, and **Truck Turning Plan** in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard. Per the attached Site Plan prepared by Baldassarra Architects Inc. (dated November 2018), elements envisioned for this development include:

- One (1) industrial use building with an approximate G.F.A of 62,849.54 m^2
- Associated at-ground parking (approximately 459 spaces)

- Two (2) site accesses from Winston Churchill Boulevard
- Stormwater management facility (approximate area of 2.32 acres).

Since the proposed site has two accesses onto Winston Churchill Boulevard, which is a boundary road between Peel Region and Halton Region, the following scope of work is prepared per the Halton Regions Transportation Impact Study Guidelines (January 2015) and Region of Peel Traffic Impact Study Terms of Reference.

We request your feedback regarding our study assumptions.

Study Methodology for the Traffic Impact Study

Study Area and Intersections to Assess

The following intersections will be analyzed:

- Existing:
  - Lakeshore Road East at Winston Churchill Boulevard, and
  - Royal Windsor Drive at Winston Churchill Boulevard
- Future
  - Winston Churchill Boulevard and Site Access (1), and
  - Winston Churchill Boulevard and Site Access (2)

We will collect the traffic counts at the existing signalized intersections on a typical weekday during the morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak periods.

- Please provide the existing Signal Timing Plan for the intersections of Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Analysis Periods and Scenarios

The weekday AM and PM peak hours for 2019 existing conditions, considering an opening year of 2021, a 5-year horizon year after full build-out (2026) will be considered for background and total traffic conditions.

Background Developments and Growth Rates

- Please provide developments that should be included in our analysis along with the associated traffic impact studies for the developments.

- Please provide the growth rate that can be used for Lakeshore Road East, Winston Churchill Boulevard, and Royal Windsor Drive. Should this information not be available, an industry standard of two percent will be applied to through movements along the study intersections.

Trip Generation

Trip generation for the proposed development will be based on the Trip Generation Manual, 10th Edition prepared by the Institute of Transportation Engineers (ITE) for Warehousing (150). To be conservative, the fitted curve equation will be used. Transit and active transportation modal split ratios will be considered per the Transportation Survey Data.

Transportation Tomorrow Survey data will be used for trip distribution and assignment.

Roadway Improvements

- Please provide details of the timings and phasing of the planned road widening on Winston Churchill Boulevard.

Analysis Procedures

Weekday AM and PM peak hours will be analyzed using the Synchro 10.0 and Highway Capacity Manual (HCM) procedures.

We will use a peak hour factor of 1.00 per Region of Peel's Synchro Guidelines.

Transportation Demand Management Plan

We will provide several transportation demand management measures to support active transportation and transit as an attempt to reduce the number of auto trips to/from the proposed development.

Truck Turning Plan

We will use AutoTURN to illustrate how delivery trucks and garbage trucks will load and unload materials on the site and the location of travel through the site.

Could you please provide any comments you may have on the above ToR and provide the following information for inclusion in the study:

1. Please provide the existing Signal Timing Plan for the intersections of Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard
2. Please provide the growth rate that can be used for Lakeshore Road East, Winston Churchill Boulevard, and Royal Windsor Drive.
3. Please provide details of the timings and phasing of the road widening planned on Winston Churchill Boulevard.
4. Please provide developments that should be included in our analysis along with the associated traffic impact studies for the developments.

Lastly, it is our understanding that you can assist with coordinating with Peel Region to get their approval on the above workplan, if this is not the case could you kindly refer me to your counterparts in Peel?

I hope the above is acceptable. Should you have any questions or concerns, please feel free to contact myself or my colleague Aaron Wignall copied on this email.

Regards,

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

Kavleen Sachdeva

From: Asadullah Yousfani <asad.yousfani@oakville.ca>
Sent: Friday, March 15, 2019 10:31 AM
To: Kavleen Sachdeva
Subject: RE: 560 Winston Churchill (CFC#0756-5105)
Attachments: 560 Winston Churchill Plan.pdf

Hi Kavleen,

I've attached Town map, which highlights all of the active development applications - https://maps.oakville.ca/gxmaps/default.aspx?map=map06.

Are you aware of the requirements from Mississauga? Road widening along Winston Churchill? During precon, I identified substandard throat lengths on concept plan, and recommended requirements as per the TAC guidelines and or per the analysis. Please ensure you address that.

Please let me know if you have any questions.

Thanks-ASAD

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

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Tuesday, March 12, 2019 11:11 AM
To: Asadullah Yousfani <asad.yousfani@oakville.ca>
Subject: FW: 560 Winston Churchill (CFC#0756-5105)

Hi Asad,

We have been retained to prepare a Transportation Impact Study (TIS), and Truck Turning Plan in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard.

I was wondering if you could help me get information about any background developments that should be added in our analysis. Our study horizon years are 2019, 2021, and 2026. Our study intersections are Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Please let me know what other information you would need from my end for providing information (preferably the Traffic Impact Studies) about the surrounding developments that should be included.

Thank you

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

From: Heinz Hecht <heinz.hecht@oakville.ca>
Sent: Friday, March 8, 2019 4:35 PM
To: Kavleen Sachdeva <ksachdeva@cfcrozier.ca>
Cc: Asadullah Yousfani <asad.yousfani@oakville.ca>
Subject: RE: 560 Winston Churchill (CFC#0756-5105)

Please contact Asad Yousfani for further assistance. Also, please note that the attached site plan was discussed at a recent pre-consultation meeting. The proposed plan does not conform to the Zoning by-law (orientation of loading dock doors) and it was strongly recommended that the proposal be revised accordingly as it would not be supported by Town staff.

Regards

Heinz Hecht, MCIP, RPP
Manager- Planning, Current Planning - East District
Planning Services
Town of Oakville | 905-845-6601, ext.3311 | f: 905-338-4414 | www.oakville.ca

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Canada's Best Place to Live (MoneySense 2018)

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Friday, March 08, 2019 3:23 PM
To: Heinz Hecht <heinz.hecht@oakville.ca>
Subject: 560 Winston Churchill (CFC#0756-5105)

Hi Heinz,

We have been retained to prepare a Transportation Impact Study (TIS), and Truck Turning Plan in support of a Site Plan Application for an Employment-Use building located at 560 Winston Churchill Boulevard.

Anne Gariscsak from Halton Region suggested I contact you to receive information about any background developments that should be added in our analysis. I have attached the Site Plan for your reference. Our study horizon years are 2019, 2021, and 2026. Our study intersections are Lakeshore Road East at Winston Churchill Boulevard and Royal Windsor Drive at Winston Churchill Boulevard.

Please let me know what other information you would need from my end for providing information (preferably the Traffic Impact Studies) about the surrounding developments that should be included.

Thank you,

Best Regards

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

Kavleen Sachdeva

From: Papiez-Lopata, Brittany <Brittany.Papiez-Lopata@halton.ca>
Sent: Monday, March 18, 2019 12:21 PM
To: Kavleen Sachdeva
Subject: RE: TMC/Signal Timing Plans
Attachments: 10334201 - WINSTON CHURCHILL @ LAKESHORE.xls; 10334201 - WINSTON CHURCHILL @ LAKESHORE.pdf; 19_WCB_@_Royal_Windsor_Dr.xls; 19 _WCB_@_Lakeshore_Rd.xls

Good afternoon,
I have attached the data, please let me know you have received it. If you have any other questions or concerns feel free to ask.

Regards,
Britt

From: Kavleen Sachdeva [mailto:ksachdeva@cfcrozier.ca]
Sent: Monday, March 18, 2019 11:45 AM
To: Papiez-Lopata, Brittany
Subject: RE: TMC/Signal Timing Plans

Thank you Brittany

Please proceed with the signal timing plan for both the intersections, and the turning movement counts for the intersection of Lakeshore Road East at Winston Churchill Boulevard.

Regards

Kavleen Sachdeva | Engineering Intern
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | ksachdeva@cfcrozier.ca
tel: 905.875.0026 ext: 359

From: Papiez-Lopata, Brittany <Brittany.Papiez-Lopata@halton.ca>
Sent: Friday, March 15, 2019 11:19 AM
To: Kavleen Sachdeva <ksachdeva@cfcrozier.ca>
Subject: TMC/Signal Timing Plans

Hello,

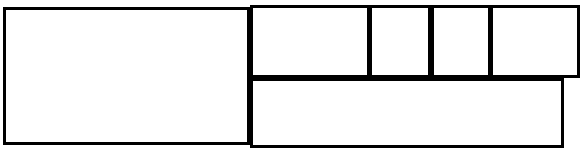
The costing per TMC is $72.85, while signal timing plan is $62.11, both before tax. As for billing you will receive and invoice from Halton Region within a few weeks, once its processed at our finance department.

As for most recent TMC , I have listed the date below for each intersection.
Lakeshore Road East at Winston Churchill Boulevard – 2018, most UTD count
Royal Windsor Drive at Winston Churchill Boulevard-2016, most UTD count

Let me know if you have any questions and if you wish to proceed with the request.

Regards,
Britt

Brittany Papiez-Lopata
Traffic Ops & Safety Co-Op Student
Waste Management & Road Operations
Public Works
Halton Region
905-825-6000, ext. 7174 | 1-866-442-5866



Kavleen Sachdeva

From: Kol, Rani <rani.kol@peelregion.ca>
Sent: Monday, March 18, 2019 1:20 PM
To: Kavleen Sachdeva
Cc: Ambrico, Angelo; Alex Martino
Subject: Traffic Engineering Comments - Terms of Reference - 560 Winston Churchill Boulevard - D-01901300W

Kavleen,

The Traffic Engineering section has reviewed the Terms of Reference for the above noted property received on March 8, 2019 and wishes to offer the following:

- We are in support of the comments and position regarding access provided by Halton Region staff;
- We do not have any record of any Capital Projects along Winston Churchill at this time.
- Please contact Roman Kuczynski, Supervisor, Transportation Planning at extension 4381 to obtain the Growth Rates along Winston Churchill Boulevard;
- Please contact Damian Jamroz, Supervisor, Traffic Operations at extension 7856 for most recent average annual daily traffic (AADT) and TMCs required for the study; and
- Please contact Rick Laing, Supervisor, Traffic Signals and Streetlighting at extension 7859 for the most up-to-date Traffic Signal Timing Parameters and ensure that the information includes the appropriate walk/don't walk splits, recall modes and offsets.
- Please contact Development Services Planning staff to obtain details on surrounding developments in the area that would affect traffic capacity in the planning horizon year(s).

Also, for your use please see the below standard Terms of Reference outline;

Full Description

The study must provide a full description of the proposed development. This includes, but is not limited to:

- Municipal address.
- Existing land uses that are permitted and use provisions in an Official Plan Amendment, Zoning By-law, etc.
- Proposed land uses.
- Floor space, including a summary of each type of use and/or number of residential units (where applicable).
- Anticipated date of occupancy.
- Approximate hour of operation.
- Planned phasing of the development.
- Nearby Regional intersections and access to adjacent developments, including type of control (signalized or unsignalized).
- Number of lanes, width and configuration:
  - The requirements for auxiliary turn lanes shall be reviewed. Adequate spacing must be provided between access points in accordance with the Region of Peel's current Controlled Access By-law, as amended. All design standards must be in accordance with those outlined in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads and the Ministry of Transportation, Ontario (MTO) Geometric Design Standards for Ontario Highways.
- Proposed access points and type of access:
  - When determining the location of an access, consideration should be given to how the access will affect the surrounding road network, area residents and area businesses. All proposed site access points on Regional roads should be evaluated for capacity, safety and adequacy of queue storage capacity. Approval of the proposed access will be evaluated using the Region of Peel's current Controlled Access By-law, as amended and sound engineering judgement.
- Nearby transit facilities/stops.
- Bike paths.

- A combination of maps and other documentation, which will identify all relevant information.

Traffic Volume Analysis

A traffic volume analysis must include:

- Horizon of 5 years is acceptable.
- AM and PM peak periods are acceptable.
- Background, site-generated and total traffic volumes.
- "Worst case" combination of site-related and background traffic.

Trip Generation and Distribution

A trip distribution and trip generation analysis must include:

- Trip generation surveys from similar developments in the Region which have similar operating characteristics as the proposed development.
- Latest edition of the Institute of Transportation Engineers (ITE) trip generation rates are acceptable (use the greater of the average rate method or the fitted line equation).
- A table summarizing your findings.
- Trip distribution assumptions must be supported by one or more of the following:
  - Transportation Tomorrow Survey
  - Origin-destination surveys
  - Comprehensive travel surveys
  - Existing/anticipated travel patterns
  - Output from the Region of Peel Travel Demand Forecasting Model
  - Market studies

Capacity Analysis

The report must include capacity analysis completed in Synchro (version 7.0 preferred, but version 8.0 will be accepted as per the Highway Capacity Manual (HCM) 2000 standards and not the new HCM 2010 module). Unsignalized analysis can be completed in either Synchro or CCG Intercalc (2008 version at a minimum).

The following parameters must be used in either software:

- Saturation flow rate of 1,900 vehicles per hour
- 3.7 metre lane width on Regional roads; and
- 3.5 metre lane width on the intersecting street(s) and/or access(es)

For Synchro analysis, see Regional Guidelines for Using Synchro 7.0 for other individual parameters. For CCG Intercalc analysis, saturation adjustments should include a complete breakdown of vehicle types by percentage (based on available data) and is to be documented in a table in the report.

The analysis must also include the identification of signalized intersections, unsignalized intersections and unsignalized accesses where:

- Volume/capacity (V/C) ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above.
- V/C ratios for exclusive movements that will exceed 1.00.
- 95th percentile queue lengths for individual movements and do they exceed available lane storage.

All intersections that are modelled as signalized intersections (other than existing signalized intersections) must be supported by an Ontario Traffic Manual (OTM) Book 12 traffic control signals warrant, each one required to be included in the appendix of the TIS.

If traffic control signals are found to be warranted at a particular intersection in an earlier horizon year (e.g. 5 year horizon), a warrant is not required for the subsequent horizon year (e.g. 10 year horizon). The horizon year in which a particular intersection is warranted for traffic control signals must be documented in the text of the TIS. A roundabout feasibility analysis may also be required at the direction of Regional staff.

In Synchro unsignalized intersection analysis, if an unacceptable LOS ("E" or higher) and v/c ratio results on the minor approach in existing conditions analysis, the consultant shall conduct a gap study to establish an average value for gaps accepted (in seconds) and override the resultant value for the HCM-calculated critical gap in the Signing window.

For horizon year analysis with an existing two- lane road, if the road is forecasted to be widened to four lanes by the respective horizon year, the consultant shall override the resultant value for the HCM-calculated critical gap in the Signing window by inputting recommended values for critical gap of left-turning and right-turning movements onto a four-lane road as identified in the Ministry of Transportation, Ontario (MTO) Geometric Design Standards for Ontario Highways.

Sight Distance Evaluation

A review and analysis of the sight distance availability for all proposed accesses or roads is required. The sight distance requirements must be determined based on the most current standards and guidelines used by the Region of Peel. Available sight distance should be taken from actual field measurements to ensure accurate conditions.

Assess the sightlines based on the Region of Peel's standard practice, eye height and object height of 1.05 metres and 0.38 metres above road surface, respectively. The Region requires the access to meet the following sightline requirements:

1. Stopping sight distance; and
2. Turning sight distance.

Sight distances must be in accordance with the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads methodology. Folded full size and to scale drawings of the sightline analysis are required for our review and comment.

Safety

Identification of potential safety or operational issues must be reviewed that are associated with:

- weaving
- merging
- corner clearances
- sight distances
- vehicle/pedestrian conflicts
- traffic infiltration
- access conflicts
- cyclist movements
- heavy truck movement conflicts

In addition, should the development be determined by Regional staff to be adjacent to a Regional intersection or road segment with significant collision history, most recent five-year collision data for the intersection(s) and/or road segment (s) must be reviewed and an assessment of the impact of the proposed development provided. Such information may be helpful to minimize any additional problems through the design or location of access points along the subject Regional road(s). Please contact William Toy, Supervisor, Traffic Safety at extension 7869 for collision information.

Functional Design

A functional design detailing a recommended access configuration and/or proposed intersection geometrics may be required at the discretion of Regional staff.

Final Report

The following study structure is suggested:

- Site/development description
- Study area, including map
- Existing conditions - exhibit required
- Analysis periods
- Background, existing, future background and future total traffic demand - exhibit required
- Site generated traffic - exhibit required
- Improvement alternatives
- Traffic impacts for future background and total traffic with and without mitigation (tabular summaries)
- Access considerations
- Recommendations

The TIS should consist of a main document, supplemented by technical appendices containing detailed analyses as required.

The Region of Peel will require 1 copy to be in electronic format and 1 hard copy complete with the appropriate supporting documentation. This shall be submitted to the Traffic Engineering section of Public Works for our review, comment and approval.

All information submitted to Regional staff in connection with any Traffic Impact Study will be considered to be in the public domain.

Appendix

The appendix must include:

- 1. Turning movement counts (include date counted) with breakdown of heavy vehicle counts;
- 2. Signal timing plan(s) for signalized intersections; and
- 3. For submissions using Synchro, generated Synchro reports showing HCM 2000 results and queuing, as well as electronic Synchro files (CD copy or sent concurrently with the TIS via email); or
- 4. For submissions using CCG Intercalc, a CCG Intercalc summary report.

Study Updates

From the date of submission, the Traffic Impact Study will have a "shelf life" of 5 years.
Where timing of subsequent development approvals exceeds 5 years, a new study will be required at the discretion of the Region of Peel.

I trust the above is satisfactory.

Regards,

Rani Kol
Technical Analyst
Traffic Development & Permits
Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9
(905) 791-7800 ext. 7858

Region of Peel
working with you

APPENDIX B

Existing Information

Winston Churchill Blvd @ Lakeshore Rd

Morning Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

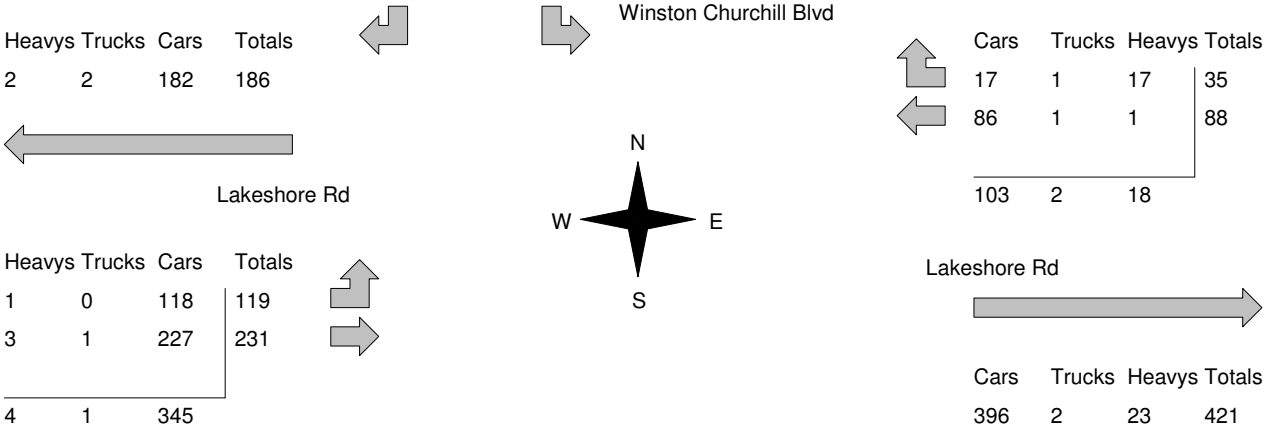
Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total:	442		
North Entering:	288		
North Peds:	1		
Peds Cross:	⋈		
Heavys	1	20	21
Trucks	1	1	2
Cars	96	169	265
Totals	98	190	
Heavys	18		
Trucks	1		
Cars	135		
Totals	154		
East Leg Total:	544		
East Entering:	123		
East Peds:	0		
Peds Cross:	⧖		



Peds Cross:	⧖
West Peds:	0
West Entering:	350
West Leg Total:	536

Comments

Winston Churchill Blvd @ Lakeshore Rd

Mid-day Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

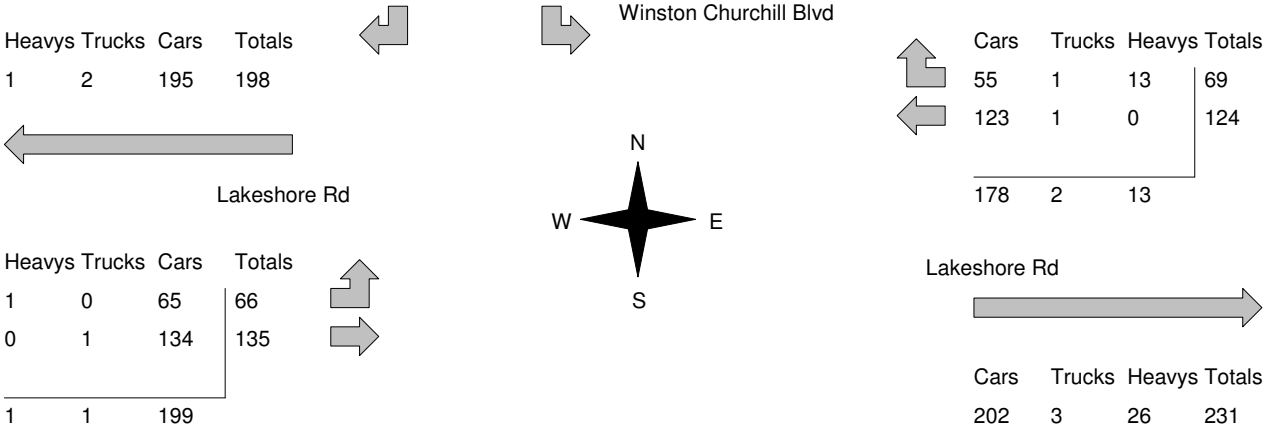
Major Road: Lakeshore Rd runs W/E

North Leg Total:	305		
North Entering:	170		
North Peds:	1		
Peds Cross:	⋈		

Heavys	1	26	27
Trucks	1	2	3
Cars	72	68	140
Totals	74	96	

Heavys	14		
Trucks	1		
Cars	120		
Totals	135		

East Leg Total:	424
East Entering:	193
East Peds:	0
Peds Cross:	⧖



Peds Cross:	⧖
West Peds:	0
West Entering:	201
West Leg Total:	399

Comments

Winston Churchill Blvd @ Lakeshore Rd

Afternoon Peak Diagram

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

One Hour Peak
From: 15:45:00
To: 16:45:00

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

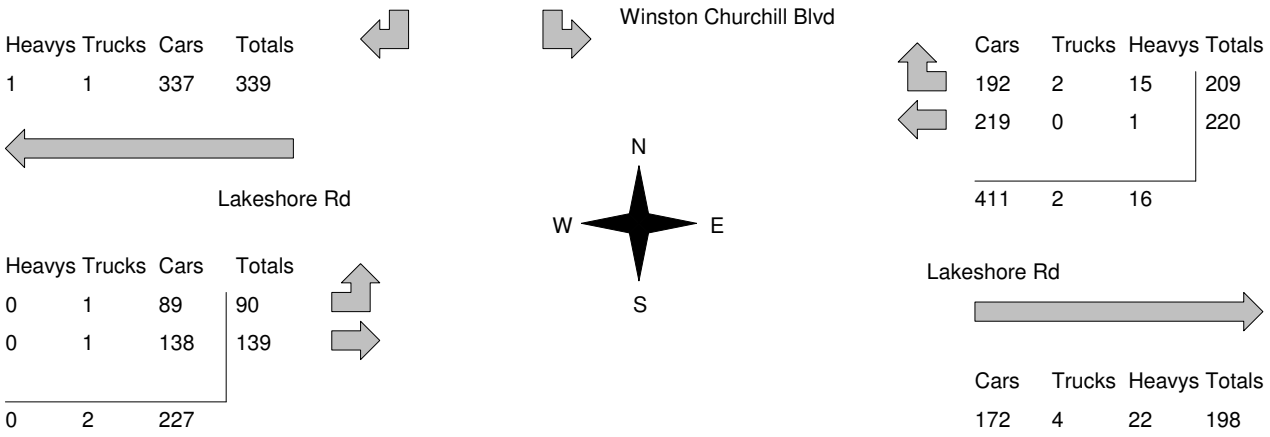
Major Road: Lakeshore Rd runs W/E

North Leg Total:	477		
North Entering:	178		
North Peds:	1		
Peds Cross:	⋈		

Heavys	0	22	22
Trucks	1	3	4
Cars	118	34	152
Totals	119	59	

Heavys	15	
Trucks	3	
Cars	281	
Totals	299	

East Leg Total:	627
East Entering:	429
East Peds:	0
Peds Cross:	⧖



Peds Cross:	⧖
West Peds:	0
West Entering:	229
West Leg Total:	568

Comments

Winston Churchill Blvd @ Lakeshore Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000000000
Intersection: Lakeshore Rd & Winston Churchill E
TFR File #: 4
Count date: 15-Nov-2017

Weather conditions:
Overcast/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total:	2961
North Entering:	1485
North Peds:	10
Peds Cross:	⋈

Heavys	8	162	170
Trucks	8	14	22
Cars	732	561	1293
Totals	748	737	

Heavys	126
Trucks	26
Cars	1324
Totals	1476

East Leg Total:	3899
East Entering:	1935
East Peds:	0
Peds Cross:	⧖

Winston Churchill Blvd

Heavys	Trucks	Cars	Totals
12	13	1808	1833

Lakeshore Rd

Heavys	Trucks	Cars	Totals
6	10	610	626
8	11	1208	1227
14	21	1818	

N
W E
S

Cars	Trucks	Heavys	Totals
714	16	120	850
1076	5	4	1085
1790	21	124	

Lakeshore Rd

Cars	Trucks	Heavys	Totals
1769	25	170	1964

Peds Cross:	⧖
West Peds:	0
West Entering:	1853
West Leg Total:	3686

Comments

Turning Movement Count (1 . ROYAL WINDSOR DR & WINSTON CHURCHILL BLVD) CustID: 01902061 MioID: 636402

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	13	39	78	0	0	130	38	59	4	0	1	101	17	10	10	0	0	37	17	159	19	0	0	195	463	
07:15:00	29	33	100	0	0	162	25	86	6	0	0	117	22	21	4	0	0	47	11	234	25	0	0	270	596	
07:30:00	39	60	118	0	0	217	40	118	3	0	2	161	14	26	7	0	0	47	26	218	23	0	1	267	692	
07:45:00	48	59	164	0	0	271	48	115	4	0	0	167	25	35	9	0	0	69	25	258	30	0	2	313	820	2571
08:00:00	56	53	138	0	0	247	49	132	8	0	0	189	19	26	5	0	0	50	8	222	35	0	1	265	751	2859
08:15:00	58	64	184	0	0	306	56	120	6	0	0	182	33	45	7	0	0	85	25	229	31	0	0	285	858	3121
08:30:00	51	67	108	0	1	226	47	143	11	0	1	201	31	38	7	0	0	76	24	219	40	0	0	283	786	3215
08:45:00	47	66	122	0	0	235	47	128	12	0	2	187	18	34	8	0	0	60	29	189	28	0	0	246	728	3123
BREAK																										
16:00:00	39	50	59	0	0	148	90	188	16	0	1	294	17	56	23	0	1	96	11	122	32	0	1	165	703	
16:15:00	39	50	54	0	1	143	77	155	9	0	0	241	17	55	26	0	0	98	7	130	43	0	1	180	662	
16:30:00	31	47	49	1	2	128	127	156	18	0	0	301	26	87	34	0	0	147	13	159	37	0	0	209	785	
16:45:00	37	44	55	1	1	137	133	205	21	0	0	359	12	57	27	0	0	96	11	122	35	0	0	168	760	2910
17:00:00	36	50	79	0	1	165	138	186	15	0	2	339	20	78	41	0	0	139	12	136	46	0	1	194	837	3044
17:15:00	28	55	81	0	0	164	109	183	15	0	1	307	27	78	26	0	0	131	21	178	49	0	0	248	850	3232
17:30:00	31	44	75	0	0	150	204	230	23	0	1	457	19	59	27	0	0	105	9	143	40	0	1	192	904	3351
17:45:00	29	37	44	0	1	110	160	221	33	0	1	414	16	53	19	0	1	88	10	157	42	0	1	209	821	3412
18:00:00	33	48	47	0	0	128	136	176	21	0	0	333	13	32	31	0	0	76	16	118	33	1	0	168	705	3280
18:15:00	24	46	45	0	0	115	107	130	21	0	0	258	11	45	16	0	0	72	18	120	34	0	0	172	617	3047
18:30:00	27	34	40	0	0	101	118	185	28	0	1	331	11	22	9	0	0	42	20	103	30	0	0	153	627	2770
18:45:00	17	37	57	0	0	111	84	92	7	0	0	183	10	28	16	0	0	54	9	109	32	0	0	150	498	2447
Grand Total	712	983	1697	2	7	3394	1833	3008	281	0	13	5122	378	885	352	0	2	1615	322	3325	684	1	9	4332	**14463**	-
Approach%	21%	29%	50%	0.1%		-	35.8%	58.7%	5.5%	0%		-	23.4%	54.8%	21.8%	0%		-	7.4%	76.8%	15.8%	0%		-	**-**	-
Totals %	4.9%	6.8%	11.7%	0%		23.5%	12.7%	20.8%	1.9%	0%		35.4%	2.6%	6.1%	2.4%	0%		11.2%	2.2%	23%	4.7%	0%		30%	**-**	-
Heavy	12	21	10	0		-	16	75	2	0		-	3	9	29	0		-	28	103	9	0		-	**-**	-
Heavy %	1.7%	2.1%	0.6%	0%		-	0.9%	2.5%	0.7%	0%		-	0.8%	1%	8.2%	0%		-	8.7%	3.1%	1.3%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

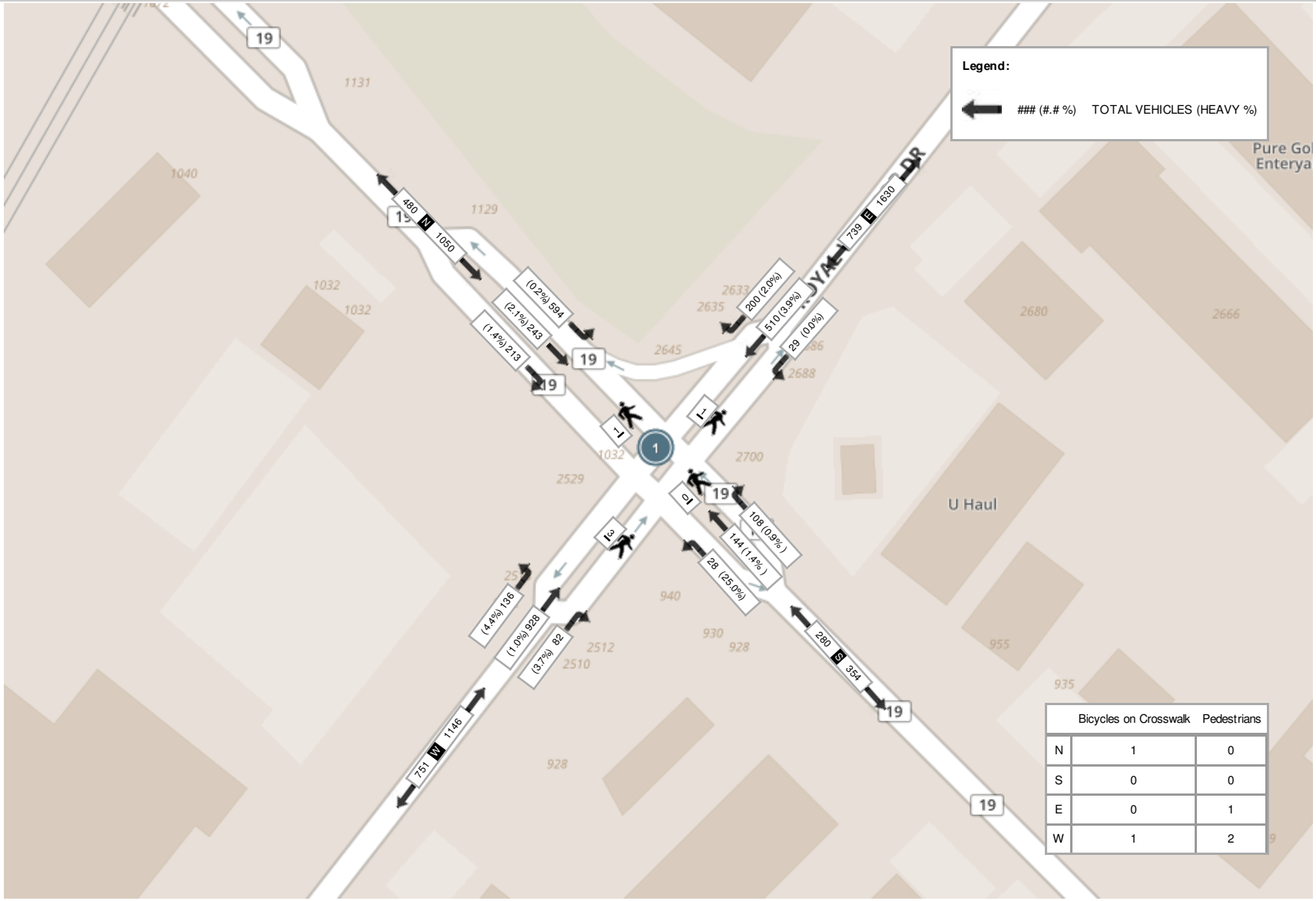
Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.68 °C)

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	48	59	164	0	0	271	48	115	4	0	0	167	25	35	9	0	0	69	25	258	30	0	2	313	820
08:00:00	56	53	138	0	0	247	49	132	8	0	0	189	19	26	5	0	0	50	8	222	35	0	1	265	751
08:15:00	58	64	184	0	0	306	56	120	6	0	0	182	33	45	7	0	0	85	25	229	31	0	0	285	858
08:30:00	51	67	108	0	1	226	47	143	11	0	1	201	31	38	7	0	0	76	24	219	40	0	0	283	786
Grand Total	213	243	594	0	1	1050	200	510	29	0	1	739	108	144	28	0	0	280	82	928	136	0	3	1146	**3215**
Approach%	20.3%	23.1%	56.6%	0%		-	27.1%	69%	3.9%	0%		-	38.6%	51.4%	10%	0%		-	7.2%	81%	11.9%	0%		-	**-**
Totals %	6.6%	7.6%	18.5%	0%		32.7%	6.2%	15.9%	0.9%	0%		23%	3.4%	4.5%	0.9%	0%		8.7%	2.6%	28.9%	4.2%	0%		35.6%	**-**
PHF	0.92	0.91	0.81	0		0.86	0.89	0.89	0.66	0		0.92	0.82	0.8	0.78	0		0.82	0.82	0.9	0.85	0		0.92	**-**
Heavy	3	5	1	0		9	4	20	0	0		24	1	2	7	0		10	3	9	6	0		18	**-**
Heavy %	1.4%	2.1%	0.2%	0%		0.9%	2%	3.9%	0%	0%		3.2%	0.9%	1.4%	25%	0%		3.6%	3.7%	1%	4.4%	0%		1.6%	**-**
Lights	207	227	574	0		1008	180	476	29	0		685	101	138	19	0		258	76	904	129	0		1109	**-**
Lights %	97.2%	93.4%	96.6%	0%		96%	90%	93.3%	100%	0%		92.7%	93.5%	95.8%	67.9%	0%		92.1%	92.7%	97.4%	94.9%	0%		96.8%	**-**
Mediums	3	11	19	0		33	16	14	0	0		30	6	4	2	0		12	3	15	1	0		19	**-**
Mediums %	1.4%	4.5%	3.2%	0%		3.1%	8%	2.7%	0%	0%		4.1%	5.6%	2.8%	7.1%	0%		4.3%	3.7%	1.6%	0.7%	0%		1.7%	**-**
Articulated Trucks	3	5	1	0		9	4	20	0	0		24	1	2	7	0		10	3	9	6	0		18	**-**
Articulated Trucks %	1.4%	2.1%	0.2%	0%		0.9%	2%	3.9%	0%	0%		3.2%	0.9%	1.4%	25%	0%		3.6%	3.7%	1%	4.4%	0%		1.6%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	20%		-	-	-	-	0%		-	-	-	-	40%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	20%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	20%		**-**

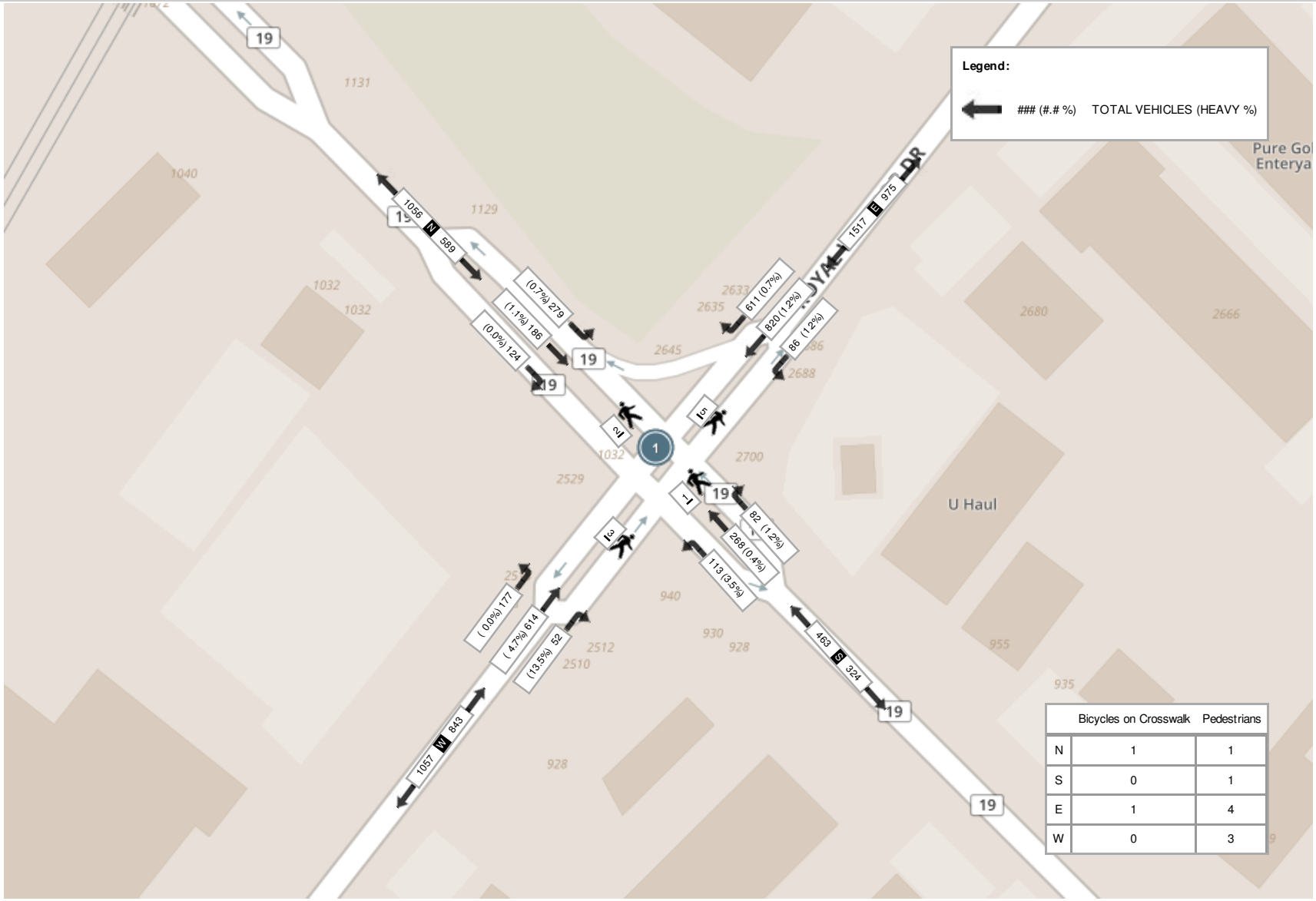
Peak Hour: 05:00 PM - 06:00 PM Weather:

Start Time	N Approach WINSTON CHURCHILL BLVD						E Approach ROYAL WINDSOR DR						S Approach WINSTON CHURCHILL BLVD						W Approach ROYAL WINDSOR DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	36	50	79	0	1	165	138	186	15	0	2	339	20	78	41	0	0	139	12	136	46	0	1	194	837
17:15:00	28	55	81	0	0	164	109	183	15	0	1	307	27	78	26	0	0	131	21	178	49	0	0	248	850
17:30:00	31	44	75	0	0	150	204	230	23	0	1	457	19	59	27	0	0	105	9	143	40	0	1	192	904
17:45:00	29	37	44	0	1	110	160	221	33	0	1	414	16	53	19	0	1	88	10	157	42	0	1	209	821
Grand Total	124	186	279	0	2	589	611	820	86	0	5	1517	82	268	113	0	1	463	52	614	177	0	3	843	**3412**
Approach%	21.1%	31.6%	47.4%	0%		-	40.3%	54.1%	5.7%	0%		-	17.7%	57.9%	24.4%	0%		-	6.2%	72.8%	21%	0%		-	**-**
Totals %	3.6%	5.5%	8.2%	0%		17.3%	17.9%	24%	2.5%	0%		44.5%	2.4%	7.9%	3.3%	0%		13.6%	1.5%	18%	5.2%	0%		24.7%	**-**
PHF	0.86	0.85	0.86	0		0.89	0.75	0.89	0.65	0		0.83	0.76	0.86	0.69	0		0.83	0.62	0.86	0.9	0		0.85	**-**
Heavy	0	2	2	0		4	4	10	1	0		15	1	1	4	0		6	7	29	0	0		36	**-**
Heavy %	0%	1.1%	0.7%	0%		0.7%	0.7%	1.2%	1.2%	0%		1%	1.2%	0.4%	3.5%	0%		1.3%	13.5%	4.7%	0%	0%		4.3%	**-**
Lights	124	176	268	0		568	592	802	83	0		1477	78	263	105	0		446	38	578	175	0		791	**-**
Lights %	100%	94.6%	96.1%	0%		96.4%	96.9%	97.8%	96.5%	0%		97.4%	95.1%	98.1%	92.9%	0%		96.3%	73.1%	94.1%	98.9%	0%		93.8%	**-**
Mediums	0	8	9	0		17	15	8	2	0		25	3	4	4	0		11	7	7	2	0		16	**-**
Mediums %	0%	4.3%	3.2%	0%		2.9%	2.5%	1%	2.3%	0%		1.6%	3.7%	1.5%	3.5%	0%		2.4%	13.5%	1.1%	1.1%	0%		1.9%	**-**
Articulated Trucks	0	2	2	0		4	4	10	1	0		15	1	1	4	0		6	7	29	0	0		36	**-**
Articulated Trucks %	0%	1.1%	0.7%	0%		0.7%	0.7%	1.2%	1.2%	0%		1%	1.2%	0.4%	3.5%	0%		1.3%	13.5%	4.7%	0%	0%		4.3%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	9.1%		-	-	-	-	36.4%		-	-	-	-	9.1%		-	-	-	-	27.3%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	9.1%		-	-	-	-	9.1%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.68 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather:



Signal Timing Report

Runtime:

Device: 0401

Region: Mississauga **Signal ID:** 0401 **Location:** ROYAL WINDSOR DRIVE E at Winston Chi

Phase	Units	1 EBLT	2 EB/WB	3 SBLT	4 NB/SB	5		7
Walk	Sec	0	11	0	14	0	0	0
Ped Clear	Sec	0	17	0	23	0	0	0
Min Green	Sec	5	8	8	8	0	0	0
Passage	Sec	3.0	5.0	4.0	5.0	0.0	0.0	0.0
Maximum 1	Sec	10	22	15	35	0	0	0
Maximum 2	Sec	10	22	15	35	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0
Red Clearance	Sec	0.0	3.0	2.0	3.3	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det	0	0	0
[P2] Ring	Ring	1	1	1	1	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7
Cycle Time	Sec	140	120	140	0	0	0	0
Offset	Sec	108	2	108	0	0	0	0
Split	Split	1	2	3	0	0	0	0
Sequence	Sequence	1	1	1	0	0	0	0

Coord Split	Units	1	2	3	4	5		7
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none
Split 1 - Time	Sec	0	56	49	35	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false
Split 2 - Mode	Enum	phaseOmitted	none	none	none	none	none	none
Split 2 - Time	Sec	0	54	32	34	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	56	31	39	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	--M---------	----M----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWT
Day of Month	Bit	123456789012345678901234567890 1	12345678901234567890123456789 01	12345678901234567890123456789 01	1---------- ------	----------9---- -------	---------- ------0-	--------- ------
Day Plan	Number	1	3	2	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWT
Day of Month	Bit	-----6---------- ------	--3---------- ------	-------8---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0
Day Plan	Number	3	3	3	3	3	3	0

TB Dayplan	Units	1	2	3	4	5		7
Plan 1 Hour	Hour	0	6	9	15	19	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0

Signal Timing Report

Runtime: 07/11/2018 08:56:57

Device: 0401

Region: Mississauga **Signal ID:** 0401 **Location:** ROYAL WINDSOR DRIVE E at Winston Churchill Boulevard

Phase	Units	1 EBLT	2 EB/WB	3 SBLT	4 NB/SB	5		7	8
Walk	Sec	0	11	0	14	0	0	0	0
Ped Clear	Sec	0	17	0	23	0	0	0	0
Min Green	Sec	5	8	8	8	0	0	0	0
Passage	Sec	3.0	5.0	4.0	5.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	22	15	35	0	0	0	0
Maximum 2	Sec	10	22	15	35	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	2.0	3.3	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	other	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	1	1	1	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7	8
Cycle Time	Sec	140	120	140	0	0	0	0	0
Offset	Sec	108	2	108	0	0	0	0	0
Split	Split	1	2	3	0	0	0	0	0
Sequence	Sequence	1	1	1	0	0	0	0	0

Coord Split	Units	1	2	3	4	5		7	8
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	56	49	35	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	54	32	34	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	56	31	39	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F----------	--M---------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234 56789012345678 901	12345678901234 56789012345678 901	12345678901234 56789012345678 901	1---------- ------	----------9----- -------	---------- -----0-	----------1--- ------	-2---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6---------- ------	--3---------- ------	-------8-------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5		7	8
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0

TB Action	Units	1	2	3	4	5		7	8

Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX C

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

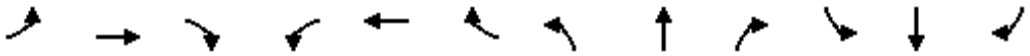
Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX D

Detailed Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Future Volume (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.396			0.164			0.491			0.950		
Satd. Flow (perm)	715	3562	0	247	3614	1560	920	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				208			70			222
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	141	965	85	30	530	208	29	150	112	618	253	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1050	0	30	530	208	29	150	112	618	253	222
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

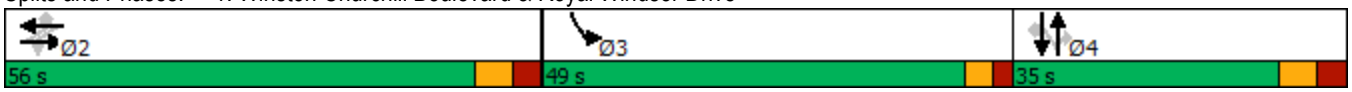


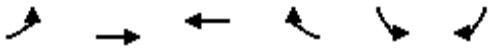
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.4	52.4		52.4	52.4	52.4	18.3	18.3	18.3	25.7	18.3	18.3
Actuated g/C Ratio	0.45	0.48		0.48	0.48	0.48	0.17	0.17	0.17	0.24	0.17	0.17
v/c Ratio	0.44	0.61		0.25	0.30	0.24	0.19	0.25	0.35	0.75	0.42	0.50
Control Delay	29.3	23.8		27.7	19.1	3.6	43.0	40.8	20.8	45.1	43.0	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	23.8		27.7	19.1	3.6	43.0	40.8	20.8	45.1	43.0	9.5
LOS	C	C		C	B	A	D	D	C	D	D	A
Approach Delay		24.5			15.2			33.3			37.4	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	19.8	81.3		3.6	34.2	0.0	5.3	14.5	7.6	62.3	25.2	0.0
Queue Length 95th (m)	47.3	132.6		13.9	59.4	14.0	14.6	25.7	24.6	87.5	40.5	20.4
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	318	1723		119	1745	860	264	1010	494	1447	1030	606
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.61		0.25	0.30	0.24	0.11	0.15	0.23	0.43	0.25	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 108.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 27.3		Intersection LOS: C	

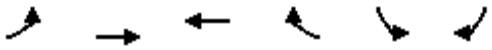
Intersection Capacity Utilization 73.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





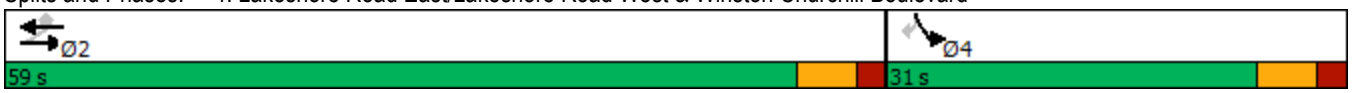
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	249	95	38	205	106
Future Volume (vph)	129	249	95	38	205	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				38		106
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	129	249	95	38	205	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	249	95	38	205	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	6.1	30.5	30.5	6.1	6.1	6.1
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)	6.1	1.8	1.8	6.1	6.1	6.1
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)		28.7	28.7			
Detector 2 Size(m)		1.8	1.8			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA	Perm	Prot	Perm

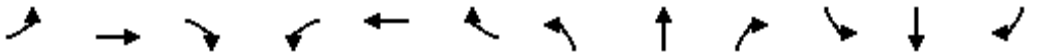


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.8	56.8	56.8	56.8	17.8	17.8
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.22	0.22
v/c Ratio	0.15	0.19	0.11	0.04	0.59	0.25
Control Delay	5.8	5.8	5.7	2.2	35.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	5.8	5.7	2.2	35.9	7.0
LOS	A	A	A	A	D	A
Approach Delay		5.8	4.7		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	5.9	11.8	4.2	0.0	28.3	0.0
Queue Length 95th (m)	15.2	26.1	11.6	3.2	48.1	11.2
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	888	1294	874	890	526	584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.11	0.04	0.39	0.18

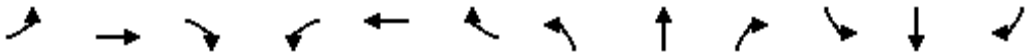
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 31.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard





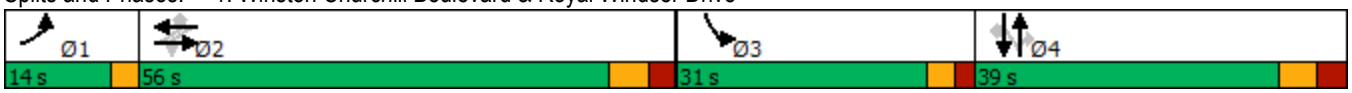
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Future Volume (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.229			0.309			0.630			0.950		
Satd. Flow (perm)	430	3406	0	574	3614	1558	1135	3650	1552	3397	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				550			94			129
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			2066.1			207.1	
Travel Time (s)		14.5			15.6			124.0			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	184	639	54	89	853	635	118	279	85	290	193	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	693	0	89	853	635	118	279	85	290	193	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												

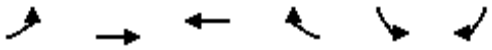


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.7	49.5		49.5	49.5	49.5	19.4	19.4	19.4	15.3	19.4	19.4
Actuated g/C Ratio	0.55	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.52	0.48		0.37	0.56	0.65	0.63	0.46	0.25	0.65	0.32	0.35
Control Delay	20.0	27.3		32.6	29.0	8.2	60.7	46.3	8.6	56.4	44.1	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	27.3		32.6	29.0	8.2	60.7	46.3	8.6	56.4	44.1	9.7
LOS	C	C		C	C	A	E	D	A	E	D	A
Approach Delay		25.8			20.8			43.2			42.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	18.9	59.0		13.7	76.6	11.7	25.5	30.7	0.0	32.9	20.7	0.0
Queue Length 95th (m)	41.4	95.6		34.9	121.1	57.2	46.5	45.6	11.3	51.9	32.7	15.9
Internal Link Dist (m)		217.7			235.4			2042.1			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	366	1448		243	1532	977	311	1001	493	771	991	524
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.48		0.37	0.56	0.65	0.38	0.28	0.17	0.38	0.19	0.25

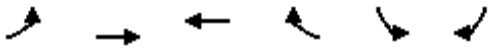
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 116.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 28.9		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





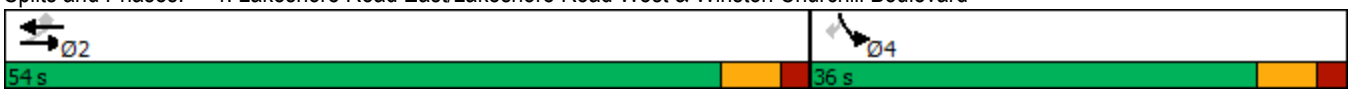
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	97	150	238	226	64	129
Future Volume (vph)	97	150	238	226	64	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				226		129
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		2066.1	
Travel Time (s)		48.8	53.1		124.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	97	150	238	226	64	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	150	238	226	64	129
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	6.1	30.5	30.5	6.1	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						

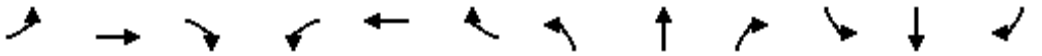


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.5	53.5	53.5	53.5	9.5	9.5
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.13	0.13
v/c Ratio	0.11	0.10	0.16	0.19	0.38	0.40
Control Delay	4.4	4.0	4.2	1.1	34.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	4.0	4.2	1.1	34.5	9.7
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.9	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.4	5.2	8.6	0.0	7.7	0.0
Queue Length 95th (m)	9.1	12.1	18.5	5.8	18.2	12.9
Internal Link Dist (m)		789.8	860.2		2042.1	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	855	1431	1445	1169	527	738
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.10	0.16	0.19	0.12	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.1			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



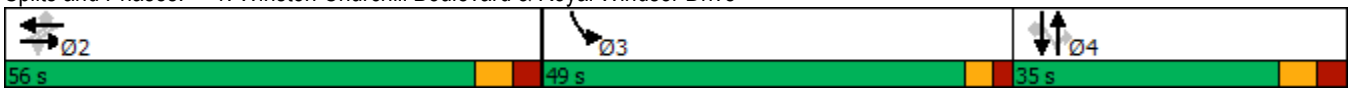


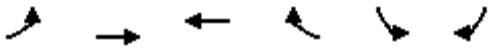
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Future Volume (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.388			0.156			0.484			0.950		
Satd. Flow (perm)	701	3562	0	234	3614	1560	907	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				212			70			226
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			236.2			207.1	
Travel Time (s)		14.5			15.6			14.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	144	984	87	31	541	212	30	153	114	630	258	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1071	0	31	541	212	30	153	114	630	258	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	48.4	52.4		52.4	52.4	52.4	18.5	18.5	18.5	26.2	18.5	18.5
Actuated g/C Ratio	0.44	0.48		0.48	0.48	0.48	0.17	0.17	0.17	0.24	0.17	0.17
v/c Ratio	0.46	0.63		0.28	0.31	0.25	0.20	0.26	0.36	0.76	0.43	0.50
Control Delay	30.5	24.6		29.6	19.5	3.6	43.5	41.0	21.2	45.3	43.3	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	24.6		29.6	19.5	3.6	43.5	41.0	21.2	45.3	43.3	9.5
LOS	C	C		C	B	A	D	D	C	D	D	A
Approach Delay		25.3			15.6			33.7			37.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	20.8	84.9		3.8	35.5	0.0	5.5	14.8	8.0	64.0	25.8	0.0
Queue Length 95th (m)	49.8	138.2		14.7	61.4	14.2	15.0	26.2	25.2	89.5	41.5	20.6
Internal Link Dist (m)		217.7			235.4			212.2			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	310	1713		112	1734	859	259	1004	492	1438	1024	606
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.63		0.28	0.31	0.25	0.12	0.15	0.23	0.44	0.25	0.37

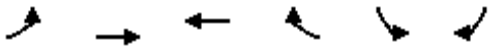
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 109.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





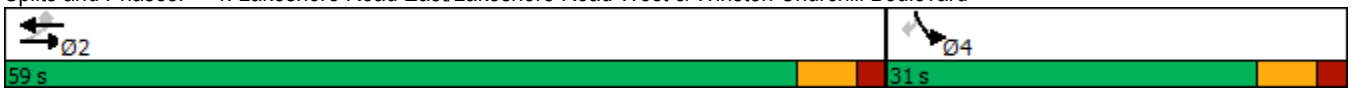
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	249	95	39	209	108
Future Volume (vph)	132	249	95	39	209	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				39		108
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1829.9	
Travel Time (s)		48.8	53.1		109.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	132	249	95	39	209	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	249	95	39	209	108
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	56.7	56.7	56.7	56.7	18.0	18.0

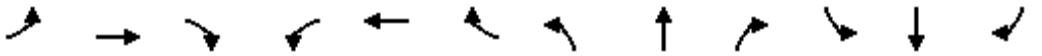


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.22	0.22
v/c Ratio	0.15	0.19	0.11	0.04	0.60	0.25
Control Delay	6.0	5.9	5.8	2.2	35.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	5.9	5.8	2.2	35.9	6.9
LOS	A	A	A	A	D	A
Approach Delay		5.9	4.8		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	6.2	12.0	4.3	0.0	28.9	0.0
Queue Length 95th (m)	15.7	26.5	11.8	3.3	49.0	11.1
Internal Link Dist (m)		789.8	860.2		1805.9	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	885	1289	871	887	525	584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.11	0.04	0.40	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



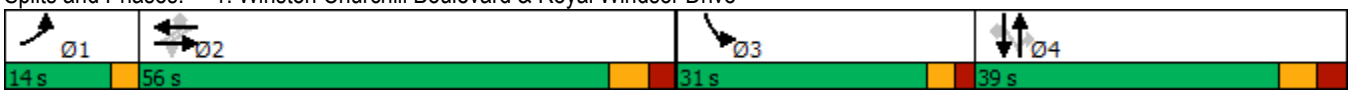


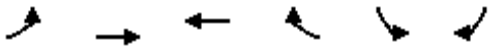
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Future Volume (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.220			0.301			0.628			0.950		
Satd. Flow (perm)	413	3406	0	560	3614	1558	1131	3650	1552	3397	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				544			94			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			236.1			207.1	
Travel Time (s)		14.5			15.6			14.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	188	652	55	91	870	648	120	285	87	296	197	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	707	0	91	870	648	120	285	87	296	197	132
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.8	49.5		49.5	49.5	49.5	19.6	19.6	19.6	15.5	19.6	19.6
Actuated g/C Ratio	0.54	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.55	0.49		0.39	0.57	0.67	0.64	0.47	0.26	0.65	0.33	0.35
Control Delay	21.0	27.8		33.6	29.5	9.2	61.4	46.5	9.0	56.7	44.3	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	27.8		33.6	29.5	9.2	61.4	46.5	9.0	56.7	44.3	9.7
LOS	C	C		C	C	A	E	D	A	E	D	A
Approach Delay		26.4			21.6			43.5			42.9	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.6	61.0		14.3	79.2	14.6	26.0	31.5	0.0	33.7	21.2	0.0
Queue Length 95th (m)	42.6	98.5		36.3	124.6	65.5	47.6	46.6	11.7	52.8	33.4	16.2
Internal Link Dist (m)		217.7			235.4			212.1			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	357	1440		236	1524	971	308	996	491	767	986	525
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.49		0.39	0.57	0.67	0.39	0.29	0.18	0.39	0.20	0.25

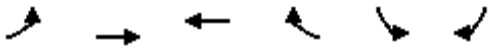
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 117.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	150	238	231	65	132
Future Volume (vph)	99	150	238	231	65	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				231		132
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1830.0	
Travel Time (s)		48.8	53.1		109.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	99	150	238	231	65	132
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	150	238	231	65	132
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.4	53.4	53.4	53.4	9.6	9.6
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.14	0.14
v/c Ratio	0.12	0.10	0.16	0.20	0.38	0.40
Control Delay	4.4	4.0	4.2	1.1	34.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	4.0	4.2	1.1	34.5	9.6
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.8	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.5	5.2	8.7	0.0	7.9	0.0
Queue Length 95th (m)	9.3	12.2	18.6	6.0	18.3	13.1
Internal Link Dist (m)		789.8	860.2		1806.0	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	854	1429	1443	1168	527	740
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.10	0.16	0.20	0.12	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

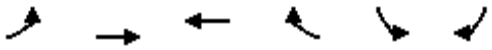
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Future Volume (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3562	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.346			0.108			0.446			0.950		
Satd. Flow (perm)	625	3562	0	162	3614	1560	836	3510	1545	3459	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				235			70			251
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	159	1090	96	34	599	235	33	170	127	698	286	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1186	0	34	599	235	33	170	127	698	286	251
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	20.3	20.3	20.3	29.5	20.3	20.3
Actuated g/C Ratio	0.42	0.46		0.46	0.46	0.46	0.18	0.18	0.18	0.26	0.18	0.18
v/c Ratio	0.60	0.72		0.46	0.36	0.28	0.22	0.27	0.38	0.78	0.45	0.52
Control Delay	40.7	30.0		51.0	22.6	3.9	45.7	42.4	23.9	46.6	44.9	9.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	30.0		51.0	22.6	3.9	45.7	42.4	23.9	46.6	44.9	9.3
LOS	D	C		D	C	A	D	D	C	D	D	A
Approach Delay		31.3			18.7			35.6			38.6	
Approach LOS		C			B			D			D	
Queue Length 50th (m)	26.8	108.9		5.1	44.3	0.0	6.3	17.2	10.9	74.6	30.0	0.0
Queue Length 95th (m)	#68.6	175.1		#24.0	75.2	15.9	16.8	29.7	30.4	103.1	47.3	21.7
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	264	1639		74	1659	843	229	961	473	1376	979	608
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.72		0.46	0.36	0.28	0.14	0.18	0.27	0.51	0.29	0.41

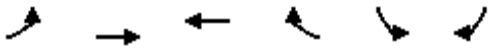
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 114.4
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



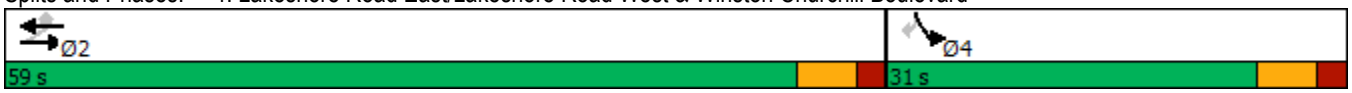
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	249	95	43	232	120
Future Volume (vph)	146	249	95	43	232	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				43		120
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	146	249	95	43	232	120
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	249	95	43	232	120
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	55.9	55.9	55.9	55.9	19.2	19.2
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.23	0.23
v/c Ratio	0.17	0.20	0.11	0.05	0.63	0.26
Control Delay	6.6	6.4	6.3	2.3	36.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	6.4	6.3	2.3	36.2	6.4
LOS	A	A	A	A	D	A
Approach Delay		6.5	5.1		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	7.4	12.8	4.6	0.0	32.6	0.0
Queue Length 95th (m)	18.4	28.2	12.5	3.6	54.2	11.7
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	869	1266	855	873	522	589
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.20	0.11	0.05	0.44	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



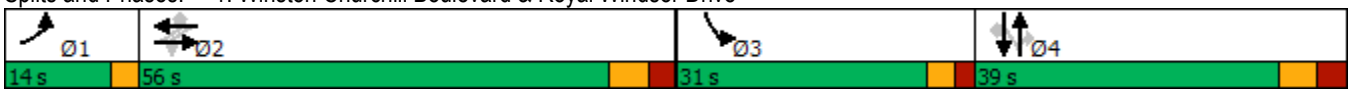
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Future Volume (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor		1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3406	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.161			0.245			0.492			0.950		
Satd. Flow (perm)	303	3406	0	456	3614	1558	887	3650	1552	3399	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				515			96			146
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	208	722	61	101	964	718	133	315	96	328	318	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	783	0	101	964	718	133	315	96	328	318	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

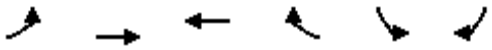
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	64.5	49.4		49.4	49.4	49.4	24.7	24.7	24.7	17.2	24.7	24.7
Actuated g/C Ratio	0.52	0.40		0.40	0.40	0.40	0.20	0.20	0.20	0.14	0.20	0.20
v/c Ratio	0.72	0.58		0.56	0.68	0.77	0.76	0.44	0.25	0.69	0.44	0.34
Control Delay	33.8	33.0		47.5	35.6	16.4	74.5	45.7	9.6	60.2	45.9	8.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	33.0		47.5	35.6	16.4	74.5	45.7	9.6	60.2	45.9	8.7
LOS	C	C		D	D	B	E	D	A	E	D	A
Approach Delay		33.2			28.5			46.4			45.0	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	27.2	81.3		19.9	106.2	45.8	31.0	35.9	0.0	41.1	36.3	0.0
Queue Length 95th (m)	#59.4	113.2		#47.9	144.5	113.2	#57.1	52.1	14.2	58.2	52.5	17.0
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	287	1351		180	1428	927	226	933	468	719	924	510
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.58		0.56	0.68	0.77	0.59	0.34	0.21	0.46	0.34	0.29

Intersection Summary

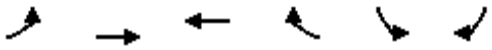
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 124.9
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 35.2 Intersection LOS: D
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





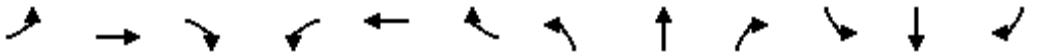
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	110	150	238	255	72	146
Future Volume (vph)	110	150	238	255	72	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				255		146
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		1879.7	
Travel Time (s)		48.8	53.1		112.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	110	150	238	255	72	146
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	150	238	255	72	146
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	51.5	51.5	51.5	51.5	10.0	10.0
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.14	0.14
v/c Ratio	0.14	0.11	0.18	0.23	0.42	0.43
Control Delay	4.7	4.3	4.6	1.2	35.5	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.3	4.6	1.2	35.5	9.4
LOS	A	A	A	A	D	A
Approach Delay		4.5	2.8		18.0	
Approach LOS		A	A		B	
Queue Length 50th (m)	4.0	5.4	8.9	0.0	8.7	0.0
Queue Length 95th (m)	10.6	12.6	19.2	6.4	19.9	13.7
Internal Link Dist (m)		789.8	860.2		1855.7	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	793	1328	1341	1109	510	728
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.11	0.18	0.23	0.14	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

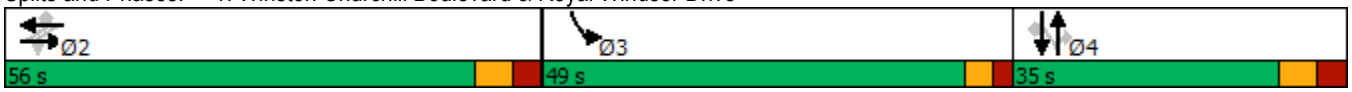


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Future Volume (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3554	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.385			0.146			0.434			0.950		
Satd. Flow (perm)	695	3554	0	219	3614	1560	813	3510	1545	3458	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				212			70			226
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	144	984	101	36	541	212	31	161	120	630	301	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1085	0	36	541	212	31	161	120	630	301	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	20.3	20.3	20.3	26.7	20.3	20.3
Actuated g/C Ratio	0.43	0.47		0.47	0.47	0.47	0.18	0.18	0.18	0.24	0.18	0.18
v/c Ratio	0.48	0.65		0.35	0.32	0.25	0.21	0.25	0.36	0.76	0.46	0.48
Control Delay	32.5	26.3		35.9	20.7	3.8	43.7	40.6	21.7	46.4	43.5	8.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	26.3		35.9	20.7	3.8	43.7	40.6	21.7	46.4	43.5	8.9
LOS	C	C		D	C	A	D	D	C	D	D	A
Approach Delay		27.1			16.9			33.6			38.3	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	21.5	89.4		4.7	36.7	0.0	5.7	15.7	9.2	65.2	30.7	0.0
Queue Length 95th (m)	52.0	148.0		18.5	64.7	14.8	15.5	27.4	27.3	92.3	48.1	20.3
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	301	1677		103	1700	846	228	984	483	1410	1004	599
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.65		0.35	0.32	0.25	0.14	0.16	0.25	0.45	0.30	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 111.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	21	170	335	44
Future Vol, veh/h	15	5	21	170	335	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	20	20	2	2	20
Mvmt Flow	15	5	21	170	335	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	547	335	379	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	468	668	1087	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	459	668	1087	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1087	-	498	-	-
HCM Lane V/C Ratio	0.019	-	0.04	-	-
HCM Control Delay (s)	8.4	-	12.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

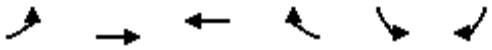
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	191	322	18
Future Vol, veh/h	0	5	0	191	322	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	2	0
Mvmt Flow	0	5	0	191	322	18

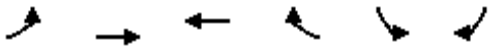
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	322	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	724	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	724	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	724	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	10	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-



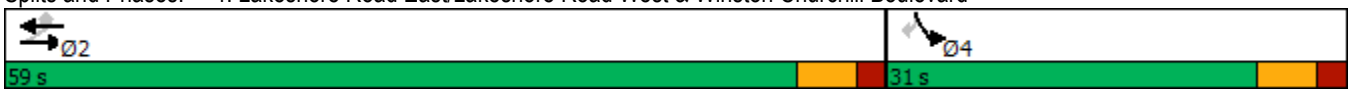
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	148	249	95	44	215	112
Future Volume (vph)	148	249	95	44	215	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				44		112
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		748.3	
Travel Time (s)		48.8	53.1		44.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	148	249	95	44	215	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	249	95	44	215	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0

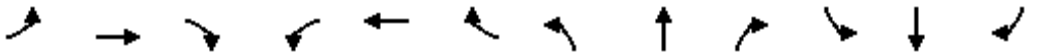


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.5	56.5	56.5	56.5	18.3	18.3
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22	0.22
v/c Ratio	0.17	0.19	0.11	0.05	0.61	0.26
Control Delay	6.2	6.0	5.9	2.2	36.0	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	6.0	5.9	2.2	36.0	6.8
LOS	A	A	A	A	D	A
Approach Delay		6.1	4.7		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	7.1	12.2	4.4	0.0	29.9	0.0
Queue Length 95th (m)	17.8	27.1	11.9	3.6	50.4	11.4
Internal Link Dist (m)		789.8	860.2		724.3	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	881	1283	867	885	525	587
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.19	0.11	0.05	0.41	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.8			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



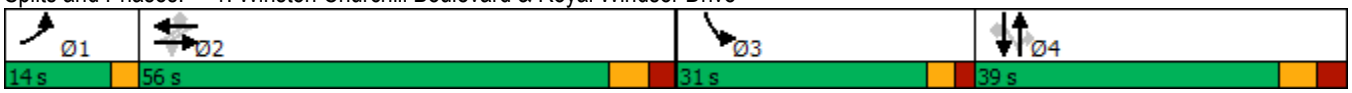


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Future Volume (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3404	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.218			0.297			0.621			0.950		
Satd. Flow (perm)	409	3404	0	552	3614	1558	1119	3650	1552	3398	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				537			94			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	188	652	58	97	870	648	125	299	91	296	208	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	710	0	97	870	648	125	299	91	296	208	132
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	63.8	49.5		49.5	49.5	49.5	20.3	20.3	20.3	15.6	20.3	20.3
Actuated g/C Ratio	0.54	0.42		0.42	0.42	0.42	0.17	0.17	0.17	0.13	0.17	0.17
v/c Ratio	0.55	0.50		0.42	0.57	0.67	0.65	0.48	0.26	0.65	0.34	0.35
Control Delay	21.5	28.3		35.3	30.0	9.6	62.2	46.5	9.7	57.1	44.2	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	28.3		35.3	30.0	9.6	62.2	46.5	9.7	57.1	44.2	9.5
LOS	C	C		D	C	A	E	D	A	E	D	A
Approach Delay		26.9			22.2			43.8			43.0	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	20.0	62.1		15.7	80.2	15.9	27.3	33.2	0.0	34.0	22.4	0.0
Queue Length 95th (m)	42.6	98.8		39.2	124.6	68.1	49.5	48.8	13.1	52.8	35.0	16.2
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	353	1430		231	1514	964	303	989	489	762	979	522
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.50		0.42	0.57	0.67	0.41	0.30	0.19	0.39	0.21	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 118.2			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	0	14	329	204	13
Future Vol, veh/h	23	0	14	329	204	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	0	20	2	2	20
Mvmt Flow	23	0	14	329	204	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	561	204	217	0	-	0
Stage 1	204	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	6.6	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.3	2.38	-	-	-
Pot Cap-1 Maneuver	460	842	1253	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	842	1253	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1253	-	455	-	-
HCM Lane V/C Ratio	0.011	-	0.051	-	-
HCM Control Delay (s)	7.9	-	13.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

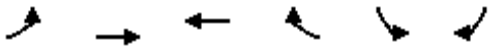
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	343	197	7
Future Vol, veh/h	0	2	0	343	197	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	2	0
Mvmt Flow	0	2	0	343	197	7

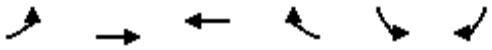
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	197	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	849	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	849	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	849	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	9.3	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	103	150	238	241	66	133
Future Volume (vph)	103	150	238	241	66	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				241		133
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		739.6	
Travel Time (s)		48.8	53.1		44.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	103	150	238	241	66	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	150	238	241	66	133
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	53.3	53.3	53.3	53.3	9.6	9.6
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.14	0.14
v/c Ratio	0.12	0.11	0.17	0.21	0.39	0.40
Control Delay	4.5	4.0	4.2	1.1	34.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	4.0	4.2	1.1	34.6	9.6
LOS	A	A	A	A	C	A
Approach Delay		4.2	2.7		17.9	
Approach LOS		A	A		B	
Queue Length 50th (m)	3.6	5.2	8.7	0.0	8.0	0.0
Queue Length 95th (m)	9.6	12.2	18.7	6.1	18.6	13.0
Internal Link Dist (m)		789.8	860.2		715.6	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	853	1428	1442	1170	528	741
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.11	0.17	0.21	0.13	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

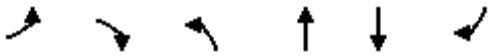
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Future Volume (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3554	0	1428	3614	1581	1785	3510	1566	3463	3579	1581
Flt Permitted	0.342			0.098			0.401			0.950		
Satd. Flow (perm)	618	3554	0	147	3614	1560	752	3510	1545	3459	3579	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				235			70			251
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	1%	4%	25%	1%	1%	0%	4%	2%	0%	2%	1%
Adj. Flow (vph)	159	1090	110	39	599	235	34	178	133	698	329	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1200	0	39	599	235	34	178	133	698	329	251
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	2	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	35.0	35.0	35.0	13.0	35.0	35.0
Total Split (s)	56.0	56.0		56.0	56.0	56.0	35.0	35.0	35.0	49.0	35.0	35.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	25.0%	25.0%	25.0%	35.0%	25.0%	25.0%
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	27.7	27.7	27.7	44.0	27.7	27.7
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	1.0	-3.0		-3.0	-3.0	-3.0	-3.3	-3.3	-3.3	-1.0	-3.3	-3.3
Total Lost Time (s)	8.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	11.0	11.0		11.0	11.0	11.0						
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)	0	0		0	0	0						
Act Effct Green (s)	48.5	52.5		52.5	52.5	52.5	22.0	22.0	22.0	29.9	22.0	22.0
Actuated g/C Ratio	0.42	0.45		0.45	0.45	0.45	0.19	0.19	0.19	0.26	0.19	0.19
v/c Ratio	0.62	0.75		0.59	0.37	0.28	0.24	0.27	0.38	0.79	0.49	0.51
Control Delay	43.1	31.9		69.1	23.8	4.1	46.2	42.0	24.3	47.6	45.2	8.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	31.9		69.1	23.8	4.1	46.2	42.0	24.3	47.6	45.2	8.8
LOS	D	C		E	C	A	D	D	C	D	D	A
Approach Delay		33.2			20.5			35.6			39.4	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	27.8	114.6		6.4	45.7	0.0	6.6	18.2	12.1	76.1	35.2	0.0
Queue Length 95th (m)	#72.0	185.1		#30.4	78.2	16.4	17.3	31.0	32.1	105.7	54.2	21.6
Internal Link Dist (m)		217.7			235.4			162.4			183.1	
Turn Bay Length (m)	100.0			55.0		180.0	75.0		40.0	70.0		65.0
Base Capacity (vph)	257	1606		66	1628	832	202	943	466	1350	961	601
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.75		0.59	0.37	0.28	0.17	0.19	0.29	0.52	0.34	0.42

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 116.6
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 32.6 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	5	21	170	369	44
Future Volume (vph)	15	5	21	170	369	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	82.5			20.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		52.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966					0.850
Flt Protected	0.964		0.950			
Satd. Flow (prot)	1019	0	1789	1883	1883	799
Flt Permitted	0.964		0.950			
Satd. Flow (perm)	1019	0	1789	1883	1883	799
Link Speed (k/h)	40			60	60	
Link Distance (m)	160.4			178.4	960.1	
Travel Time (s)	14.4			10.7	57.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	2%	2%	2%	2%	100%
Adj. Flow (vph)	15	5	21	170	369	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	21	170	369	44
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.4%		ICU Level of Service A	
Analysis Period (min) 15			

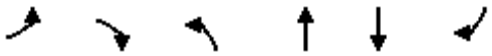
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	21	170	369	44
Future Vol, veh/h	15	5	21	170	369	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	2	2	2	2	100
Mvmt Flow	15	5	21	170	369	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	581	369	413	0	-	0
Stage 1	369	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	7.4	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	346	677	1146	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	340	677	1146	-	-	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1146	-	388	-	-
HCM Lane V/C Ratio	0.018	-	0.052	-	-
HCM Control Delay (s)	8.2	-	14.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	0	210	356	18
Future Volume (vph)	0	5	0	210	356	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1662	0	1883	1883	1597
Flt Permitted						
Satd. Flow (perm)	0	1662	0	1883	1883	1597
Link Speed (k/h)	40			60	60	
Link Distance (m)	176.7			741.2	178.4	
Travel Time (s)	15.9			44.5	10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Adj. Flow (vph)	0	5	0	210	356	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	5	0	210	356	18
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.7%		ICU Level of Service A	
Analysis Period (min) 15			

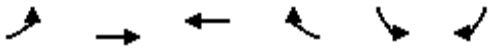
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	210	356	18
Future Vol, veh/h	0	5	0	210	356	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	0	5	0	210	356	18

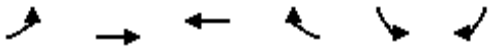
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	356	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	693	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	693	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	693	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	10.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-



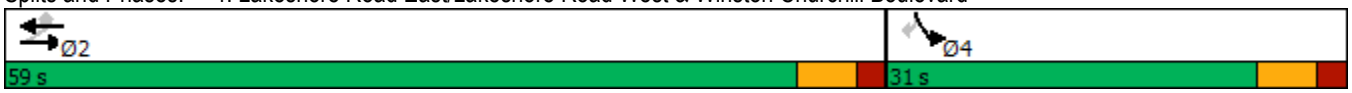
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	162	249	95	48	238	124
Future Volume (vph)	162	249	95	48	238	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1883	1272	1278	1608	1566
Flt Permitted	0.695				0.950	
Satd. Flow (perm)	1293	1883	1272	1278	1608	1566
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				48		124
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		741.2	
Travel Time (s)		48.8	53.1		44.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	51%	25%	11%	2%
Adj. Flow (vph)	162	249	95	48	238	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	162	249	95	48	238	124
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%
Maximum Green (s)	53.0	53.0	53.0	53.0	24.8	24.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0

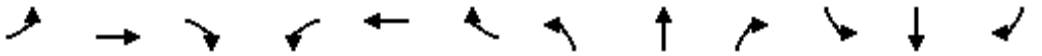


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	55.8	55.8	55.8	55.8	19.5	19.5
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.23	0.23
v/c Ratio	0.19	0.20	0.11	0.06	0.63	0.27
Control Delay	6.8	6.5	6.4	2.3	36.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	6.5	6.4	2.3	36.3	6.4
LOS	A	A	A	A	D	A
Approach Delay		6.6	5.0		26.0	
Approach LOS		A	A		C	
Queue Length 50th (m)	8.4	13.0	4.6	0.0	33.6	0.0
Queue Length 95th (m)	20.5	28.4	12.6	3.9	55.7	11.8
Internal Link Dist (m)		789.8	860.2		717.2	
Turn Bay Length (m)	45.0			65.0	80.0	
Base Capacity (vph)	865	1260	851	871	522	592
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.20	0.11	0.06	0.46	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.3			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard



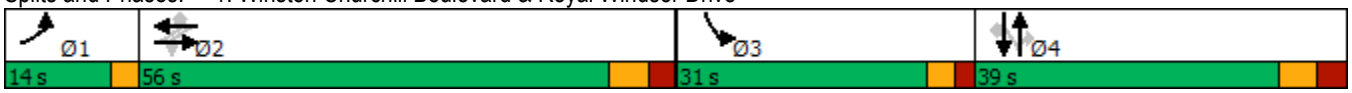


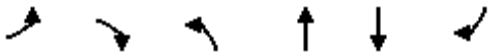
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Future Volume (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	100.0		0.0	55.0		180.0	75.0		40.0	70.0		65.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	100.0			60.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor		1.00		1.00		0.99	1.00		0.98	0.99		0.98
Frt		0.988				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3405	0	1767	3614	1581	1716	3650	1581	3429	3614	1597
Flt Permitted	0.167			0.248			0.609			0.950		
Satd. Flow (perm)	314	3405	0	461	3614	1558	1097	3650	1552	3399	3614	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				510			100			146
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		241.7			259.4			186.4			207.1	
Travel Time (s)		14.5			15.6			11.2			12.4	
Confl. Peds. (#/hr)	2		1	1		2	3		5	5		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	14%	1%	1%	1%	4%	0%	1%	1%	1%	0%
Adj. Flow (vph)	208	722	64	107	964	718	138	329	100	328	229	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	786	0	107	964	718	138	329	100	328	229	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	1	2			2			4		3	4	
Permitted Phases	2			2		2	4		4			4
Detector Phase	1	2		2	2	2	4	4	4	3	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	35.0		35.0	35.0	35.0	39.0	39.0	39.0	13.0	39.0	39.0
Total Split (s)	14.0	56.0		56.0	56.0	56.0	39.0	39.0	39.0	31.0	39.0	39.0
Total Split (%)	10.0%	40.0%		40.0%	40.0%	40.0%	27.9%	27.9%	27.9%	22.1%	27.9%	27.9%
Maximum Green (s)	11.0	49.0		49.0	49.0	49.0	31.7	31.7	31.7	26.0	31.7	31.7
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0		3.0	3.0	3.0	3.3	3.3	3.3	2.0	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		7.0	7.0	7.0	7.3	7.3	7.3	5.0	7.3	7.3
Lead/Lag	Lead	Lag		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max	Max	None	None	None	None	None	None
Walk Time (s)		11.0		11.0	11.0	11.0						
Flash Dont Walk (s)		17.0		17.0	17.0	17.0						
Pedestrian Calls (#/hr)		0		0	0	0						
Act Effct Green (s)	64.5	49.4		49.4	49.4	49.4	22.5	22.5	22.5	17.0	22.5	22.5
Actuated g/C Ratio	0.53	0.40		0.40	0.40	0.40	0.18	0.18	0.18	0.14	0.18	0.18
v/c Ratio	0.70	0.57		0.58	0.66	0.77	0.69	0.49	0.27	0.69	0.35	0.36
Control Delay	30.9	31.8		47.1	34.2	16.1	64.6	47.2	9.8	59.0	44.8	9.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	31.8		47.1	34.2	16.1	64.6	47.2	9.8	59.0	44.8	9.0
LOS	C	C		D	C	B	E	D	A	E	D	A
Approach Delay		31.6			27.7			44.8			44.0	
Approach LOS		C			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 122.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 80.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Royal Windsor Drive





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	0	14	329	225	13
Future Volume (vph)	23	0	14	329	225	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	82.5			20.0
Storage Lanes	1	0	1			1
Taper Length (m)	2.5		52.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	913	0	1789	1883	1883	799
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	913	0	1789	1883	1883	799
Link Speed (k/h)	40			60	60	
Link Distance (m)	160.4			182.9	956.1	
Travel Time (s)	14.4			11.0	57.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	2%	2%	2%	100%
Adj. Flow (vph)	23	0	14	329	225	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	14	329	225	13
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3%		ICU Level of Service A	
Analysis Period (min) 15			

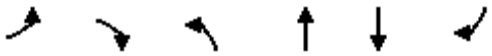
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	0	14	329	225	13
Future Vol, veh/h	23	0	14	329	225	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	825	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	2	2	2	100
Mvmt Flow	23	0	14	329	225	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	582	225	238	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	7.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	346	819	1329	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	819	1329	-	-	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1329	-	342	-	-
HCM Lane V/C Ratio	0.011	-	0.067	-	-
HCM Control Delay (s)	7.7	-	16.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	2	0	379	218	7
Future Volume (vph)	0	2	0	379	218	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	0.0	0.0	0.0			30.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.6		7.6			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1662	0	1921	1883	1597
Flt Permitted						
Satd. Flow (perm)	0	1662	0	1921	1883	1597
Link Speed (k/h)	40			60	60	
Link Distance (m)	176.7			740.7	182.9	
Travel Time (s)	15.9			44.4	11.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	2	0	379	218	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2	0	379	218	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	0.99	0.99	1.01
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.3%		ICU Level of Service A	
Analysis Period (min) 15			

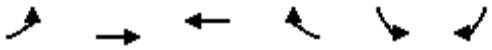
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	379	218	7
Future Vol, veh/h	0	2	0	379	218	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	0	2	0	379	218	7

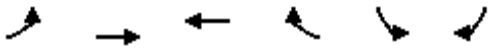
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	218	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	827	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	827	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	827	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	9.4	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	150	238	265	73	147
Future Volume (vph)	114	150	238	265	73	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	45.0			65.0	80.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	45.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1767	1902	1921	1479	1257	1581
Flt Permitted	0.611				0.950	
Satd. Flow (perm)	1137	1902	1921	1479	1257	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				265		147
Link Speed (k/h)		60	60		60	
Link Distance (m)		813.8	884.2		740.7	
Travel Time (s)		48.8	53.1		44.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	42%	1%
Adj. Flow (vph)	114	150	238	265	73	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	150	238	265	73	147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.01	0.99	0.99	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2			2		4
Detector Phase	2	2	2	2	4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	25.0	25.0	24.2	24.2
Total Split (s)	54.0	54.0	54.0	54.0	36.0	36.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	48.0	48.0	48.0	48.0	29.8	29.8
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0

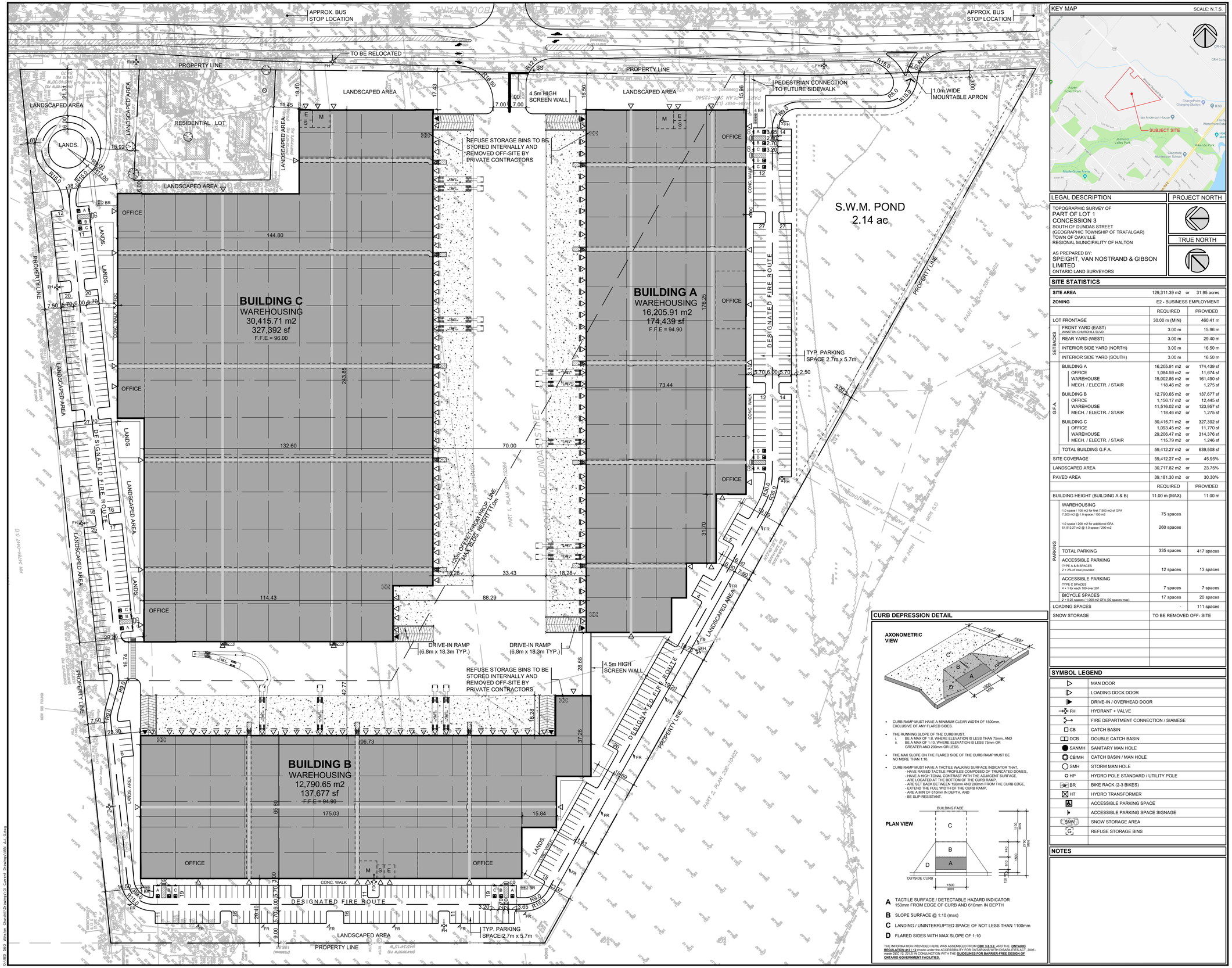


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Recall Mode	Max	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	51.4	51.4	51.4	51.4	10.0	10.0
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.14	0.14
v/c Ratio	0.14	0.11	0.18	0.24	0.43	0.43
Control Delay	4.8	4.3	4.6	1.2	35.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	4.3	4.6	1.2	35.7	9.4
LOS	A	A	A	A	D	A
Approach Delay		4.5	2.8		18.2	
Approach LOS		A	A		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 41.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road East/Lakeshore Road West & Winston Churchill Boulevard

FIGURES



CURB DEPRESSION DETAIL

- CURB RAMP MUST HAVE A MINIMUM CLEAR WIDTH OF 1500mm, EXCLUSIVE OF ANY FLARED SIDES.
- THE RUNNING SLOPE OF THE CURB MUST,
  i. BE A MAX OF 1:8, WHERE ELEVATION IS LESS THAN 75mm, AND
  ii. BE A MAX OF 1:10, WHERE ELEVATION IS LESS 75mm OR GREATER AND 200mm OR LESS.
- THE MAX SLOPE ON THE FLARED SIDE OF THE CURB RAMP MUST BE NO MORE THAN 1:10.
- CURB RAMP MUST HAVE A TACTILE WALKING SURFACE INDICATOR THAT,
  - HAVE RAISED TACTILE PROFILES COMPOSED OF TRUNCATED DOMES,
  - HAVE A HIGH TONAL CONTRAST WITH THE ADJACENT SURFACE,
  - ARE LOCATED AT THE BOTTOM OF THE CURB RAMP,
  - ARE SET BACK BETWEEN 150mm AND 200mm FROM THE CURB EDGE,
  - EXTEND THE FULL WIDTH OF THE CURB RAMP,
  - ARE A MIN OF 610mm IN DEPTH, AND
  - BE SLIP-RESISTANT.

A TACTILE SURFACE / DETECTABLE HAZARD INDICATOR 150mm FROM EDGE OF CURB AND 610mm IN DEPTH

B SLOPE SURFACE @ 1:10 (max)

C LANDING / UNINTERRUPTED SPACE OF NOT LESS THAN 1100mm

D FLARED SIDES WITH MAX SLOPE OF 1:10

THE INFORMATION PROVIDED HERE WAS ASSEMBLED FROM **OBC 3.8.3.2**, AND THE **ONTARIO REGULATION 413 / 12** (made under the ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT, 2005 - made DEC 12, 2012) IN CONJUNCTION WITH THE **GUIDELINES FOR BARRIER-FREE DESIGN OF ONTARIO GOVERNMENT FACILITIES.**

KEY MAP

SCALE: N.T.S.

LEGAL DESCRIPTION

TOPOGRAPHIC SURVEY OF
PART OF LOT 1
CONCESSION 3
SOUTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

AS PREPARED BY:
SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
ONTARIO LAND SURVEYORS

PROJECT NORTH

TRUE NORTH

SITE STATISTICS

SITE AREA	129,311.39 m2	or	31.95 acres
ZONING	E2 - BUSINESS EMPLOYMENT		
	REQUIRED		PROVIDED
LOT FRONTAGE	30.00 m (MIN)		460.41 m
SETBACKS: FRONT YARD (EAST) WINSTON CHURCHILL BLVD.	3.00 m		15.96 m
SETBACKS: REAR YARD (WEST)	3.00 m		29.40 m
SETBACKS: INTERIOR SIDE YARD (NORTH)	3.00 m		16.50 m
SETBACKS: INTERIOR SIDE YARD (SOUTH)	3.00 m		16.50 m
G.F.A.: BUILDING A	16,205.91 m2	or	174,439 sf
G.F.A.: OFFICE	1,084.59 m2	or	11,674 sf
G.F.A.: WAREHOUSE	15,002.86 m2	or	161,490 sf
G.F.A.: MECH. / ELECTR. / STAIR	118.46 m2	or	1,275 sf
G.F.A.: BUILDING B	12,790.65 m2	or	137,677 sf
G.F.A.: OFFICE	1,156.17 m2	or	12,445 sf
G.F.A.: WAREHOUSE	11,516.02 m2	or	123,957 sf
G.F.A.: MECH. / ELECTR. / STAIR	118.46 m2	or	1,275 sf
G.F.A.: BUILDING C	30,415.71 m2	or	327,392 sf
G.F.A.: OFFICE	1,093.45 m2	or	11,770 sf
G.F.A.: WAREHOUSE	29,206.47 m2	or	314,376 sf
G.F.A.: MECH. / ELECTR. / STAIR	115.79 m2	or	1,246 sf
G.F.A.: TOTAL BUILDING G.F.A.	59,412.27 m2	or	639,508 sf
SITE COVERAGE	59,412.27 m2	or	45.95%
LANDSCAPED AREA	30,717.82 m2	or	23.75%
PAVED AREA	39,181.30 m2	or	30.30%
	REQUIRED		PROVIDED
BUILDING HEIGHT (BUILDING A & B)	11.00 m (MAX)		11.00 m
PARKING: WAREHOUSING (1.0 space / 100 m2 for first 7,500 m2 of GFA; 7,500 m2 @ 1.0 space / 100 m2)	75 spaces		
PARKING: (1.0 space / 200 m2 for additional GFA; 51,912.27 m2 @ 1.0 space / 200 m2)	260 spaces		
PARKING: TOTAL PARKING	335 spaces		417 spaces
PARKING: ACCESSIBLE PARKING TYPE A & B SPACES (2 + 2% of total provided)	12 spaces		13 spaces
PARKING: ACCESSIBLE PARKING TYPE C SPACES (4 + 1 for each 100 over 201)	7 spaces		7 spaces
PARKING: BICYCLE SPACES (2 + 0.25 spaces / 1,000 m2 GFA (30 spaces max))	17 spaces		20 spaces
LOADING SPACES	-		111 spaces
SNOW STORAGE	TO BE REMOVED OFF- SITE		

SYMBOL LEGEND

	MAN DOOR
	LOADING DOCK DOOR
	DRIVE-IN / OVERHEAD DOOR
FH	HYDRANT + VALVE
	FIRE DEPARTMENT CONNECTION / SIAMESE
CB	CATCH BASIN
DCB	DOUBLE CATCH BASIN
SANMH	SANITARY MAN HOLE
CB/MH	CATCH BASIN / MAN HOLE
SMH	STORM MAN HOLE
HP	HYDRO POLE STANDARD / UTILITY POLE
BR	BIKE RACK (2-3 BIKES)
HT	HYDRO TRANSFORMER
	ACCESSIBLE PARKING SPACE
	ACCESSIBLE PARKING SPACE SIGNAGE
SNW	SNOW STORAGE AREA
G	REFUSE STORAGE BINS

NOTES

No.	ISSUED	DATE
1	ISSUED FOR COORDINATION	SEPT. 17, 2020

No.	REVISION	DATE

BALDASSARRA Architects Inc.

30 Great Gulf Drive, Unit 20 | Concord ON | L4K 0K7
T. 905.660.0722 | **www.baldassarra.ca**

OWNERS INFORMATION:

560 Winston Churchill Blvd.

Oakville, Ontario

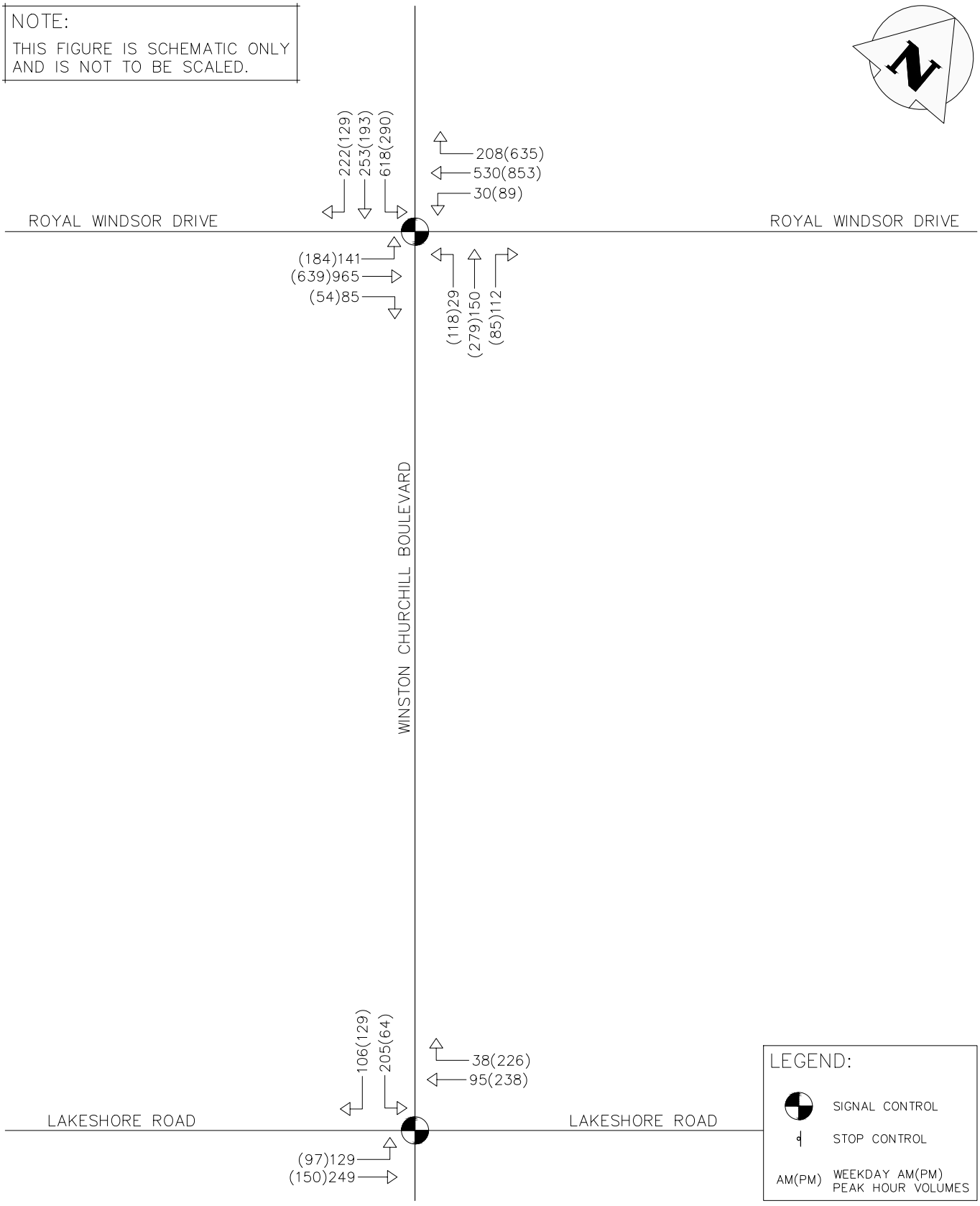
SITE PLAN

DATE:	DRAWN BY:	CHECKED:	SCALE:
AUG. 2020	DM/LY		1:750

PROJECT No. 18-51

DRAWING No. A-1.0

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



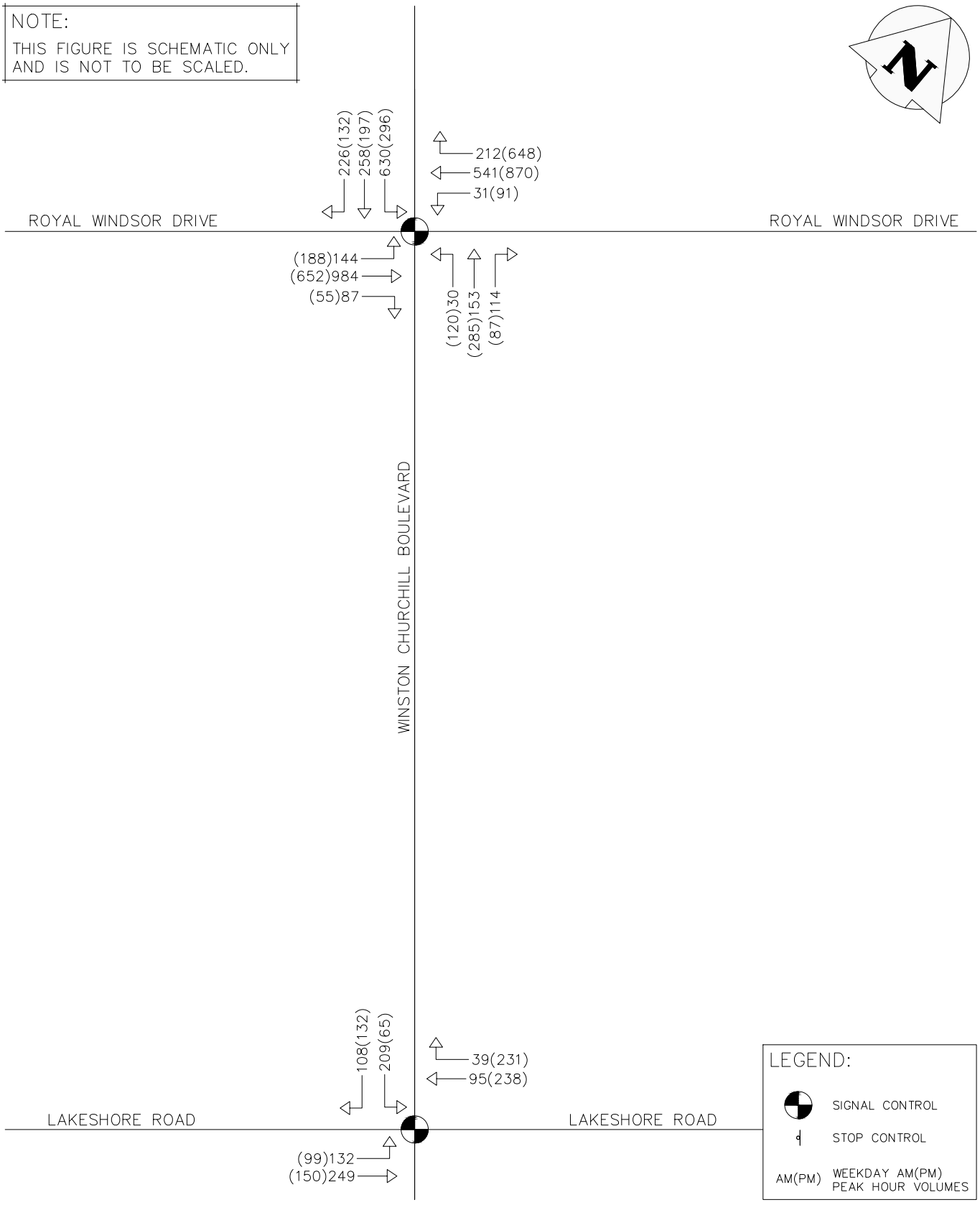
560 WINSTON CHURCHILL BOULEVARD

EXISTING TRAFFIC VOLUMES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756-5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.02

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



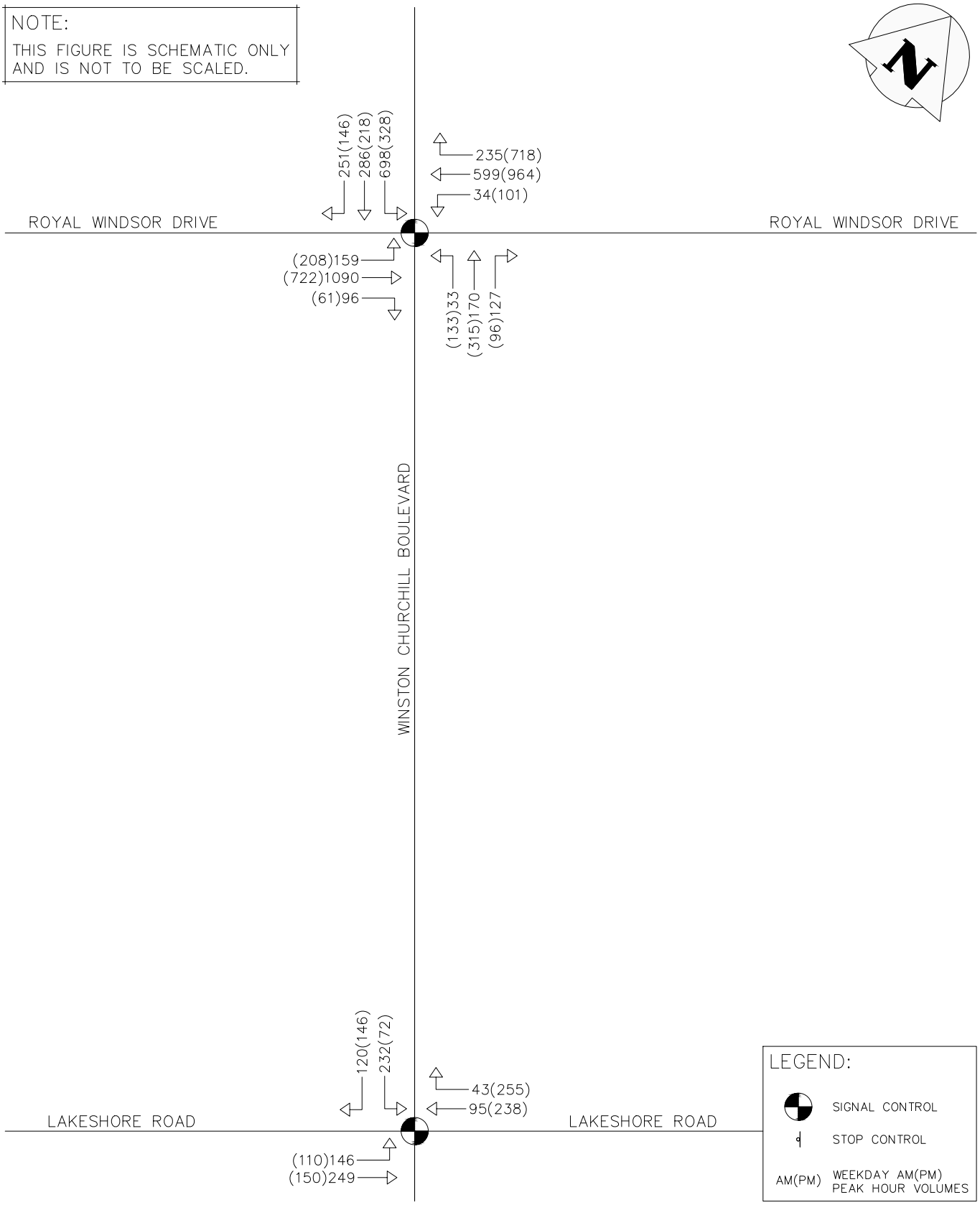
560 WINSTON CHURCHILL BOULEVARD

2022 FUTURE BACKGROUND TRAFFIC VOLUMES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756-5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.03

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



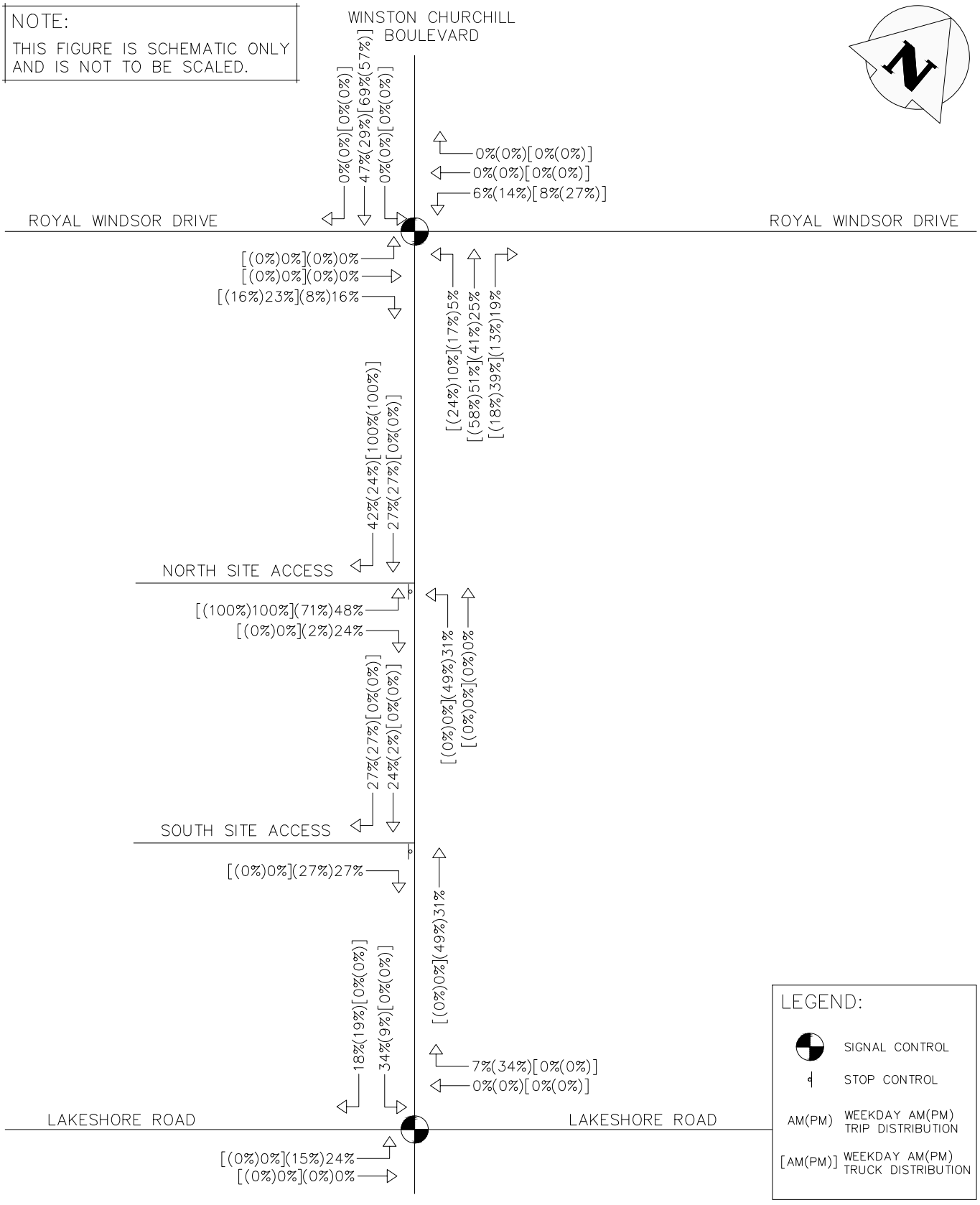
560 WINSTON CHURCHILL BOULEVARD

2027 FUTURE BACKGROUND TRAFFIC VOLUMES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756-5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.04

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



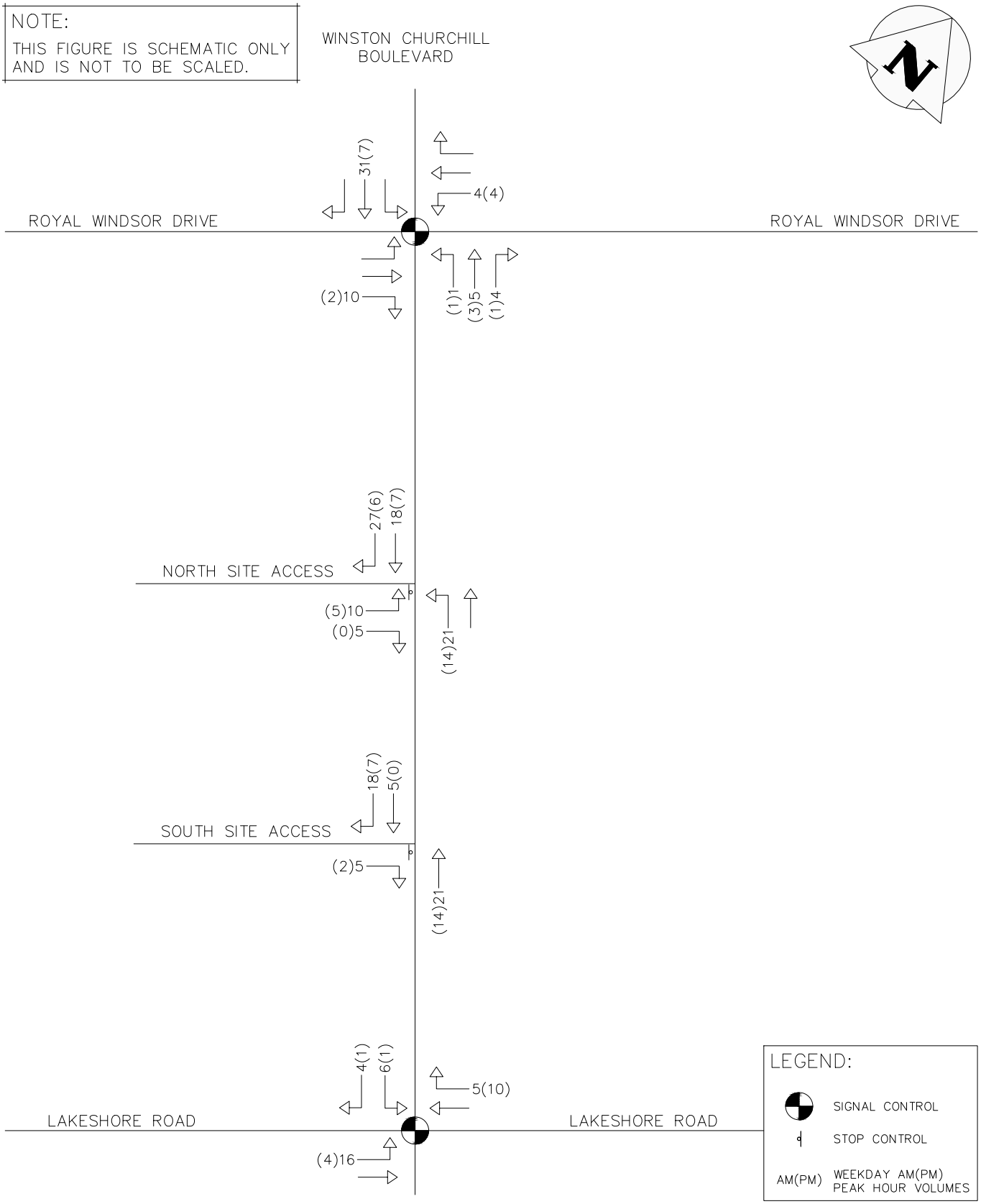
560 WINSTON CHURCHILL BOULEVARD

SITE TRIP DISTRIBUTION

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.	0756–5105	
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.05

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



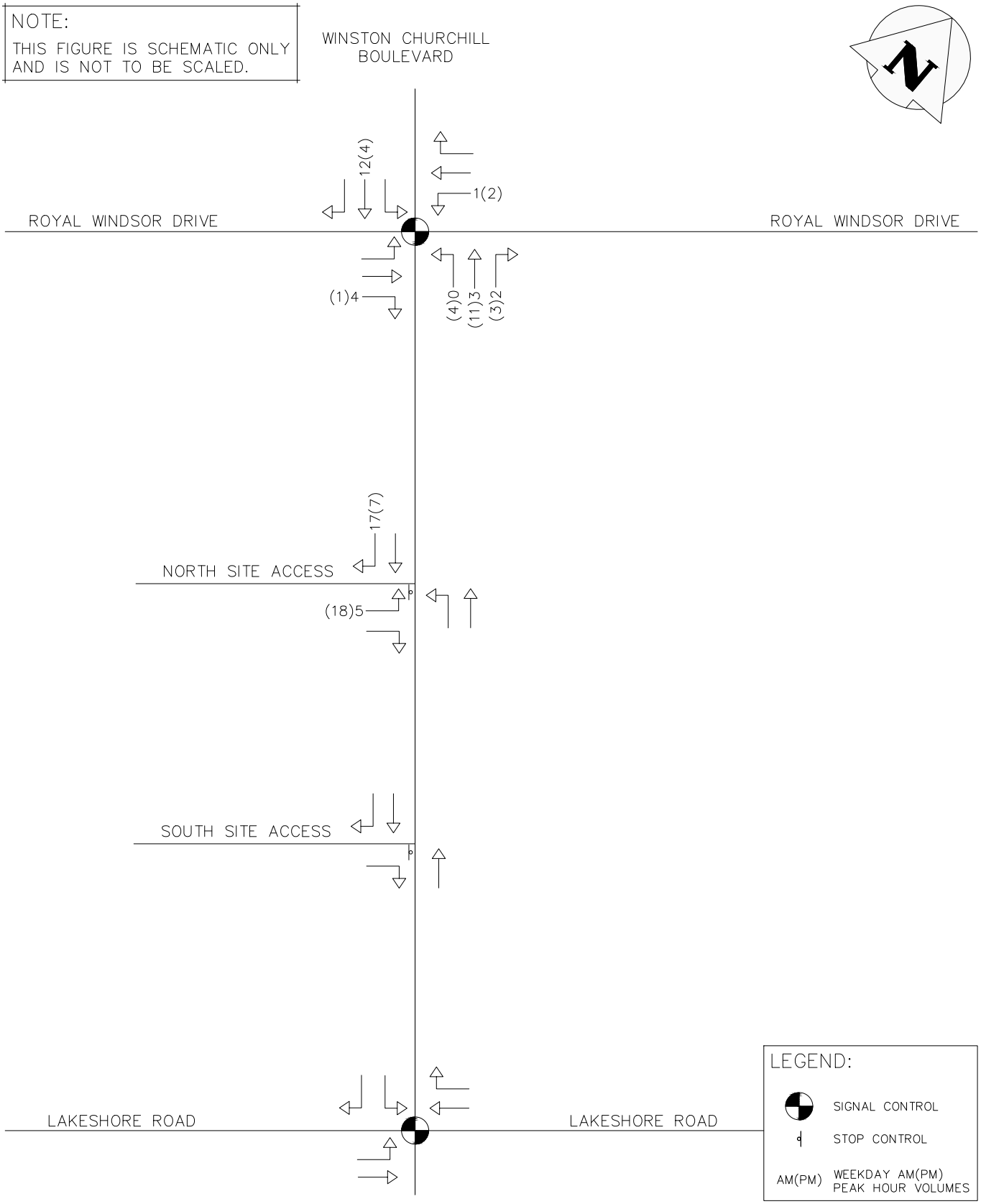
560 WINSTON CHURCHILL BOULEVARD

SITE TRIP ASSIGNMENT – PASSENGER VEHICLES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756–5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.06

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



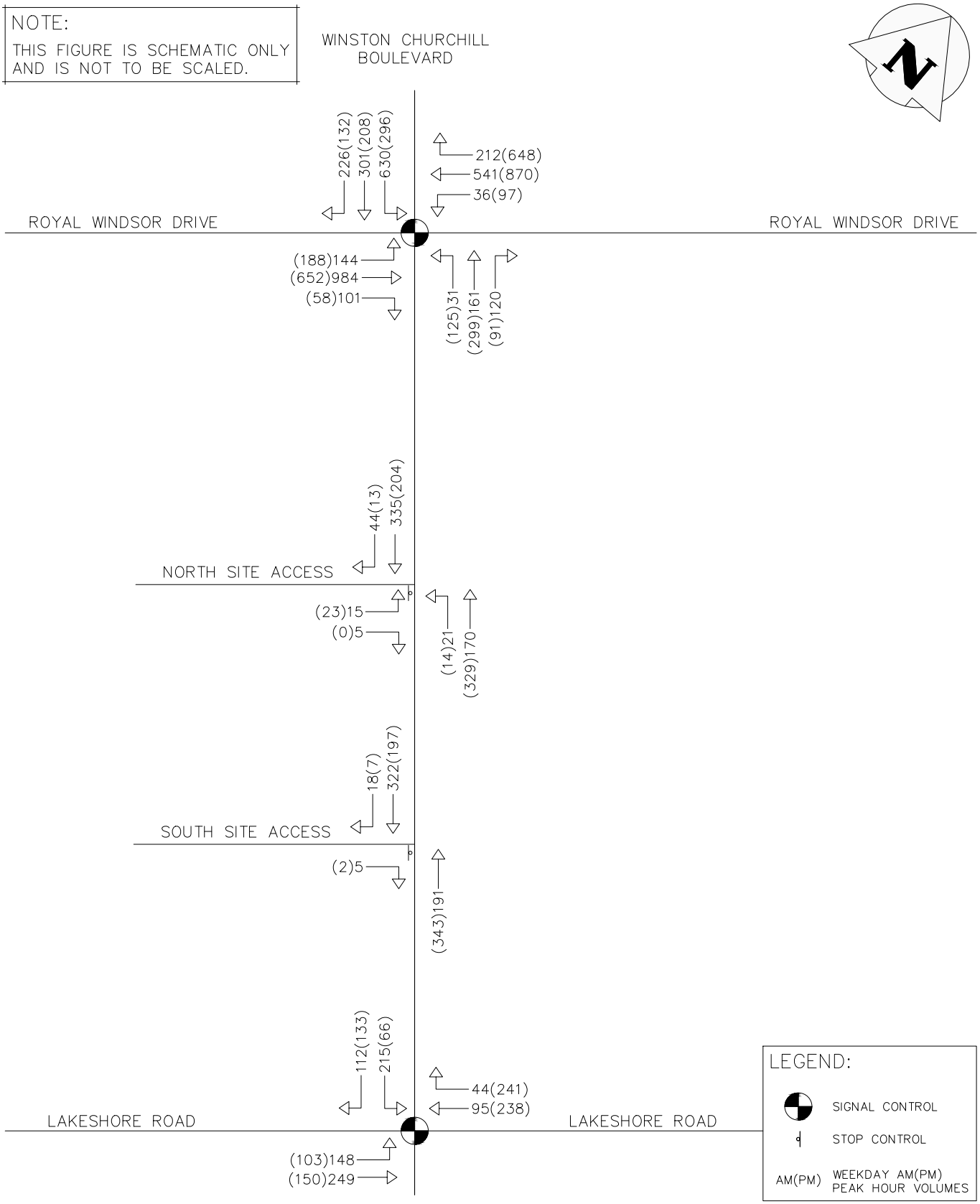
560 WINSTON CHURCHILL BOULEVARD

SITE TRIP ASSIGNMENT – HEAVY VEHICLES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756–5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.07

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



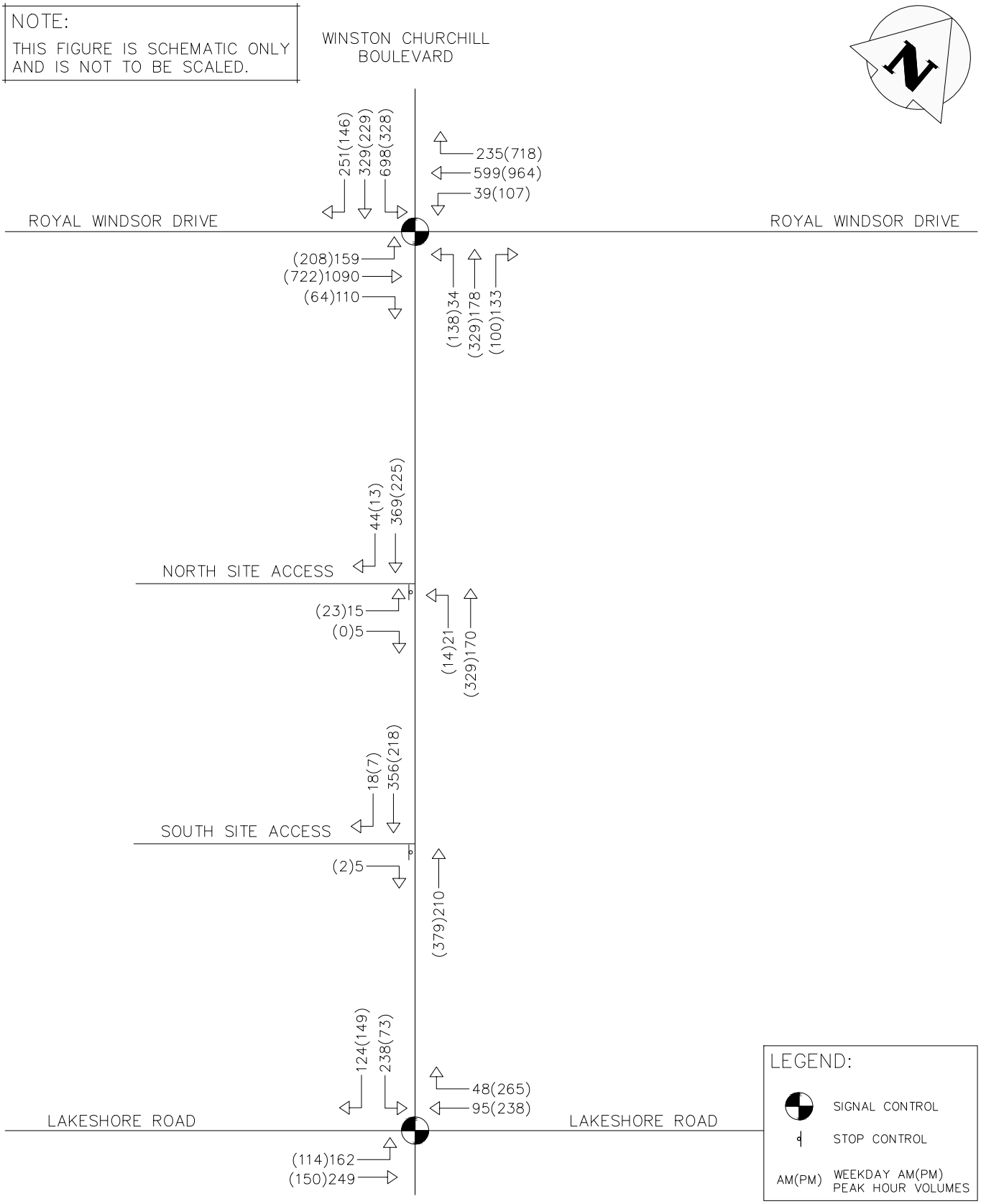
560 WINSTON CHURCHILL BOULEVARD

2022 FUTURE TOTAL TRAFFIC VOLUMES

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756-5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.08

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

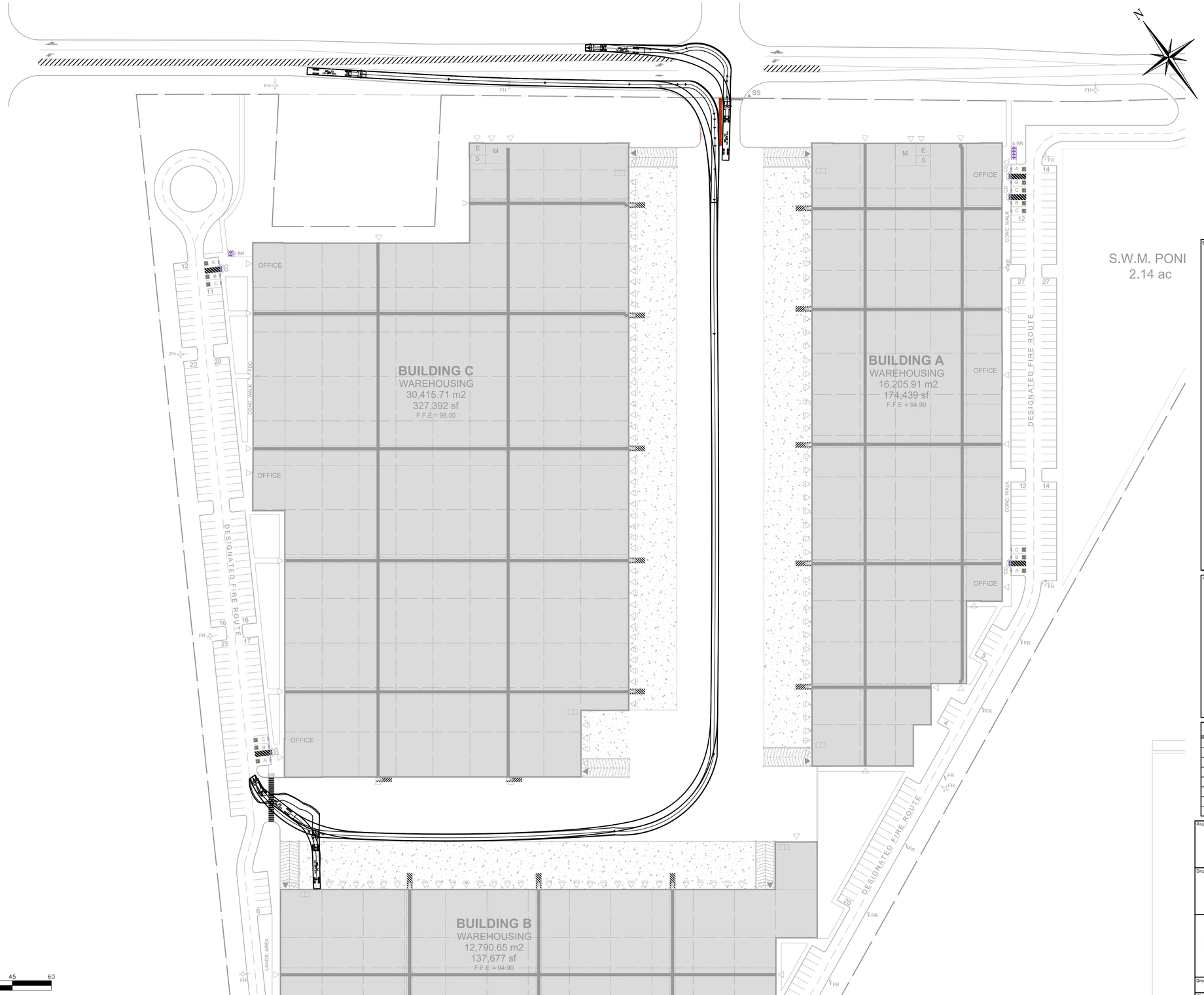


560 WINSTON CHURCHILL BOULEVARD

2027 FUTURE TOTAL TRAFFIC VOLUMES

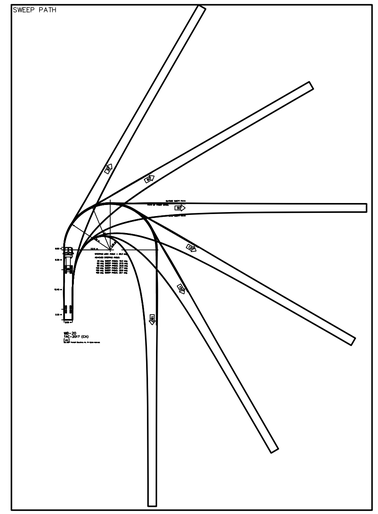
CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	Design	Project No.	
S.Y./T.D.S.	S.Y./K.S.		0756-5105
Check	Check	Scale	Dwg.
A.W.	K.S.	N.T.S	FIG.09

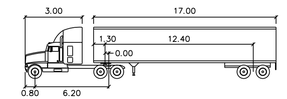


DRAFT
FOR DISCUSSION PURPOSES ONLY

S.W.M. PONI
2.14 ac



VEHICLE PROFILE



WB–20

meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.2
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	02/09/2021
0a	ISSUED FOR INTERNAL REVIEW	02/25/2021

Project

BLACKWOOD PARTNERS INC.
560 WINSTON CHURCHILL BLVD

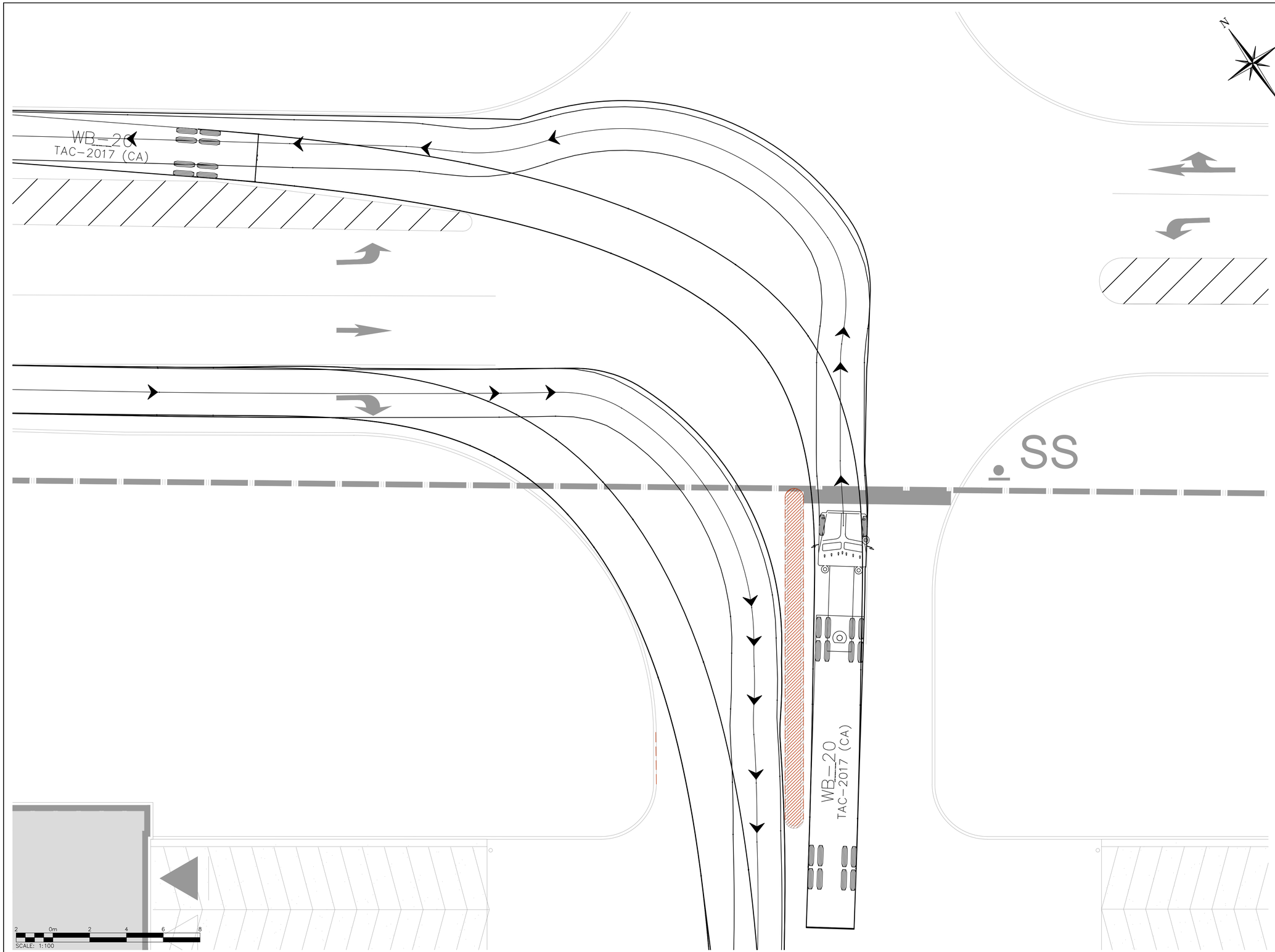
Drawing

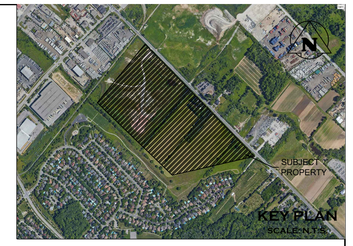
TRUCK TURNING ANALYSIS
WB–20

CROZIER
CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
S.K.			756–5105
Check By	Check By	Scale	Drawing
K.S.		1:750	TT 01

I:\700\756-Blackwood Partners Inc\5105-560 Winston Churchill Blvd\CAD\Traffic\5105_TT.dwg, TT 01, 2021-02-26 4:35:39 PM, skerr





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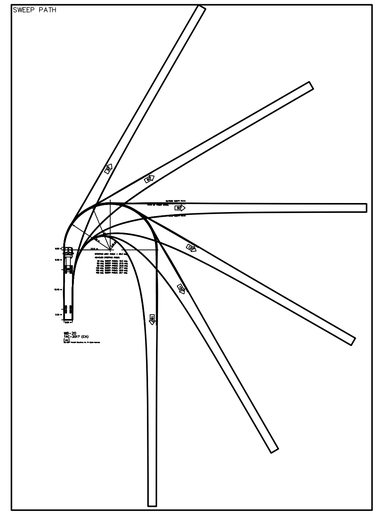
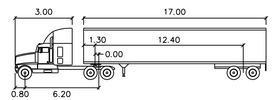
FOR DISCUSSION PURPOSES ONLY



VEHICLE PROFILE



WB–20

meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.2
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	02/09/2021
0a	ISSUED FOR INTERNAL REVIEW	02/25/2021

Project

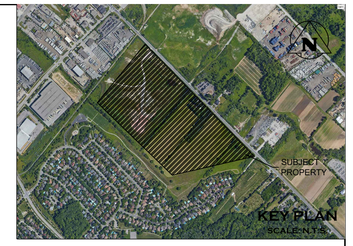
BLACKWOOD PARTNERS INC.
560 WINSTON CHURCHILL BLVD

Drawing

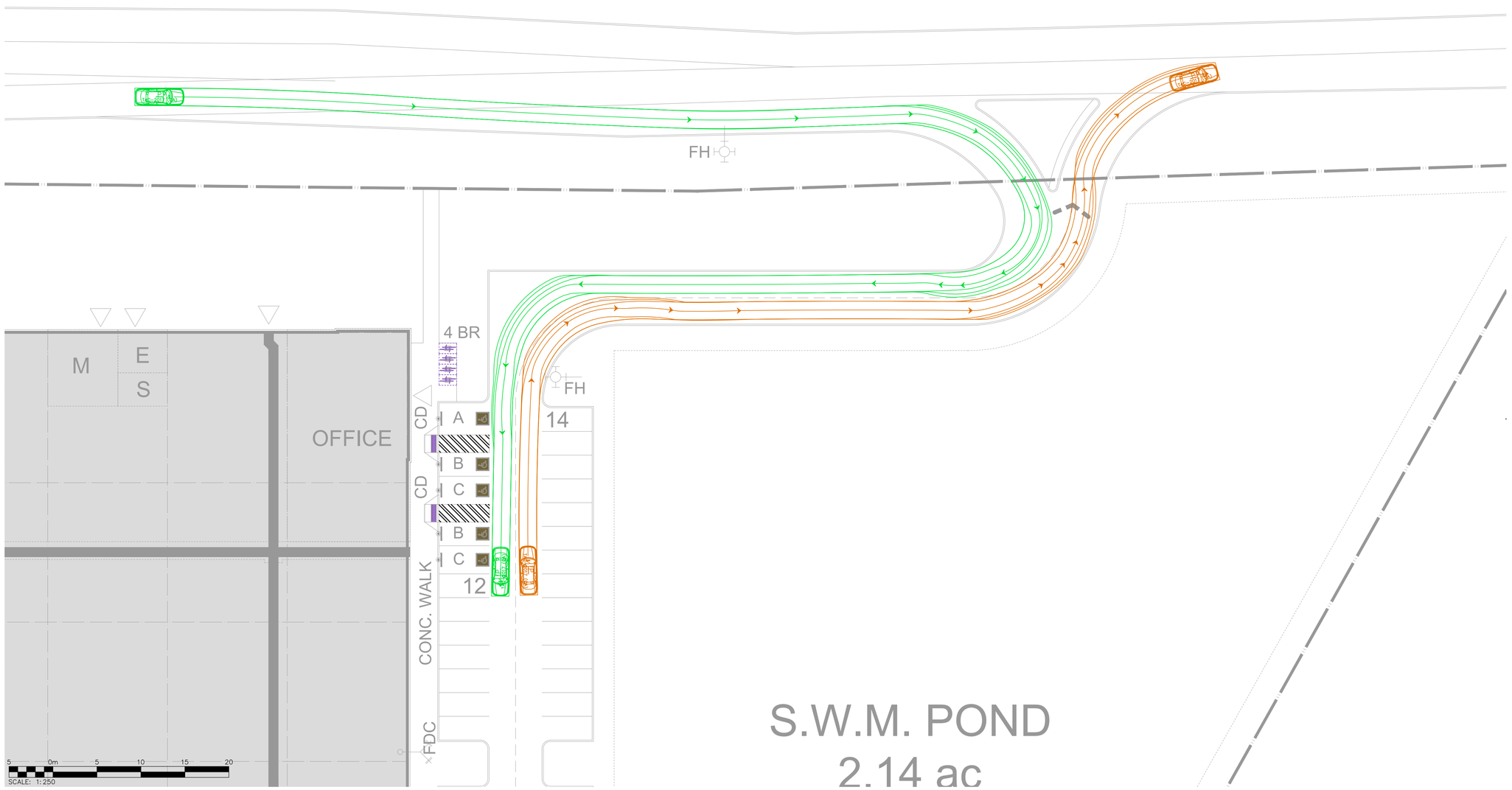
TRUCK TURNING ANALYSIS
WB–20

CROZIER
CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

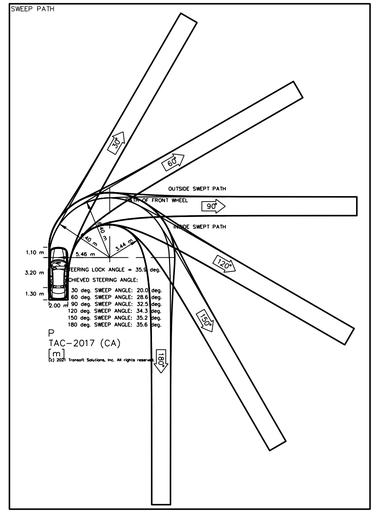
Drawn By	Design By	Project	
S.K.			756–5105
Check By	Check By	Scale	Drawing
K.S.		1:100	TT 01A



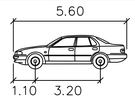
DRAFT
FOR DISCUSSION PURPOSES ONLY



SWEEP PATH



VEHICLE PROFILE



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	02/09/2021
0a	ISSUED FOR INTERNAL REVIEW	02/25/2021

Project

BLACKWOOD PARTNERS INC.
560 WINSTON CHURCHILL BLVD

Drawing

TRUCK TURNING ANALYSIS
P CAR

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
S.K.			756-5105
Check By	Check By	Scale	Drawing
K.S.		1:250	TT 02