115 Trafalgar Road
Town of Oakville
Operational Analysis and Parking Study

Paradigm Transportation Solutions Limited

August 2023
220632

ptsl.com

Project Summary

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115 Trafalgar Road
Town of Oakville
Operational Analysis and Parking Study

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Executive Summary

Content

Trafalgar Luxury Living Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Operation Analysis and Parking Study, for a proposed mixed-use development located at 115 Trafalgar Road in the Town of Oakville. The site is in the Downtown Core Central Business District (CBD).

Development Concept

The development concept includes a six-story mixed-use building containing 12 condominium units and approximately 230 m² of ground floor retail space.

A total parking supply of 21 spaces (2.25 spaces per unit) is proposed. Build-out and occupancy is anticipated to occur by Year 2026, timing subject to market conditions.

Vehicle access is proposed by a private driveway to Trafalgar Road. The driveway is located approximately 30 metres (centreline to centreline) south of Church Street at the site's southern property line.

Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The study area intersections assessed in this study include:
  - Trafalgar Road at Church Street (signalized);
  - Trafalgar Road at Lakeshore Road East (signalized); and
  - Proposed site driveway to Trafalgar Road (unsignalized).
- **Existing Traffic Conditions**: The intersections within the study area are operating with acceptable levels of service during the AM and PM peak hours.
- **Forecast Traffic**: A five-year horizon (Year 2028) following the date of the study has been assessed. The likely future traffic volumes near the subject site are estimated to consist of generalized background traffic growth and traffic generated by the subject site.
- **Background Traffic Conditions**: The intersections within the study area are forecast to continue to operate with acceptable levels of service during the AM and PM peak hours.

- **Site Generated Traffic**: The subject site is forecast to generate approximately 10 and 21 vehicle trips during the AM and PM peak hours, respectively.
- **Total Traffic Conditions**: The intersections within the study area are forecast to continue to operate with acceptable levels of service during the AM and PM peak hours.

  The site driveway approach to Trafalgar Road is forecast to operate with acceptable levels of service. Delays on the driveway approach are forecast to be in the LOS A range with v/c ratios of less than 0.15. The 95th percentile queue length is expected to be less than 1 vehicle and not extend past the overhead door.
- **Parking Supply**: 21 parking spaces are proposed to accommodate the site's parking demand.
  - The Zoning By-Law stipulates a requirement of 18 parking spaces. A minimum of three spaces should be allocated to visitors. The site's parking supply exceeds the zoning requirements.
  - The Zoning By-Law requires 2 short-term bicycle parking spaces.
- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. Additional TDM measures are included in Section 5.1.
- **Site Driveway**: To assist drivers in identifying pedestrians using the sidewalk across the site's frontage near the site driveway additional design elements should be include in the site plan design.

Recommendations

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

- A minimum of three parking spaces should be allocated to visitors.
- The two on-street parking spaces across the site's frontage to Trafalgar Road be removed to accommodate the site driveway.
- The following TDM measures can assist in mitigating the site's transportation and parking impacts:
  - The occupant parking supply be unbundled.

- transit information and discounted transit passes for first time purchasers who do not purchase a parking space be included as a marketing item;
- Wayfinding and Travel Planning resources be provided to residents.

- The following site driveway design elements be incorporated into the site plan design:
  - Stop sign on the driveway approach to Trafalgar Road;
  - Signage on the driveway approach to remind drivers to watch for pedestrians;
  - Continuous sidewalk through the site driveway;
  - Convex mirrors on the driveway approach to assist drivers in identifying pedestrian and vice versa;
  - Alternative pavement colour treatment for the driveway surface; and
  - Tactile walking surface indicators on the sidewalk at the site driveway.

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Appendices

Figures

Tables

1 Introduction

1.1 Overview

Trafalgar Luxury Living Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Operation Analysis and Parking Study, for a proposed mixed-use development located at 115 Trafalgar Road in the Town of Oakville. The site is in the Downtown Core Central Business District (CBD)[1]. **Figure 1.1** illustrates the site location.

The scope of the study includes:

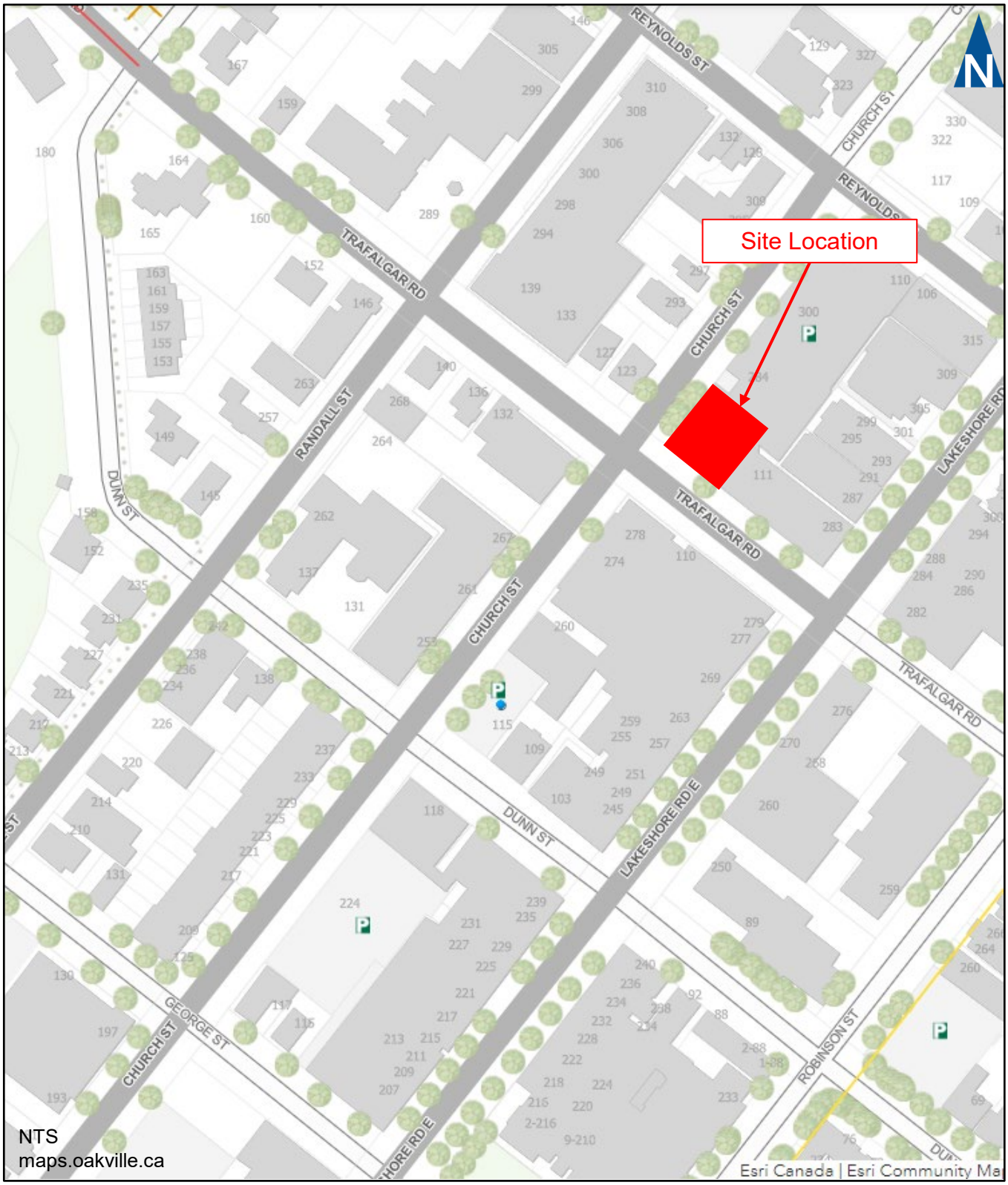
- An assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network;
- Determining the site's parking needs and providing recommendations to mitigate parking demands; and
- Recommendations to mitigate the site generated traffic in a satisfactory manner, if required.

Appendix A contains the pre-study consultation material and responses from the Town of Oakville. The study generally follows Halton Region Transportation Impact Study Guidelines[2].

The study area intersections assessed in this study include:

- Trafalgar Road at Church Street (signalized);
- Trafalgar Road at Lakeshore Road East (signalized); and
- Proposed site driveway to Trafalgar Road (unsignalized).

[1] Town of Oakville. *Zoning By-Law 2014-014*, *Map 19(8a)*. (Oakville, May 10, 2021).
[2] (Region of Halton). *Transportation Impact Study Guidelines*. (Halton: January 2015).



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Site Location

115 Trafalgar Road
220623

Figure 1.1

2 Existing Conditions

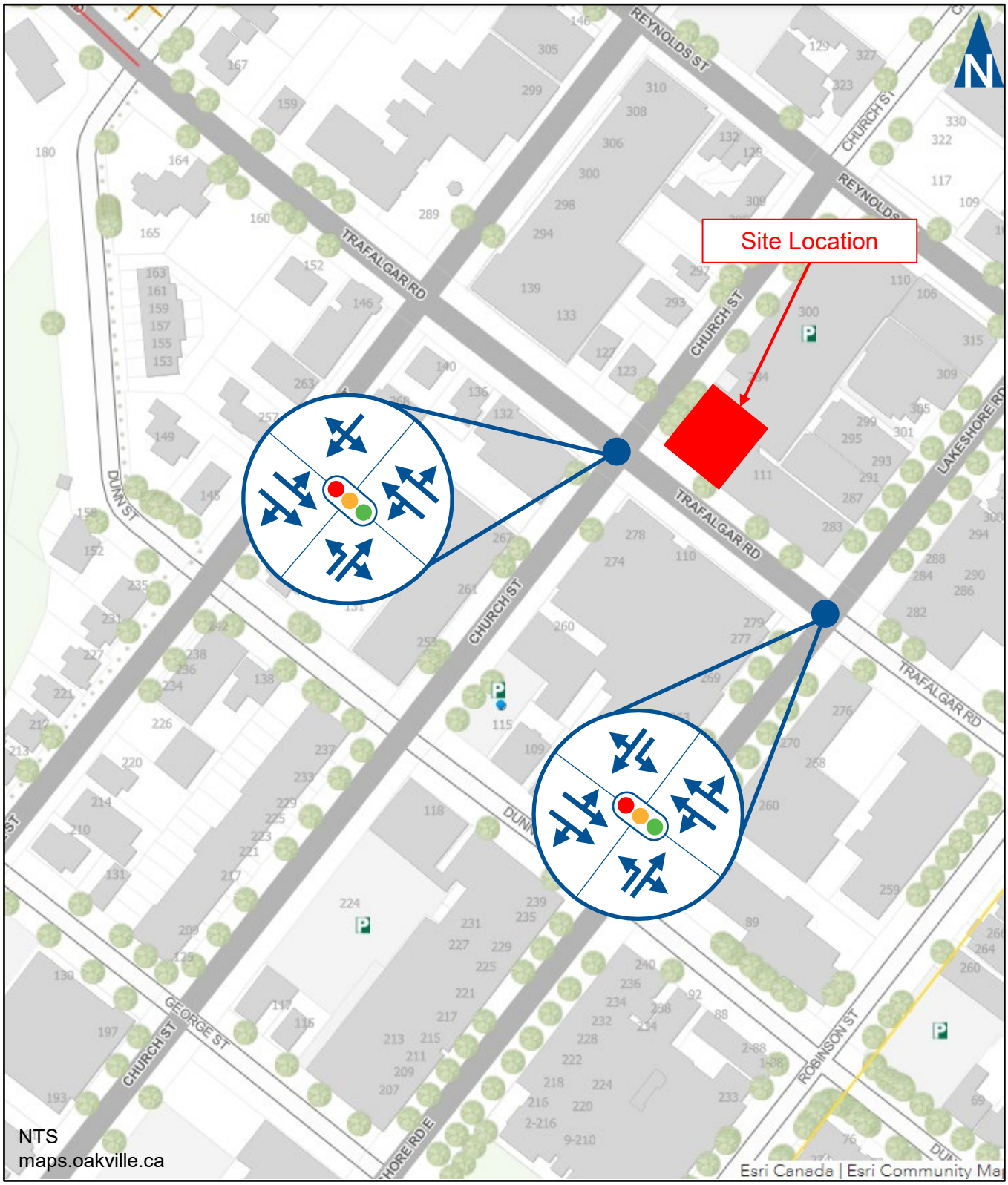
2.1 Roadways

The roadways of interest within the study area include[3]:

- **Trafalgar Road** is a north / south minor arterial road. The road has a four-lane urban cross-section that transitions into a two-lane cross-section south of Church Street and a posted speed limit of 50 km/h. Sidewalks are provided on both sides of the roadway. Intermitted on-street parking is available on both sides of the road in marked spaces. The intersections with Church Street and Lakeshore Road East are signalized and operate with crosswalks and pedestrian pushbuttons on all approaches.
- **Church Street** is an east / west minor arterial road. The road has a two-lane cross-section and an assumed speed limit of 50 km/h. Sidewalks are provided on both sides of the roadway and the roadway operates as a signed bike route. Intermitted on-street parking is provided on both sides of the roadway in marked spaces.
- **Lakeshore Road East** is an east / west minor arterial road. The road has a two-lane cross-section and a posted speed limit of 50 km/h. Sidewalks are provided on both sides of the roadway.

Figure 2.1 illustrates the existing lane configuration and traffic control at the study area intersections.

[3] (Town of Oakville). *2015 Road System Map*. (Oakville: December 2015).



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Existing Lane Configuration and Traffic Control

115 Trafalgar Road
220623

Figure 2.1

2.2 Transit Network

Transit service is provided by Oakville Transit. There are 7 stops located within 500 metres of the subject site. The site is serviced by Route 14, 14a, 83. Route 83 travels north/south while Route 14 and 14a travel east/west.

The nearest northbound/eastbound stop is located on the south side of Church Street approximately 120 metres away from the site, while the nearest westbound stop is located on the north side of Randell Street approximately 150 metres away from the site.

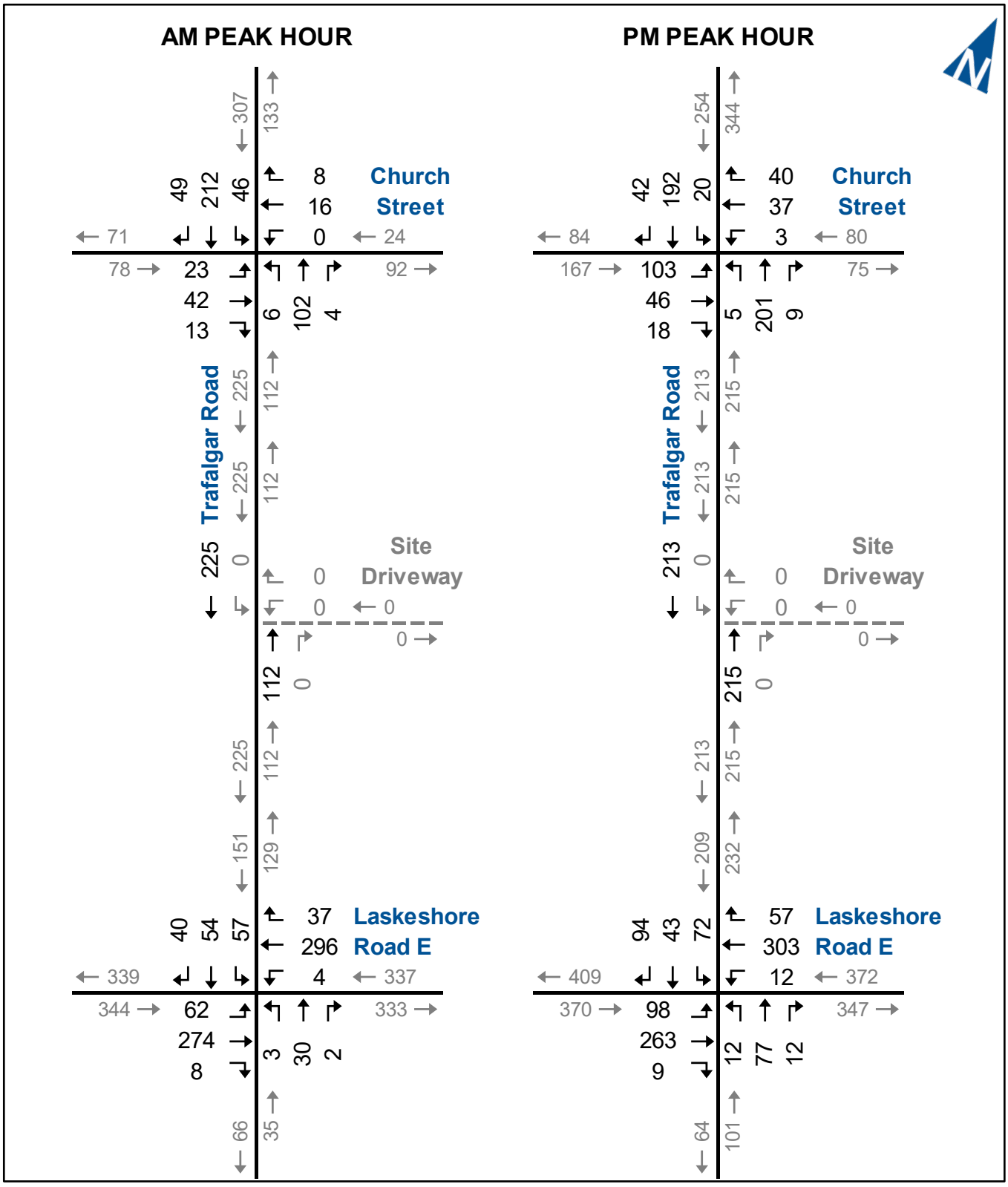
2.3 Traffic Volumes

Table 2.1 summarizes the location and date of the existing turning movement count (TMC) data used in the analysis. **Appendix B** contains the existing count data and signal timing data.

The TMC data was adjusted to a base year (Year 2023) condition using a 2% per annum growth rate. **Figure 2.2** illustrates the base year traffic volumes.

TABLE 2.1: EXISTING TMC DATA

Intersection	Date
Trafalgar Road at Church Street	2022-11-02
Trafalgar Road at Lakeshore Road East	2022-12-07



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Base Year Traffic Volumes

115 Trafalgar Road
220623

Figure 2.2

2.4 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles wanting to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The intersection analysis considered three separate measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity (v/c) ratio for each intersection; and
- 95th percentile queue length (metres) using Synchro 11.

Under Halton Region's TIS Guidelines[4], the operational analysis must include identification of signalized and unsignalized intersections where:

- v/c ratios for through or shared through / turning movements that exceed 0.85 at a signalized intersection;
- v/c ratios for exclusive left-turning movements that exceed 0.90 at a signalized intersection;
- The 95th percentile queues for an individual movement are projected to exceed available turning lane storage; and
- LOS, based on average delay per vehicle on individual movements, operate at LOS D or worse at unsignalized intersections.

4 (Region of Halton). *Transportation Impact Study Guidelines*. (Halton: January 2015).

The evaluation criteria used to analyze signalized and unsignalized intersections are based on the Highway Capacity Manual (HCM)[5] 2000 using Synchro 11 software.

The operations of the intersections in the study area were evaluated using the existing lane configuration, signal timings, and traffic control along with the base year traffic volumes.

Table 2.1 summarizes the level of service conditions.

The intersections within the study area are forecast to operate with acceptable levels of service and within capacity during the AM and PM peak hours. No critical movements are noted.

Appendix C contains the detailed Synchro 11 reports.

[5] (Transportation Research Board). *Highway Capacity Manual*. (Washington, D.C: 2003).

TABLE 2.1: BASE YEAR TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	A	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	10	10	>	**10**	<	10	>	**10**	<	9	>	**9**	<	10	>	**10**	**10**
			V/C	0.08	0.11	>		<	0.04	>		<	0.11	>		<	0.29	>		**0.20**
			95th	6	8	>		<	5	>		<	9	>		<	21	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	19	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	A	A	>	**A**	B	B	>	**B**	B	B	>	**B**	B	B	>	**B**	**B**
			Delay	9	9	>	**9**	12	19	>	**19**	17	17	>	**17**	13	13	>	**13**	**14**
			V/C	0.19	0.35	>		0.02	0.69	>		0.05	0.10	>		0.18	0.17	>		**0.46**
			95th	10	40	>		2	69	>		2	10	>		12	12	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	15	-	>		23	-	>		24	-	>		-	-	>		
PM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	B	A	>	**B**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	11	10	>	**11**	<	10	>	**10**	<	9	>	**9**	<	10	>	**10**	**10**
			V/C	0.28	0.10	>		<	0.11	>		<	0.18	>		<	0.24	>		**0.26**
			95th	20	11	>		<	12	>		<	16	>		<	17	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	5	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	A	A	>	**A**	B	B	>	**B**	C	C	>	**C**	B	B	>	**B**	**B**
			Delay	8	9	>	**9**	11	15	>	**15**	23	25	>	**25**	18	18	>	**18**	**14**
			V/C	0.25	0.35	>		0.05	0.55	>		0.08	0.33	>		0.26	0.20	>		**0.45**
			95th	14	39	>		4	71	>		5	23	>		15	13	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	11	-	>		21	-	>		20	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

3 Development Concept

3.1 Description

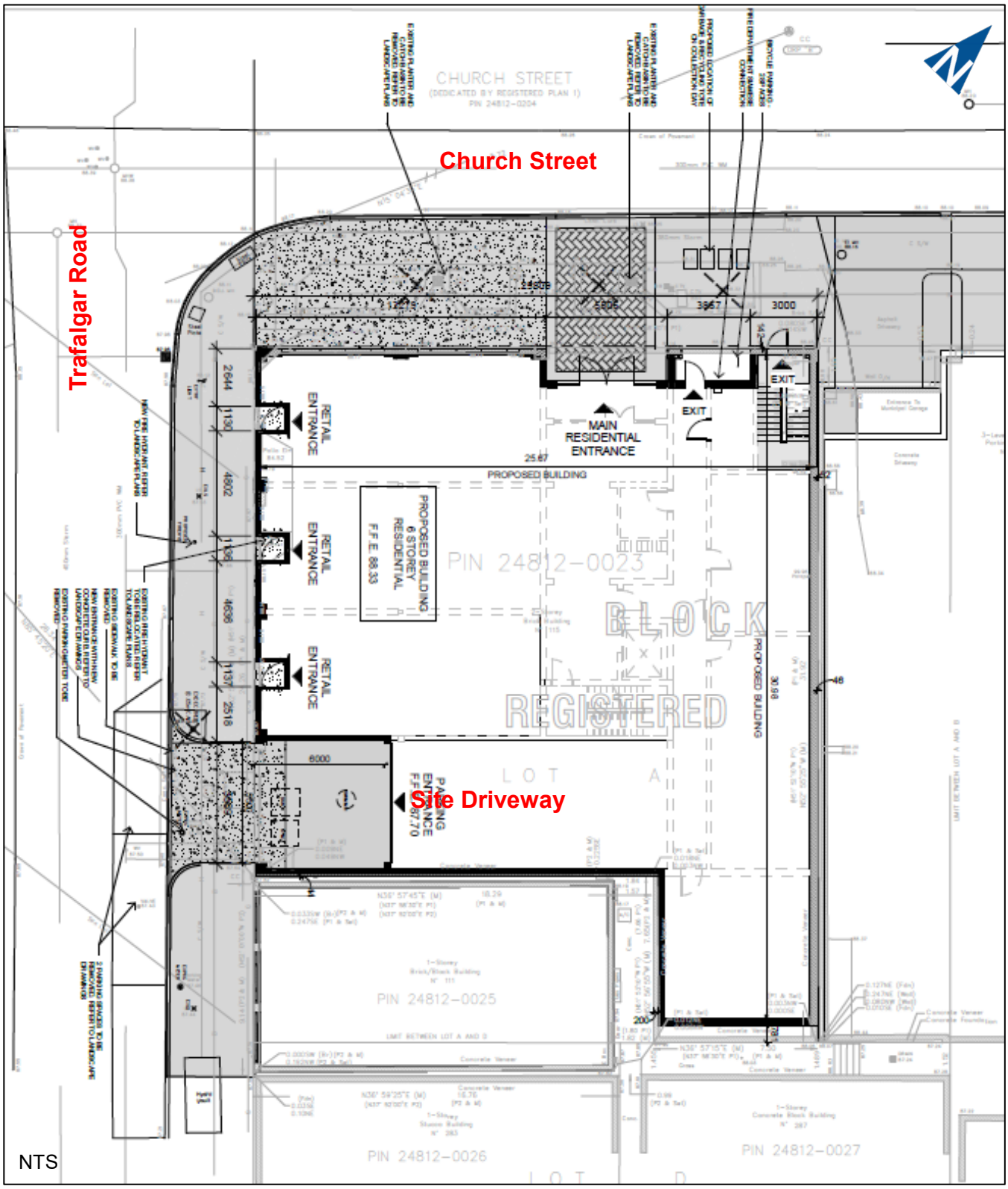
The subject site is located at 115 Trafalgar Road in the Town of Oakville.

The development concept includes a six-story mixed-use building containing 12 condominium units and approximately 230 m² of ground floor retail space.

A total parking supply of 21 spaces (1.75 spaces per unit) is proposed. Build-out and occupancy is anticipated to occur by Year 2026, timing subject to market conditions.

Vehicle access is proposed by a private driveway to Trafalgar Road. The driveway is located approximately 30 metres (CL to CL) south of Church Street at the site's southern property line. The driveway is designed with a width of 5.5 m at the building face.

Figure 3.1 illustrates the site concept plan.



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Site Concept Plan

115 Trafalgar Road
220623

Figure 3.1

3.2 Proposed TDM Measures

The only identifiable TDM measure included on the site plan is the pedestrian realm. Direct pedestrian connections are proposed to the existing sidewalks along Church Street and Trafalgar Road.

Additional TDM measures are recommended to manage the site's transportation impacts. **Section 5.1** summarizes the recommended TDM measures for the site.

3.3 Site Trip Generation

The ITE Trip Generation 11th edition[6] data was used to estimate the vehicular site trip generation. The average rate equations for Multifamily Housing (Mid-Rise) (LUC 221) and Shopping Plaza (<44k) (LUC 822) were used to estimate the site's trips generation.

Table 3.1 summarizes the estimated trip generation. To remain conservative, no modal split adjustments have been applied to the trip generation estimate to account for active transportation or transit-oriented trips. A pass-by trip rate of 40% was applied to LUC 822 in the PM peak hour.

The subject site is forecast to generate approximately 10 and 21 total vehicle trips during the AM and PM peak hours, respectively. Pass-by trips are expected to reduce the site's PM peak trip generation by approximately 7 trips. Resulting in a net trip generation of 13 trips during the PM peak hour.

The site driveway is forecast to have less than 25 two-way peak hour vehicle trips.

[6] *Trip Generation Manual Eleventh Edition*. Institute of Transportation Engineers, (Washington D.C., 2021)

TABLE 3.1: SITE GENERATED TRAFFIC

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) (LUC 221)[1] - 12 units	1	3	**4**	3	2	**5**
Shopping Plaza (<44k) (LUC 822)[2] - 230 m²	4	2	**6**	8	8	**16**
Total Generation	**5**	**5**	**10**	**11**	**10**	**21**
Pass-By Shopping[3]			N/A	3	4	7
New Trips	**5**	**5**	**10**	**8**	**6**	**14**

1: AM Rate - 0.37, PM Rate - 0.39
2: AM Rate - 2.36, PM Rate - 6.59
3: AM Rate - N/A, PM Rate - 40%[7]

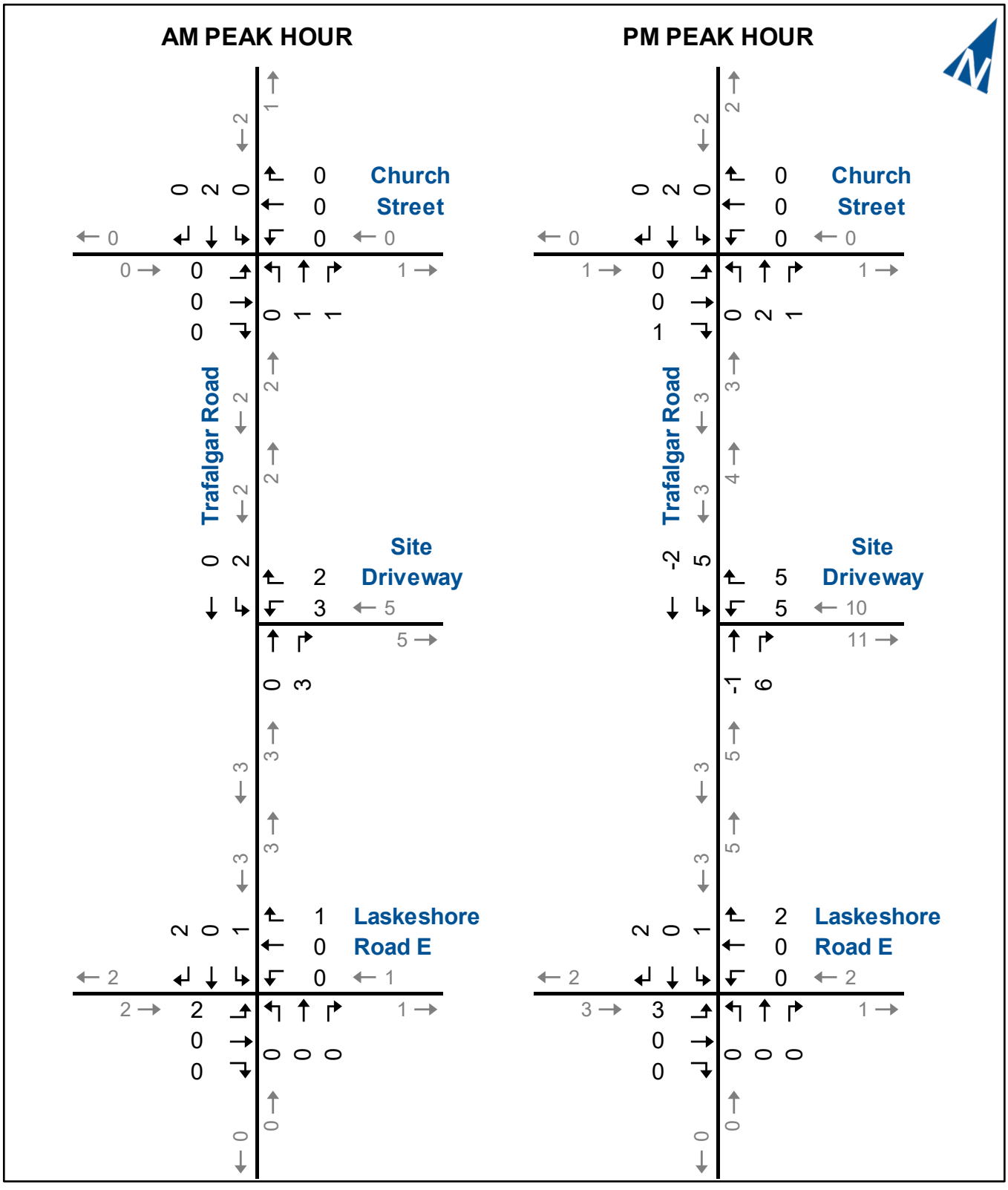
The surrounding area is primarily residential and retail stores, as such the trip distribution for the subject site reflects existing travel patterns as documented in the turning movement counts. **Table 3.2** summarizes the estimated trip distribution. The estimated distribution is based on existing traffic volumes.

Figure 3.2 illustrates the site generated traffic.

TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Trafalgar Road	30%	20%	25%	30%
South via Trafalgar Road	0%	0%	0%	0%
East via Lakeshore Road East	30%	30%	30%	25%
West via Lakeshore Road East	30%	35%	30%	30%
East via Church Street	5%	10%	5%	10%
West via Church Street	5%	5%	10%	5%
Total	**100%**	**100%**	**100%**	**100%**

[7] *Trip Generation Manual Eleventh Edition*, Pass-By Trips. Institute of Transportation Engineers, (Washington D.C., 2021)



Site Generate Traffic Volumes

115 Trafalgar Road
220623

Figure 3.2

4 Future Traffic Conditions

The assessment of future conditions in this section includes the following components:

- Future background traffic estimates;
- Level of service analysis for background traffic (pre-development);
- Future total traffic estimates; and
- Level of service analysis for total traffic (post-development).

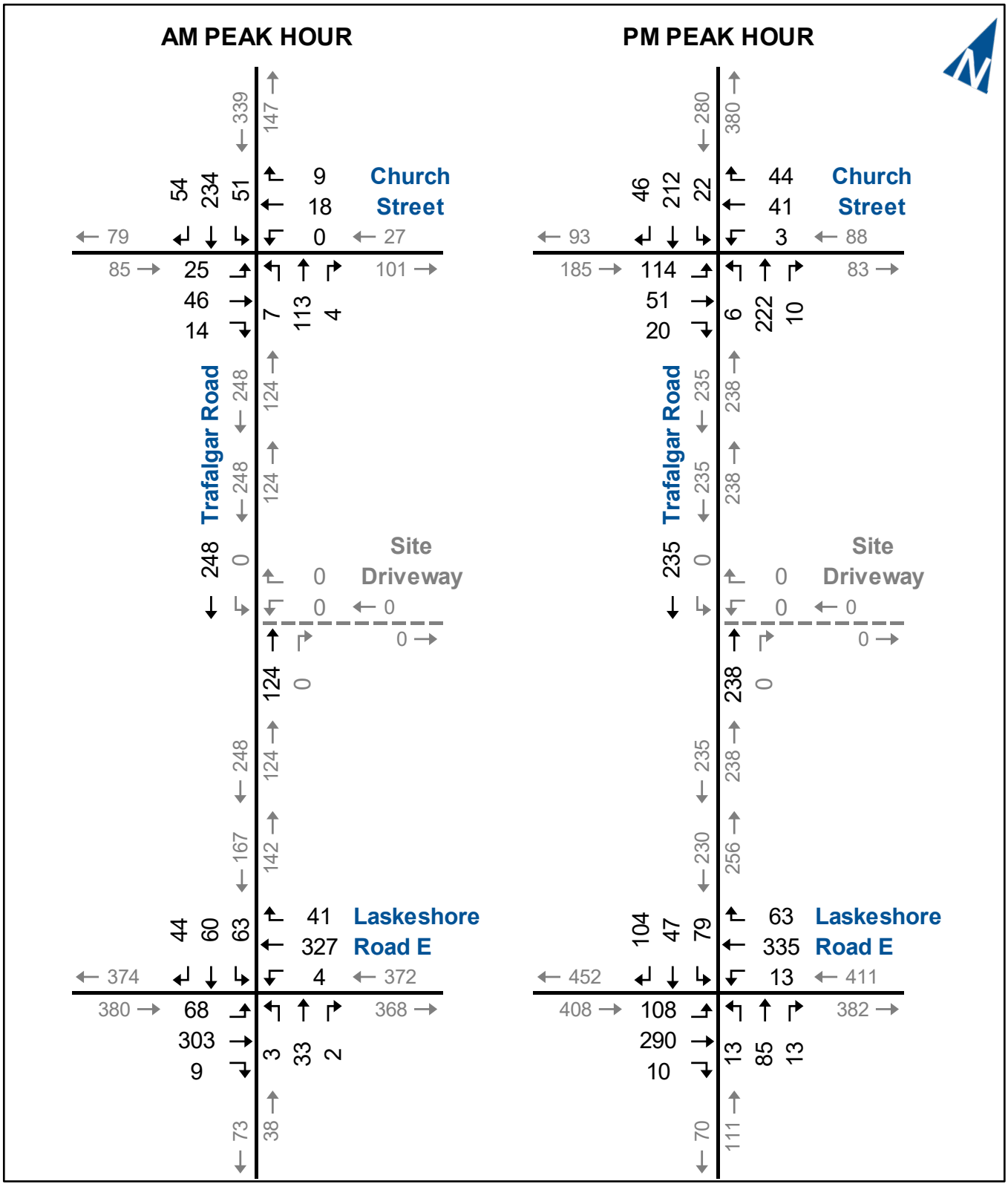
4.1 Forecast Traffic

A five-year horizon (Year 2028) from the date of the study has been assessed. The likely future traffic volumes near the subject site are estimated to consist of:

- Increased non-site traffic (generalized background traffic growth); and
- Traffic generated by the subject site.

During pre-study consultations, Town staff confirmed a generalized background growth rate of 2% per annum. No adjacent development applications were identified during pre-consultation by the Town of Oakville for inclusion in the traffic forecast.

Figure 4.1 illustrates the forecast five-year background traffic volumes. **Figure 4.2** illustrates the forecast five-year total traffic volumes.



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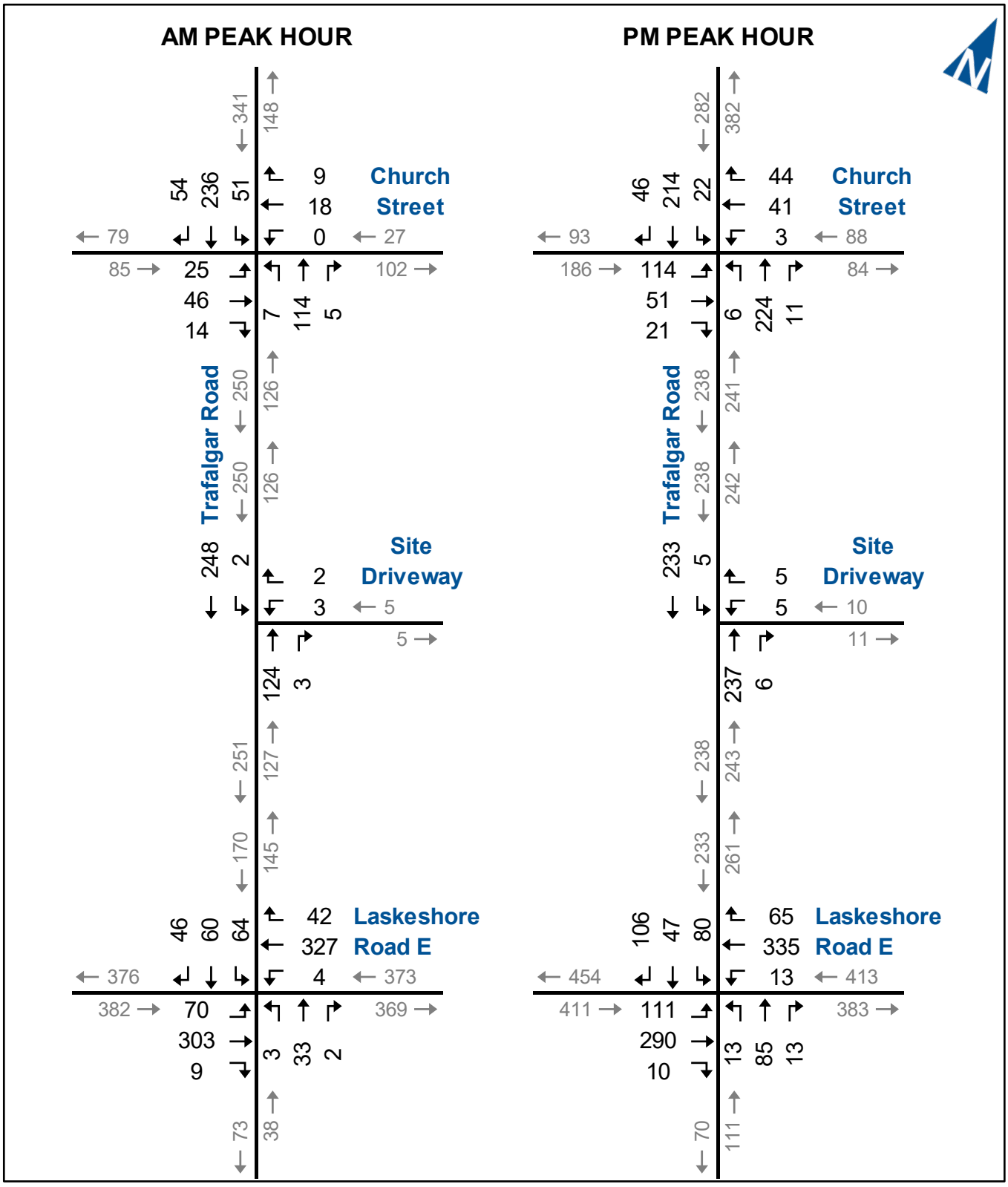
Five-Year Background Traffic Volumes

115 Trafalgar Road
220623

Figure 4.1



Five-Year Total Traffic Volumes

115 Trafalgar Road
220623

Figure 4.2

4.2 Background Traffic Operations

The study area intersection operations analyses followed the same methodology used for existing conditions. No changes to the existing lane configurations or signal timings are assumed.

Table 4.1 summarizes the level of service conditions.

The intersections within the study area are forecast to continue to operate with acceptable levels of service and within capacity during the AM and PM peak hours. No critical movements are noted.

Appendix D contains the detailed Synchro 11 reports.

4.3 Total Traffic Operations

The study area intersection operations analyses followed the same methodology used for existing conditions. No changes to the existing lane configurations or signal timings are assumed.

Table 4.2 summarizes the level of service conditions.

The intersections within the study area are forecast to continue to operate with acceptable levels of service and well within capacity during the AM and PM peak hours.

The site driveway approach to Trafalgar Road is forecast to operate with acceptable levels of service. Delays on the driveway approach are forecast to be in the LOS A range with v/c ratios of less than 0.05. The 95th percentile queue length is expected to be less than 1 vehicle and not extend past the overhead door.

The overall impact of the proposed development on the existing road network is considered minimal.

Appendix E contains the detailed Synchro 11 reports.

TABLE 4.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	A	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	**A**
			Delay	10	10	>	**10**	<	10	>	**10**	<	9	>	**9**	<	10	>	**10**	**10**
			V/C	0.09	0.12	>		<	0.05	>		<	0.12	>		<	0.32	>		**0.22**
			95th	6	9	>		<	6	>		<	10	>		<	24	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	19	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	A	A	>	**A**	B	B	>	**B**	C	C	>	**C**	B	B	>	**B**	**B**
			Delay	8	8	>	**8**	11	15	>	**15**	22	23	>	**23**	18	18	>	**18**	**13**
			V/C	0.18	0.32	>		0.02	0.56	>		0.06	0.13	>		0.24	0.23	>		**0.45**
			95th	10	44	>		2	78	>		2	11	>		13	14	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	15	-	>		23	-	>		24	-	>		-	-	>		
PM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	B	A	>	**B**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	11	10	>	**11**	<	10	>	**10**	<	9	>	**9**	<	10	>	**10**	**10**
			V/C	0.31	0.11	>		<	0.12	>		<	0.20	>		<	0.27	>		**0.29**
			95th	21	12	>		<	13	>		<	17	>		<	19	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	4	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	B	B	>	**B**	B	C	>	**C**	C	C	>	**C**	B	B	>	**B**	**B**
			Delay	12	12	>	**12**	14	22	>	**22**	21	22	>	**22**	16	16	>	**16**	**17**
			V/C	0.36	0.43	>		0.07	0.70	>		0.06	0.27	>		0.23	0.19	>		**0.50**
			95th	16	43	>		4	81	>		6	25	>		16	13	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	10	-	>		21	-	>		19	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	A	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	**A**
			Delay	10	10	>	**10**	<	10	>	**10**	<	9	>	**9**	<	10	>	**10**	**10**
			V/C	0.09	0.12	>		<	0.05	>		<	0.12	>		<	0.32	>		**0.23**
			95th	6	9	>		<	6	>		<	10	>		<	24	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	19	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	A	A	>	**A**	B	B	>	**B**	C	C	>	**C**	B	B	>	**B**	**B**
			Delay	8	8	>	**8**	11	15	>	**15**	22	23	>	**23**	18	18	>	**18**	**13**
			V/C	0.19	0.32	>		0.02	0.56	>		0.06	0.13	>		0.24	0.23	>		**0.46**
			95th	11	44	>		2	78	>		2	11	>		13	14	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	14	-	>		23	-	>		24	-	>		-	-	>		
	Trafalgar Road & Site Driveway	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	**A**
			Delay					10		>	**10**		0	>	**0**	<	0		**0**	**0**
			V/C					0.01		>			0.05	>		<	0.11			
			95th					0		>			0	>		<	0			
PM Peak Hour	Trafalgar Road & Church Street	TCS	LOS	B	A	>	**B**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	11	10	>	**11**	<	10	>	**10**	<	10	>	**10**	<	10	>	**10**	**10**
			V/C	0.31	0.11	>		<	0.12	>		<	0.21	>		<	0.27	>		**0.29**
			95th	21	12	>		<	13	>		<	18	>		<	19	>		
			Storage	25	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	4	-	>		<	-	>		<	-	>		<	-	>		
	Trafalgar Road & Lakeshore Road East	TCS	LOS	B	B	>	**B**	B	C	>	**C**	C	C	>	**C**	B	B	>	**B**	**B**
			Delay	12	12	>	**12**	14	22	>	**22**	21	22	>	**22**	16	16	>	**16**	**17**
			V/C	0.38	0.43	>		0.07	0.70	>		0.06	0.27	>		0.23	0.19	>		**0.50**
			95th	16	43	>		4	81	>		6	25	>		16	13	>		
			Storage	25	-	>		25	-	>		25	-	>		-	-	>		
			Avail.	9	-	>		21	-	>		19	-	>		-	-	>		
	Trafalgar Road & Site Driveway	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	**A**
			Delay					10		>	**10**		0	>	**0**	<	1		**0**	**0**
			V/C					0.01		>			0.10	>		<	0.10			
			95th					0		>			0	>		<	0			

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

5 Remedial Measures

5.1 TDM Measures

The following TDM measures can assist in mitigating the site's transportation and parking impacts:

- **Parking** – The developer should consider unbundling parking costs from residential unit costs. This allows residents to purchase a unit without a parking space.
- **Bicycle Parking** – two short-term bicycle parking spaces should be provided as outlined in the Oakville Zoning By-Law 2014-014[8]
- **Transit** – Provision of transit information on-site and discounted transit passes for first time purchasers who do not purchase a parking space be provided for the first year of occupancy;
- **Wayfinding and Travel Planning** – Wayfinding and Travel Planning resources (transit and active transportation maps) can be provided to residents. Wayfinding signage directing occupants and visitors to active transportation facilities (pedestrian pathways, bike network, trails) could also be integrated into the site's landscaping plans.

5.2 Access Management

Vehicle access is proposed by a private driveway to Trafalgar Road. The driveway is located approximately 30 metres (CL to CL) south of Church Street at the site's southern property line. The driveway is designed with a width of 5.5 m at the building face.

The two on-street parking spaces on the east side of Trafalgar Road across the site's frontage will need to be removed to accommodate the site driveway.

The proposed site driveway width does not conform to the Town of Oakville's standard drawing STD 10-2[9] which prescribes an driveway width of 7.5 metres.

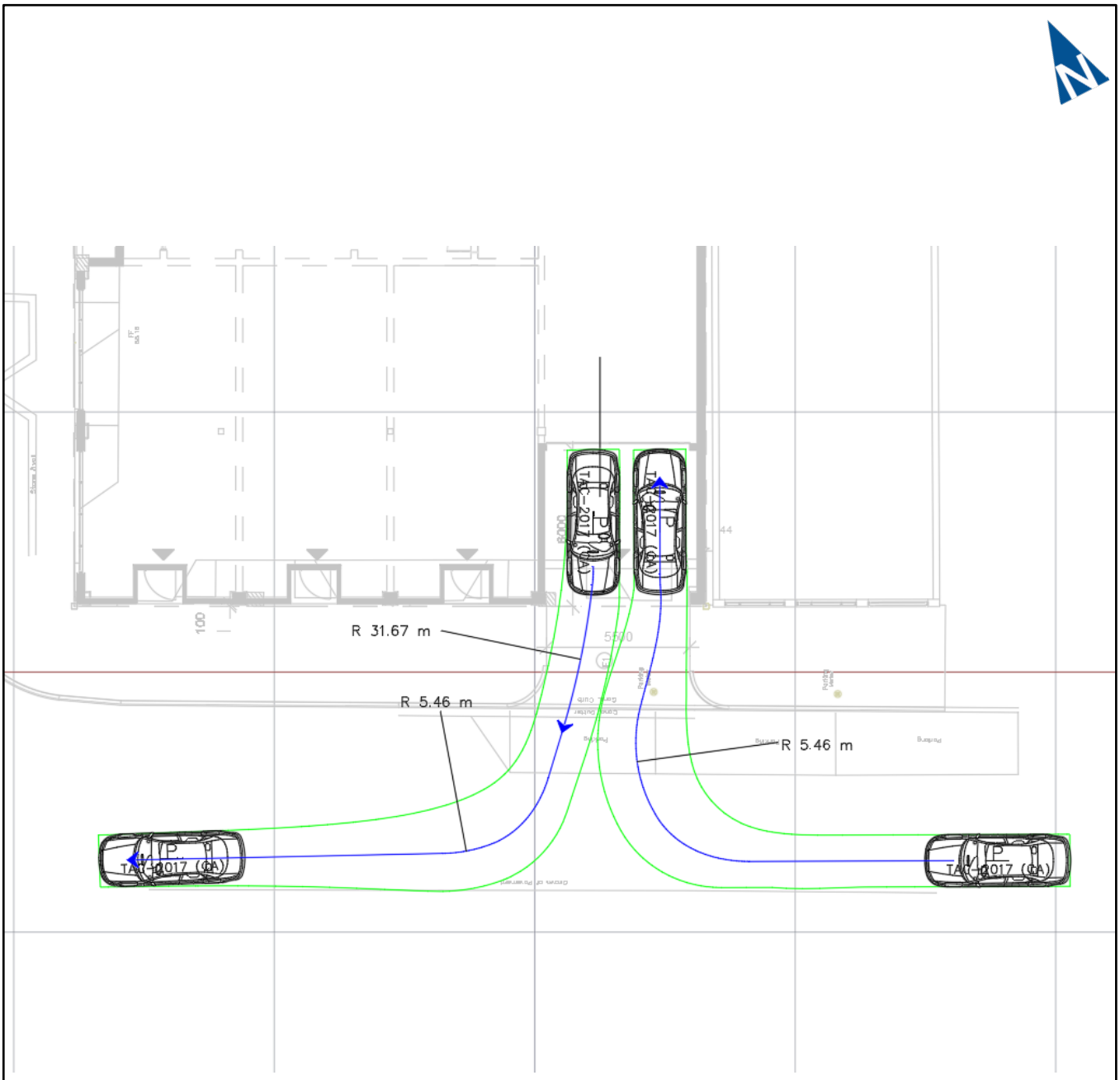
[8] Town of Oakville. *Zoning By-Law 2014-014*, *Section 5 Parking and Loading Regulations, Table 5.2.2.* (Oakville, May 10, 2021).
[9] (Department of The Town of Oakville Department of Public Works). *Standard Drawings, STD. 10-2.* (Oakville: May, 2003)

Figure 5.1 illustrates AutoTURN analysis for a Transportation Association of Canada (TAC) Passenger car using the site driveway. Simultaneous two-way travel is possible based on the current design.

The layout of the site driveway allows for the storage of one vehicle on the driveway between the overhead door and the sidewalk which is forecast to accommodate the queuing demands on the driveway approach.

To manage traffic movements and to assist drivers in identifying pedestrians using the sidewalk across the site's frontage near the site driveway the following design elements should be added to the site concept plan:

- Stop sign on the driveway approach to Trafalgar Road;
- Signage on the driveway approach to remind drivers to watch for pedestrians;
- Continuous sidewalk through the site driveway;
- Convex mirrors on the driveway approach to assist drivers in identifying pedestrian and vice versa;
- Alternative pavement colour treatment for the driveway surface; and
- Tactile walking surface indicators on the sidewalk at the site driveway.



Reduced Scale Drawing

paradigm TRANSPORTATION SOLUTIONS LIMITED

AutoTURN - Site Driveway

115 Trafalgar Road
220623

Figure 5.1

6 Parking

6.1 Proposed Parking Supply

The site concept includes six-story mixed-use building located in the Downtown Core Central Business District (CBD) which contains 12 condominium units and approximately 230 m² of retail space. A total of 21 parking spaces are proposed.

6.2 Zoning By-Law Requirements

The subject site is located within the Town of Oakville's CBD. Oakville Zoning By-Law 2014-014[10] Section 5 is the current in-force By-law for the subject site within the Town of Oakville.

The Town of Oakville Zoning By-Law prescribes parking ratios for apartment buildings for occupants and visitors. The following minimum parking ratios are noted for apartment dwelling units:

- 1.25 occupant spaces per unit; and
- 0.20 visitor spaces per unit where a minimum of 5 parking spaces are required.
- No minimum requirement for all other permitted non-residential uses in a Mixed-Use zone (Map 19(8a) Downtown Oakville[11]).

Table 6.1 summarizes the site's Zoning By-Law parking requirements. The Zoning By-Law parking requirement is 18 spaces. A minimum of 3 spaces should be allocated to visitors.

The site's parking supply exceeds the zoning requirements.

TABLE 6.1: ZONING BY-LAW PARKING REQUIREMENT

Parking Requirement	Units	Ratio	Spaces
Occupant	12	1.25	15
Visitor	12	0.20	3
Total			**18**
Supply			21
Surplus/Deficit			**3**

[10] Town of Oakville. *Zoning By-Law 2014-014*, *Section 5 Parking and Loading Regulations, Table 5.2.2.* (Oakville, May 10, 2021).
[11] Town of Oakville. *Zoning By-Law 2014-014*, *Map 19(8a).* (Oakville, May 10, 2021).

7 Conclusions and Recommendations

7.1 Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The study area intersections assessed in this study include:
  - Trafalgar Road at Church Street (signalized);
  - Trafalgar Road at Lakeshore Road East (signalized); and
  - Proposed site driveway to Trafalgar Road (unsignalized).
- **Existing Traffic Conditions**: The intersections within the study area are operating with acceptable levels of service during the AM and PM peak hours.
- **Forecast Traffic**: A five-year horizon (Year 2028) following the date of the study has been assessed. The likely future traffic volumes near the subject site are estimated to consist of generalized background traffic growth and traffic generated by the subject site.
- **Background Traffic Conditions**: The intersections within the study area are forecast to continue to operate with acceptable levels of service during the AM and PM peak hours.
- **Site Generated Traffic**: The subject site is forecast to generate approximately 10 and 21 vehicle trips during the AM and PM peak hours, respectively.
- **Total Traffic Conditions**: The intersections within the study area are forecast to continue to operate with acceptable levels of service during the AM and PM peak hours.

  The site driveway approach to Trafalgar Road is forecast to operate with acceptable levels of service. Delays on the driveway approach are forecast to be in the LOS A range with v/c ratios of less than 0.15. The 95th percentile queue length is expected to be less than 1 vehicle and not extend past the overhead door.
- **Parking Supply**: 21 parking spaces are proposed to accommodate the site's parking demand.
  - The Zoning By-Law stipulates a requirement of 18 parking spaces. A minimum of three spaces should be allocated to visitors. The site's parking supply exceeds the zoning requirements.

  - The Zoning By-Law requires 2 short-term bicycle parking spaces.
- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. Additional TDM measures are included in Section 5.1.
- **Site Driveway**: To assist drivers in identifying pedestrians using the sidewalk across the site's frontage near the site driveway additional design elements should be include in the site plan design.

7.2 Recommendations

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

- A minimum of three parking spaces should be allocated to visitors.
- The two on-street parking spaces across the site's frontage to Trafalgar Road be removed to accommodate the site driveway.
- The following TDM measures can assist in mitigating the site's transportation and parking impacts:
  - The occupant parking supply be unbundled.
  - transit information and discounted transit passes for first time purchasers who do not purchase a parking space be included as a marketing item;
  - Wayfinding and Travel Planning resources be provided to residents.
- The following site driveway design elements be incorporated into the site plan design:
  - Stop sign on the driveway approach to Trafalgar Road;
  - Signage on the driveway approach to remind drivers to watch for pedestrians;
  - Continuous sidewalk through the site driveway;
  - Convex mirrors on the driveway approach to assist drivers in identifying pedestrian and vice versa;
  - Alternative pavement colour treatment for the driveway surface; and
  - Tactile walking surface indicators on the sidewalk at the site driveway.

Appendix A

Pre-Study Consultation

Creighton Chartier

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: November 17, 2022 1:10 PM
To: Creighton Chartier
Cc: Syed Rizvi
Subject: RE: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

Hello Mr. Chartier;

Please see my comments for the scope of work required for this development:

Proposed Terms of Reference – Operational Analysis and Parking Study

Operational Study:

- Provide traffic forecasts and analysis (weekday AM and PM peak hours) for the site driveway connection to Trafalgar Road. The review may recommend mitigation measures to address deficiencies and to help ensure driver sightlines are maintained.
- Please include analysis for existing, future background and future total (2027)
- Include the following intersection in the study:
    - Trafalgar Road & Church Street
    - Trafalgar Road & Lakeshore Road E
    - Trafalgar Road & Access

Traffic Forecast:

- Background traffic annual growth rate of 2% per annum.
- Please identify any adjacent development applications that would need to be specifically included in the traffic forecast. (at this time there are not additional background development within the study area)

Trip Generation:

- ITE Trip Generation Data 11th Edition
    - 221 Multi-Family Residential (Mid-Rise) – Please confirm if this development will have 3 or 4 floors, if 3 floors, please use LUC 220; if 4 floors, please use LUC 221
    - 822 Strip Retail (<40k) – 40% Pass-By PM Peak Hour
- Preliminary trip generation please review and illustrate the trip generations in the table format.
    - AM Peak Period ~~– 14 trips~~ – greater than 14 trips
    - ~~AM Peak Period – 21 trips~~ PM Peak Period – greater than 21 trips
- No modal split reductions.

Parking Study:

- Estimate the parking demand generated by the proposed development
- Establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions.
- If needed, a strategy would be developed to satisfy the parking demands of the proposed development.

[AK:] Please include the locations for Bicycle Parking, garbage refuse and Loading area.

Please include a **TDM Measures**.

~~Letter:~~ **Memo Report**

- Letter report documenting the study methodologies, findings and conclusions.

[AK:] Please include in the report that the access onto Trafalgar Road should be between 7.0m to 7.5m as per the Town of Oakville Design guidelines page 97.

Regards;

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

Canada's Best Place to Live (MoneySense 2018)
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http://www.oakville.ca/privacy.html

From: Creighton Chartier <cchartier@ptsl.com>
Sent: November 14, 2022 3:13 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Subject: RE: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

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

Sorry, please see all floors attached here.

Regards,

Creighton Chartier
Transportation Consultant

*** *Paradigm is now operating on a 4-day workweek. Our offices are closed Fridays.* ***

Paradigm Transportation Solutions Limited
p: 905.381.2229 x504
e: cchartier@ptsl.com
w: www.ptsl.com

From: Creighton Chartier
Sent: November 14, 2022 3:10 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Subject: RE: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

Please see attached.

Regards,

Creighton Chartier
Transportation Consultant

*** Paradigm is now operating on a 4-day workweek. Our offices are closed Fridays. ***

Paradigm Transportation Solutions Limited
p: 905.381.2229 x504
e: cchartier@ptsl.com
w: www.ptsl.com

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: November 10, 2022 10:15 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>; Creighton Chartier <cchartier@ptsl.com>
Subject: RE: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

Hi Creighton;

Please provide the proposed site plan for my review.

Thank you

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

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Aquisha Khan, P. Eng.
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3236 | www.oakville.ca

Vision: To be the most livable town in Canada
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http://www.oakville.ca/privacy.html

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: November 10, 2022 12:11 AM
To: 'Creighton Chartier' <cchartier@ptsl.com>

Cc: Aquisha Khan <aquisha.khan@oakville.ca>
Subject: FW: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

Hi Creighton,

The proposed development is located in the East District of town, and Aquisha Khan is the Transportation Engineer for the East District copied in this email. Aquisha will provide response to your attached TOR email.

Thanks,
Syed

I'm sending this message now because it works for me, but please note that I do not expect a response outside of your normal working hours.

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca
Vision: To be the most livable town in Canada
Please consider the environment before printing this email.
http://www.oakville.ca/privacy.html

From: Creighton Chartier <cchartier@ptsl.com>
Sent: Tuesday, November 8, 2022 2:06 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

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

Hi Syed,

Just wondering if you have had an opportunity to review the TOR below.

Regards,

Creighton Chartier
Transportation Consultant

**** Paradigm is now operating on a 4-day workweek. Our offices are closed Fridays. ****

Paradigm Transportation Solutions Limited
p: 905.381.2229 x504
e: cchartier@ptsl.com
w: www.ptsl.com

From: Creighton Chartier
Sent: November 1, 2022 12:12 PM
To: 'Syed Rizvi' <syed.rizvi@oakville.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: (220623) 115 Trafalgar Road - Operational Analysis and Parking Study - TOR

Paradigm has been retained to prepare an Operational Analysis & Parking Study for the proposed redevelopment of 115 Trafalgar Road in the Town of Oakville. The conceptual site plan is attached. The proposal includes a six-storey mid-rise mixed-use building containing approximately 9 condominium units and 223 m² of ground floor retail space.

Vehicle access is proposed by a driveway to Trafalgar Road located approximately 45 metres south of Church Street.

A total parking supply of 25 spaces is proposed (2.78 spaces per unit)

Proposed Terms of Reference – Operational Analysis and Parking Study

Operational Study:

- Provide traffic forecasts and analysis (weekday AM and PM peak hours) for the site driveway connection to Trafalgar Road. The review may recommend mitigation measures to address deficiencies and to help ensure driver sightlines are maintained.

Traffic Forecast:

- Background traffic annual growth rate of 2% per annum.
- Please identify any adjacent development applications that would need to be specifically included in the traffic forecast.

Trip Generation:

- ITE Trip Generation Data 11th Edition
  - 221 Muti-Family Residential (Mid-Rise)
  - 822 Strip Retail (<40k) – 40% Pass-By PM Peak Hour
- Preliminary trip generation ***[AK:]*** Review the trip generation again.
  - AM Peak Period – 14 trips
  - ~~AM~~***~~[AK:]~~*** PM Peak Period – 21 trips
- No modal split reductions.

Parking Study:

- Estimate the parking demand generated by the proposed development
- Establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions.
- If needed, a strategy would be developed to satisfy the parking demands of the proposed development.

Letter:

- Letter documenting the study methodologies, findings and conclusions.

Creighton Chartier
Transportation Consultant

*** *Paradigm is now operating on a 4-day workweek. Our offices are closed Fridays.* ***

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
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Appendix B

Existing TMC and Signal Data

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	E-T	N	S-T	E-T	W-T	S-L	N-T	N	N	N	N	N	N	N	N
Min Green	0	24	0	15	7	24	7	15	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	18	0	19	0	18	0	19	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	0.0	4.0	0.0	3.0	3.0	4.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max1	0	30	0	30	10	30	10	30	35	35	35	35	35	35	35	35
Max2	0	40	0	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	3.3	0.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	0.0	2.4	0.0	2.2	0.0	2.4	0.0	2.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	0.0	4.0	0.0	4.0	0.0	4.0	2.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Seconds	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lag	Use Ped Time	Yes
Ped Recall	No	Ped Reservice	No
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	00:00
SYNC Reference:	Reference Time
Day Light Savings:	No
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1 - "1"

Pattern	1	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								

Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 2 - "2"

Pattern	2	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 3 - "3"

Pattern	3	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0

Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0208 - Lakeshore Rd @ Trafalgar Rd - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #2 - "2"

Event	Action Plan	Start Time
1	99	00:00
2	2	09:00
3	3	15:00
4	99	19:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	N-T	N	E-T	N	S-T	N	W-T	N	N	N	N	N	N	N	N
Min Green	5	28	5	26	5	28	5	26	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	11	0	10	0	11	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	17	0	16	0	17	0	16	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max1	35	35	35	45	35	35	35	45	35	35	35	35	35	35	35	35
Max2	40	42	40	25	40	42	40	25	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	0.0	2.1	0.0	2.3	0.0	2.1	0.0	2.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	30	0	30	0	30	0	30	0	0	0	0	0	0	0	0

Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Seconds	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lag	Use Ped Time	Yes
Ped Recall	No	Ped Reservice	No
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	00:00
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1 - "1"

Pattern	1	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 2 - "2"

Pattern	2	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 3 - "3"

Pattern	3	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0

Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0204 - Trafalgar Rd @ Church St - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #2 - "2"

Event	Action Plan	Start Time
1	99	00:00
2	2	09:00
3	3	15:00
4	99	19:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022

Turning Movement Data

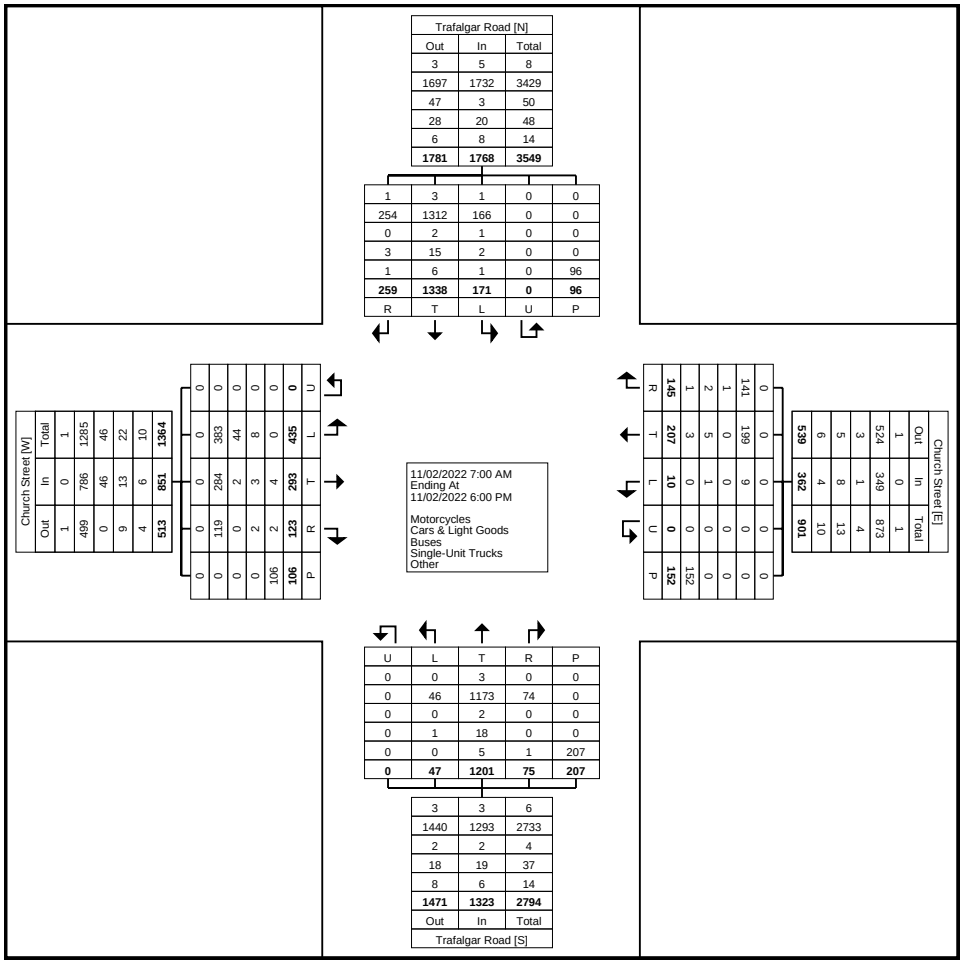
Start Time	Church Street Eastbound						Church Street Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	2	0	0	0	6	0	1	0	0	3	1	0	14	0	0	1	14	2	7	2	0	1	11	32
7:15 AM	4	2	1	0	0	7	0	0	0	0	0	0	0	20	0	0	4	20	5	27	4	0	0	36	63
7:30 AM	4	1	2	0	0	7	0	0	1	0	0	1	0	27	1	0	1	28	2	20	1	0	0	23	59
7:45 AM	9	4	1	0	1	14	0	4	1	0	1	5	0	27	0	0	3	27	2	35	1	0	0	38	84
Hourly Total	21	9	4	0	1	34	0	5	2	0	4	7	0	88	1	0	9	89	11	89	8	0	1	108	238
8:00 AM	5	5	4	0	0	14	0	2	3	0	7	5	1	23	0	0	4	24	5	26	8	0	1	39	82
8:15 AM	5	7	2	0	2	14	0	3	1	0	4	4	1	33	1	0	3	35	4	43	5	0	0	52	105
8:30 AM	5	14	4	0	0	23	0	5	0	0	1	5	0	27	0	0	7	27	8	38	10	0	4	56	111
8:45 AM	4	16	5	0	0	25	0	4	1	0	2	5	3	27	0	0	9	30	14	55	13	0	3	82	142
Hourly Total	19	42	15	0	2	76	0	14	5	0	14	19	5	110	1	0	23	116	31	162	36	0	8	229	440
9:00 AM	5	9	1	0	2	15	0	3	4	0	2	7	1	22	2	0	6	25	14	49	8	0	6	71	118
9:15 AM	8	8	5	0	4	21	0	4	1	0	1	5	2	21	1	0	3	24	8	47	16	0	4	71	121
9:30 AM	6	8	2	0	0	16	0	5	2	0	8	7	0	30	1	0	2	31	9	57	11	0	3	77	131
9:45 AM	12	2	4	0	5	18	1	6	2	0	5	9	1	39	4	0	4	44	6	44	9	0	1	59	130
Hourly Total	31	27	12	0	11	70	1	18	9	0	16	28	4	112	8	0	15	124	37	197	44	0	14	278	500
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	16	11	8	0	4	35	0	9	5	0	4	14	2	39	6	0	5	47	7	53	12	0	2	72	168
11:15 AM	11	10	1	0	0	22	0	5	5	0	7	10	2	31	5	0	4	38	9	46	10	0	3	65	135
11:30 AM	16	5	6	0	4	27	0	11	4	0	6	15	2	46	3	0	5	51	3	56	6	0	4	65	158
11:45 AM	22	8	3	0	5	33	2	12	10	0	5	24	3	33	4	0	5	40	7	59	11	0	2	77	174
Hourly Total	65	34	18	0	13	117	2	37	24	0	22	63	9	149	18	0	19	176	26	214	39	0	11	279	635
12:00 PM	14	10	5	0	3	29	0	8	6	0	5	14	1	44	4	0	7	49	3	40	9	0	2	52	144
12:15 PM	22	16	12	0	7	50	2	13	6	0	5	21	1	43	4	0	15	48	3	37	4	0	6	44	163
12:30 PM	13	8	3	0	5	24	1	7	6	0	5	14	6	38	7	0	6	51	4	38	10	0	5	52	141
12:45 PM	18	21	4	0	9	43	0	8	5	0	4	13	3	44	3	0	8	50	8	48	5	0	11	61	167
Hourly Total	67	55	24	0	24	146	3	36	23	0	19	62	11	169	18	0	36	198	18	163	28	0	24	209	615
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	20	15	4	0	3	39	1	7	4	0	7	12	2	50	1	0	7	53	3	39	8	0	3	50	154
3:15 PM	15	11	2	0	13	28	0	5	6	0	15	11	1	51	1	0	13	53	4	37	7	0	5	48	140
3:30 PM	5	9	2	0	6	16	0	9	3	0	1	12	0	37	2	0	11	39	5	32	8	0	3	45	112
3:45 PM	18	11	3	0	8	32	0	10	4	0	12	14	2	57	4	0	11	63	2	53	12	0	3	67	176
Hourly Total	58	46	11	0	30	115	1	31	17	0	35	49	5	195	8	0	42	208	14	161	35	0	14	210	582
4:00 PM	22	9	5	0	4	36	0	9	10	0	5	19	1	44	4	0	9	49	3	35	7	0	0	45	149
4:15 PM	16	8	5	0	4	29	0	8	3	0	11	11	0	45	2	0	3	47	5	48	5	0	4	58	145
4:30 PM	14	8	8	0	6	30	0	7	7	0	6	14	2	49	3	0	6	54	2	43	7	0	4	52	150

4:45 PM	22	8	4	0	1	34	2	9	9	0	6	20	2	55	4	0	7	61	8	49	11	0	4	68	183
Hourly Total	74	33	22	0	15	129	2	33	29	0	28	64	5	193	13	0	25	211	18	175	30	0	12	223	627
5:00 PM	30	12	5	0	5	47	0	8	14	0	3	22	2	55	1	0	11	58	6	40	13	0	3	59	186
5:15 PM	27	13	2	0	3	42	0	9	11	0	6	20	1	42	1	0	7	44	5	42	6	0	6	53	159
5:30 PM	22	12	7	0	1	41	1	10	5	0	1	16	0	45	3	0	10	48	1	57	11	0	2	69	174
5:45 PM	21	10	3	0	1	34	0	6	6	0	4	12	5	43	3	0	10	51	4	38	9	0	1	51	148
Hourly Total	100	47	17	0	10	164	1	33	36	0	14	70	8	185	8	0	38	201	16	177	39	0	12	232	667
Grand Total	435	293	123	0	106	851	10	207	145	0	152	362	47	1201	75	0	207	1323	171	1338	259	0	96	1768	4304
Approach %	51.1	34.4	14.5	0.0	-	-	2.8	57.2	40.1	0.0	-	-	3.6	90.8	5.7	0.0	-	-	9.7	75.7	14.6	0.0	-	-	-
Total %	10.1	6.8	2.9	0.0	-	19.8	0.2	4.8	3.4	0.0	-	8.4	1.1	27.9	1.7	0.0	-	30.7	4.0	31.1	6.0	0.0	-	41.1	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	1	3	1	0	-	5	8
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.6	0.2	0.4	-	-	0.3	0.2
Cars & Light Goods	383	284	119	0	-	786	9	199	141	0	-	349	46	1173	74	0	-	1293	166	1312	254	0	-	1732	4160
% Cars & Light Goods	88.0	96.9	96.7	-	-	92.4	90.0	96.1	97.2	-	-	96.4	97.9	97.7	98.7	-	-	97.7	97.1	98.1	98.1	-	-	98.0	96.7
Buses	44	2	0	0	-	46	0	0	1	0	-	1	0	2	0	0	-	2	1	2	0	0	-	3	52
% Buses	10.1	0.7	0.0	-	-	5.4	0.0	0.0	0.7	-	-	0.3	0.0	0.2	0.0	-	-	0.2	0.6	0.1	0.0	-	-	0.2	1.2
Single-Unit Trucks	8	3	2	0	-	13	1	5	2	0	-	8	1	18	0	0	-	19	2	15	3	0	-	20	60
% Single-Unit Trucks	1.8	1.0	1.6	-	-	1.5	10.0	2.4	1.4	-	-	2.2	2.1	1.5	0.0	-	-	1.4	1.2	1.1	1.2	-	-	1.1	1.4
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	3	0	0	-	3	1	3	0	0	-	4	8
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.3	0.0	0.2	0.0	-	-	0.2	0.6	0.2	0.0	-	-	0.2	0.2
Bicycles on Road	0	4	2	0	-	6	0	2	1	0	-	3	0	2	1	0	-	3	0	3	1	0	-	4	16
% Bicycles on Road	0.0	1.4	1.6	-	-	0.7	0.0	1.0	0.7	-	-	0.8	0.0	0.2	1.3	-	-	0.2	0.0	0.2	0.4	-	-	0.2	0.4
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.9	-	-	-	-	-	3.3	-	-	-	-	-	1.9	-	-	-	-	-	1.0	-	-
Pedestrians	-	-	-	-	105	-	-	-	-	-	147	-	-	-	-	-	203	-	-	-	-	-	95	-	-
% Pedestrians	-	-	-	-	99.1	-	-	-	-	-	96.7	-	-	-	-	-	98.1	-	-	-	-	-	99.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022

Turning Movement Peak Hour Data (8:45 AM)

Start Time	Church Street Eastbound						Church Street Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:45 AM	4	16	5	0	0	25	0	4	1	0	2	5	3	27	0	0	9	30	14	55	13	0	3	82	142
9:00 AM	5	9	1	0	2	15	0	3	4	0	2	7	1	22	2	0	6	25	14	49	8	0	6	71	118
9:15 AM	8	8	5	0	4	21	0	4	1	0	1	5	2	21	1	0	3	24	8	47	16	0	4	71	121
9:30 AM	6	8	2	0	0	16	0	5	2	0	8	7	0	30	1	0	2	31	9	57	11	0	3	77	131
Total	23	41	13	0	6	77	0	16	8	0	13	24	6	100	4	0	20	110	45	208	48	0	16	301	512
Approach %	29.9	53.2	16.9	0.0	-	-	0.0	66.7	33.3	0.0	-	-	5.5	90.9	3.6	0.0	-	-	15.0	69.1	15.9	0.0	-	-	-
Total %	4.5	8.0	2.5	0.0	-	15.0	0.0	3.1	1.6	0.0	-	4.7	1.2	19.5	0.8	0.0	-	21.5	8.8	40.6	9.4	0.0	-	58.8	-
PHF	0.719	0.641	0.650	0.000	-	0.770	0.000	0.800	0.500	0.000	-	0.857	0.500	0.833	0.500	0.000	-	0.887	0.804	0.912	0.750	0.000	-	0.918	0.901
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	17	41	12	0	-	70	0	16	8	0	-	24	5	95	3	0	-	103	44	201	48	0	-	293	490
% Cars & Light Goods	73.9	100.0	92.3	-	-	90.9	-	100.0	100.0	-	-	100.0	83.3	95.0	75.0	-	-	93.6	97.8	96.6	100.0	-	-	97.3	95.7
Buses	5	0	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	6
% Buses	21.7	0.0	0.0	-	-	6.5	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	2.2	0.0	0.0	-	-	0.3	1.2
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	1	5	0	0	-	6	0	5	0	0	-	5	12
% Single-Unit Trucks	4.3	0.0	0.0	-	-	1.3	-	0.0	0.0	-	-	0.0	16.7	5.0	0.0	-	-	5.5	0.0	2.4	0.0	-	-	1.7	2.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.7	0.4
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	7.7	-	-	1.3	-	0.0	0.0	-	-	0.0	0.0	0.0	25.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	5.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	13	-	-	-	-	-	19	-	-	-	-	-	16	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	95.0	-	-	-	-	-	100.0	-	-

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5A-150 Pinebush Rd

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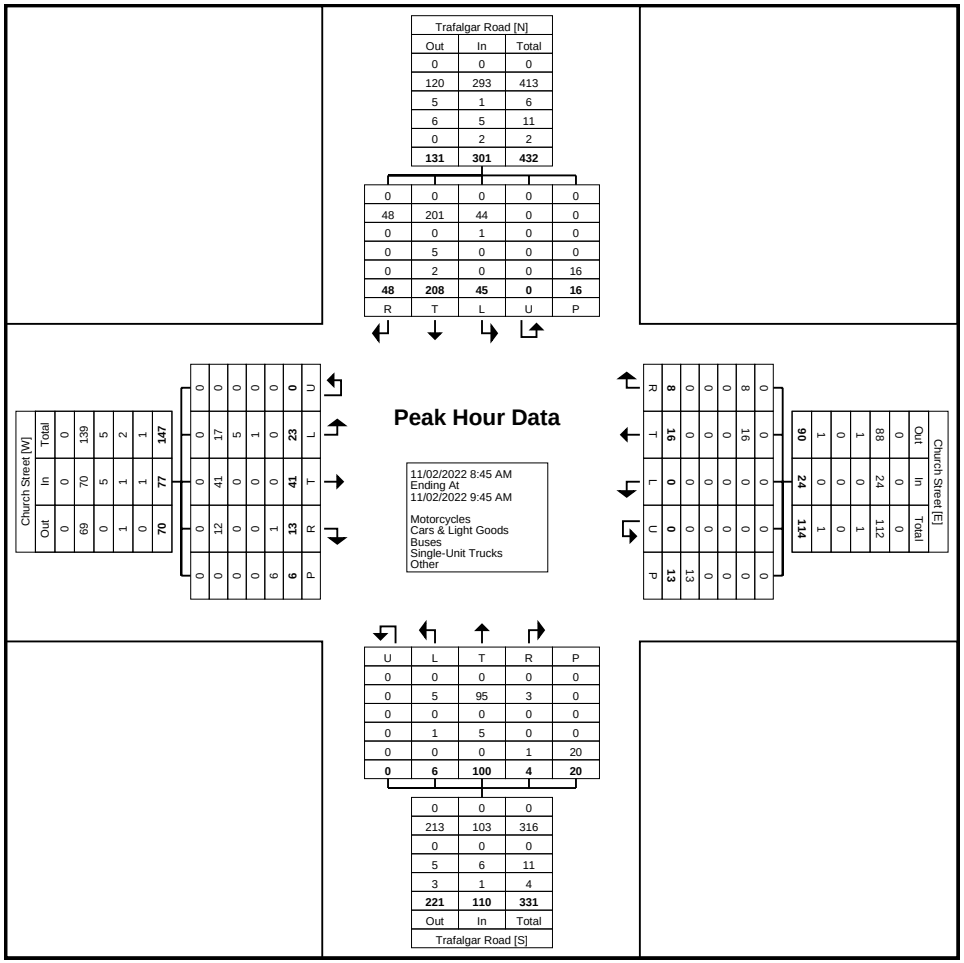
Start Date: 11/02/2022



Turning Movement Peak Hour Data Plot (8:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022

Turning Movement Peak Hour Data (11:30 AM)

Start Time	Church Street Eastbound						Church Street Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:30 AM	16	5	6	0	4	27	0	11	4	0	6	15	2	46	3	0	5	51	3	56	6	0	4	65	158
11:45 AM	22	8	3	0	5	33	2	12	10	0	5	24	3	33	4	0	5	40	7	59	11	0	2	77	174
12:00 PM	14	10	5	0	3	29	0	8	6	0	5	14	1	44	4	0	7	49	3	40	9	0	2	52	144
12:15 PM	22	16	12	0	7	50	2	13	6	0	5	21	1	43	4	0	15	48	3	37	4	0	6	44	163
Total	74	39	26	0	19	139	4	44	26	0	21	74	7	166	15	0	32	188	16	192	30	0	14	238	639
Approach %	53.2	28.1	18.7	0.0	-	-	5.4	59.5	35.1	0.0	-	-	3.7	88.3	8.0	0.0	-	-	6.7	80.7	12.6	0.0	-	-	-
Total %	11.6	6.1	4.1	0.0	-	21.8	0.6	6.9	4.1	0.0	-	11.6	1.1	26.0	2.3	0.0	-	29.4	2.5	30.0	4.7	0.0	-	37.2	-
PHF	0.841	0.609	0.542	0.000	-	0.695	0.500	0.846	0.650	0.000	-	0.771	0.583	0.902	0.938	0.000	-	0.922	0.571	0.814	0.682	0.000	-	0.773	0.918
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.2
Cars & Light Goods	69	37	25	0	-	131	3	41	24	0	-	68	7	164	15	0	-	186	16	190	29	0	-	235	620
% Cars & Light Goods	93.2	94.9	96.2	-	-	94.2	75.0	93.2	92.3	-	-	91.9	100.0	98.8	100.0	-	-	98.9	100.0	99.0	96.7	-	-	98.7	97.0
Buses	4	0	0	0	-	4	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	5
% Buses	5.4	0.0	0.0	-	-	2.9	0.0	0.0	3.8	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	1	1	1	0	-	3	1	2	0	0	-	3	0	2	0	0	-	2	0	1	0	0	-	1	9
% Single-Unit Trucks	1.4	2.6	3.8	-	-	2.2	25.0	4.5	0.0	-	-	4.1	0.0	1.2	0.0	-	-	1.1	0.0	0.5	0.0	-	-	0.4	1.4
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	2.3	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	1	0	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	3
% Bicycles on Road	0.0	2.6	0.0	-	-	0.7	0.0	0.0	3.8	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	3.3	-	-	0.4	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	9.5	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	19	-	-	-	-	-	32	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.5	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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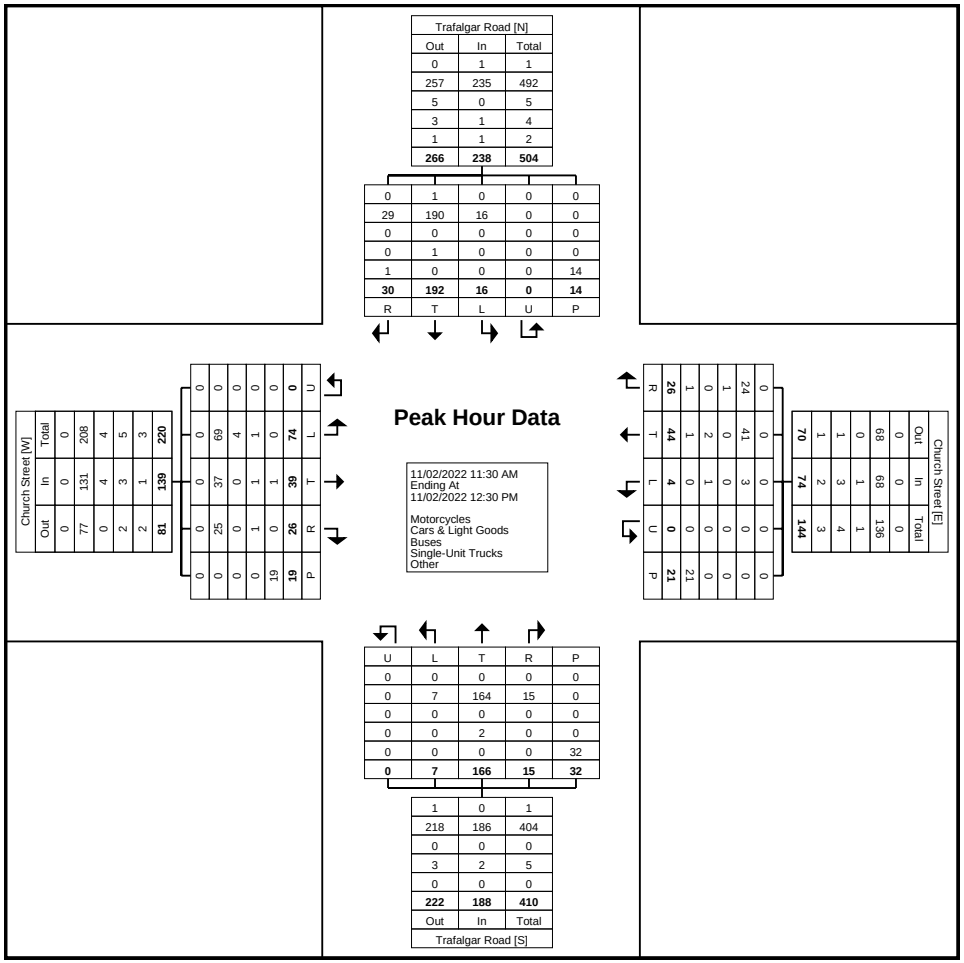


Turning Movement Peak Hour Data Plot (11:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022

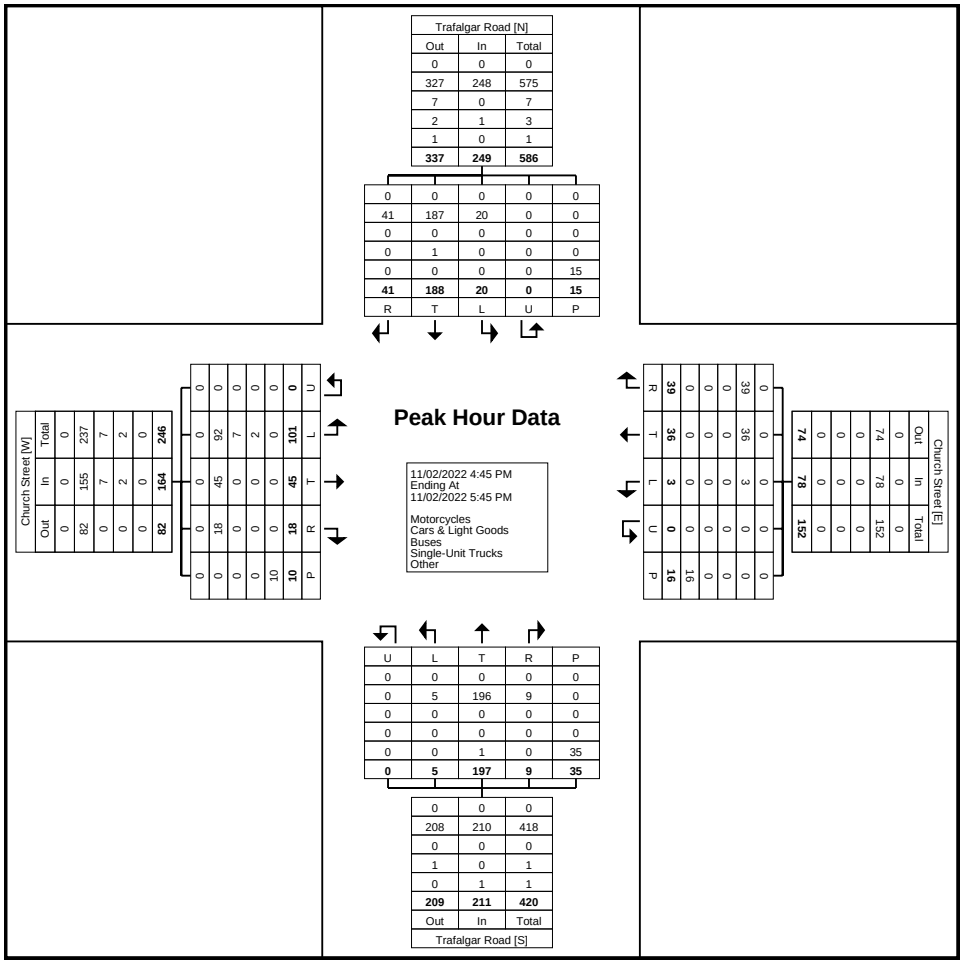
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Church Street Eastbound						Church Street Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	22	8	4	0	1	34	2	9	9	0	6	20	2	55	4	0	7	61	8	49	11	0	4	68	183
5:00 PM	30	12	5	0	5	47	0	8	14	0	3	22	2	55	1	0	11	58	6	40	13	0	3	59	186
5:15 PM	27	13	2	0	3	42	0	9	11	0	6	20	1	42	1	0	7	44	5	42	6	0	6	53	159
5:30 PM	22	12	7	0	1	41	1	10	5	0	1	16	0	45	3	0	10	48	1	57	11	0	2	69	174
Total	101	45	18	0	10	164	3	36	39	0	16	78	5	197	9	0	35	211	20	188	41	0	15	249	702
Approach %	61.6	27.4	11.0	0.0	-	-	3.8	46.2	50.0	0.0	-	-	2.4	93.4	4.3	0.0	-	-	8.0	75.5	16.5	0.0	-	-	-
Total %	14.4	6.4	2.6	0.0	-	23.4	0.4	5.1	5.6	0.0	-	11.1	0.7	28.1	1.3	0.0	-	30.1	2.8	26.8	5.8	0.0	-	35.5	-
PHF	0.842	0.865	0.643	0.000	-	0.872	0.375	0.900	0.696	0.000	-	0.886	0.625	0.895	0.563	0.000	-	0.865	0.625	0.825	0.788	0.000	-	0.902	0.944
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	92	45	18	0	-	155	3	36	39	0	-	78	5	196	9	0	-	210	20	187	41	0	-	248	691
% Cars & Light Goods	91.1	100.0	100.0	-	-	94.5	100.0	100.0	100.0	-	-	100.0	100.0	99.5	100.0	-	-	99.5	100.0	99.5	100.0	-	-	99.6	98.4
Buses	7	0	0	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	7
% Buses	6.9	0.0	0.0	-	-	4.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.0
Single-Unit Trucks	2	0	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	3
% Single-Unit Trucks	2.0	0.0	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	6.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	15	-	-	-	-	-	35	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	93.8	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Church Street
Site Code: 220623
Start Date: 11/02/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022

Turning Movement Data

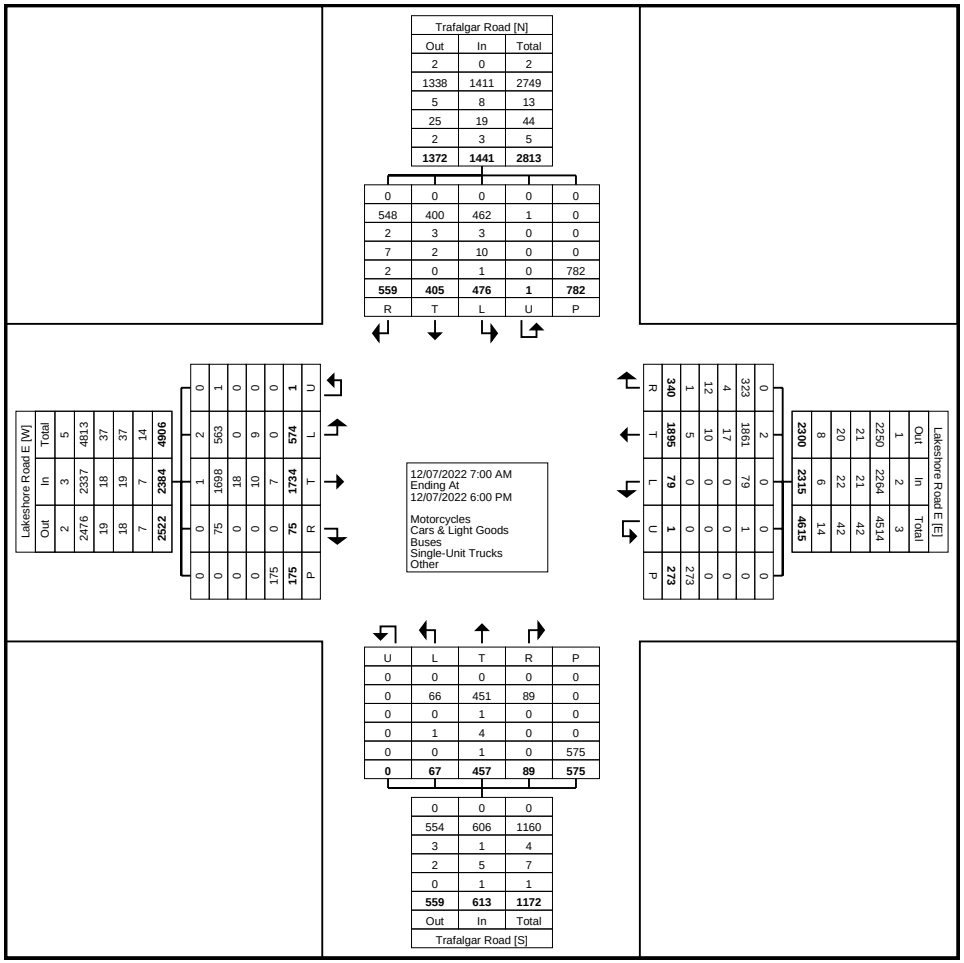
Start Time	Lakeshore Road E Eastbound						Lakeshore Road E Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	7	30	1	0	0	38	0	22	5	0	0	27	0	0	2	0	4	2	8	7	4	0	10	19	86
7:15 AM	2	43	0	0	1	45	0	22	6	0	0	28	1	4	0	0	6	5	7	4	9	0	3	20	98
7:30 AM	9	39	1	0	2	49	0	26	3	0	0	29	0	5	2	0	6	7	15	6	6	0	7	27	112
7:45 AM	12	45	0	0	0	57	0	38	7	0	2	45	1	11	0	0	3	12	13	5	5	1	12	24	138
Hourly Total	30	157	2	0	3	189	0	108	21	0	2	129	2	20	4	0	19	26	43	22	24	1	32	90	434
8:00 AM	12	62	2	0	0	76	0	36	10	0	1	46	2	10	1	0	1	13	15	8	6	0	10	29	164
8:15 AM	16	67	3	0	1	86	2	81	12	0	1	95	0	6	0	0	5	6	8	9	11	0	12	28	215
8:30 AM	19	70	1	0	2	90	0	82	5	0	0	87	3	7	0	0	3	10	15	10	8	0	16	33	220
8:45 AM	10	71	2	0	3	83	0	75	11	0	4	86	0	7	1	0	13	8	16	14	12	0	9	42	219
Hourly Total	57	270	8	0	6	335	2	274	38	0	6	314	5	30	2	0	22	37	54	41	37	0	47	132	818
9:00 AM	16	61	2	0	2	79	2	52	8	0	6	62	0	9	1	0	9	10	17	20	8	0	19	45	196
9:15 AM	12	44	1	0	6	57	2	49	11	0	1	62	1	12	1	0	15	14	10	12	12	0	10	34	167
9:30 AM	18	44	3	0	5	65	1	44	5	0	8	50	4	13	1	0	14	18	16	16	17	0	21	49	182
9:45 AM	14	49	2	0	3	65	1	60	10	0	1	71	2	14	4	0	9	20	9	17	13	0	13	39	195
Hourly Total	60	198	8	0	16	266	6	205	34	0	16	245	7	48	7	0	47	62	52	65	50	0	63	167	740
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	24	54	3	0	7	81	8	59	14	0	12	81	0	14	6	0	22	20	11	15	17	0	26	43	225
11:15 AM	20	52	4	1	4	77	6	53	12	0	9	71	7	15	2	0	14	24	19	25	17	0	39	61	233
11:30 AM	18	44	4	0	8	66	3	61	20	1	8	85	3	13	5	0	17	21	20	26	29	0	36	75	247
11:45 AM	29	41	5	0	14	75	8	43	16	0	12	67	2	18	6	0	25	26	17	20	21	0	26	58	226
Hourly Total	91	191	16	1	33	299	25	216	62	1	41	304	12	60	19	0	78	91	67	86	84	0	127	237	931
12:00 PM	28	51	2	0	12	81	3	73	9	0	22	85	1	27	1	0	33	29	20	13	19	0	34	52	247
12:15 PM	15	53	5	0	7	73	5	47	9	0	19	61	7	22	2	0	43	31	20	20	26	0	35	66	231
12:30 PM	16	64	5	0	7	85	2	53	14	0	17	69	1	19	4	0	26	24	14	16	20	0	43	50	228
12:45 PM	15	36	3	0	10	54	2	62	14	0	19	78	3	20	5	0	26	28	9	9	39	0	51	57	217
Hourly Total	74	204	15	0	36	293	12	235	46	0	77	293	12	88	12	0	128	112	63	58	104	0	163	225	923
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	29	62	2	0	2	93	4	69	7	0	19	80	3	17	2	0	24	22	14	11	18	0	37	43	238
3:15 PM	20	45	2	0	10	67	3	72	8	0	6	83	3	17	2	0	23	22	16	16	13	0	21	45	217
3:30 PM	27	52	1	0	6	80	5	80	13	0	10	98	3	17	4	0	34	24	16	12	28	0	34	56	258
3:45 PM	21	84	2	0	7	107	2	87	15	0	14	104	4	21	0	0	36	25	16	14	25	0	39	55	291
Hourly Total	97	243	7	0	25	347	14	308	43	0	49	365	13	72	8	0	117	93	62	53	84	0	131	199	1004
4:00 PM	28	65	3	0	14	96	2	67	12	0	13	81	4	19	3	0	31	26	18	8	16	0	28	42	245
4:15 PM	20	57	3	0	6	80	3	63	16	0	16	82	1	18	5	0	26	24	21	8	23	0	30	52	238
4:30 PM	22	71	4	0	6	97	3	92	4	0	11	99	0	17	3	0	23	20	15	5	14	0	30	34	250

4:45 PM	11	66	1	0	5	78	4	68	10	0	7	82	0	14	2	0	19	16	14	7	21	0	32	42	218
Hourly Total	81	259	11	0	31	351	12	290	42	0	47	344	5	68	13	0	99	86	68	28	74	0	120	170	951
5:00 PM	19	52	3	0	13	74	3	66	11	0	21	80	2	27	5	0	13	34	18	14	21	0	33	53	241
5:15 PM	24	54	1	0	4	79	2	64	18	0	6	84	5	20	6	0	21	31	16	14	20	0	17	50	244
5:30 PM	18	43	2	0	6	63	1	75	15	0	1	91	1	8	5	0	17	14	17	6	26	0	27	49	217
5:45 PM	23	63	2	0	2	88	2	54	10	0	7	66	3	16	8	0	14	27	16	18	35	0	22	69	250
Hourly Total	84	212	8	0	25	304	8	259	54	0	35	321	11	71	24	0	65	106	67	52	102	0	99	221	952
Grand Total	574	1734	75	1	175	2384	79	1895	340	1	273	2315	67	457	89	0	575	613	476	405	559	1	782	1441	6753
Approach %	24.1	72.7	3.1	0.0	-	-	3.4	81.9	14.7	0.0	-	-	10.9	74.6	14.5	0.0	-	-	33.0	28.1	38.8	0.1	-	-	-
Total %	8.5	25.7	1.1	0.0	-	35.3	1.2	28.1	5.0	0.0	-	34.3	1.0	6.8	1.3	0.0	-	9.1	7.0	6.0	8.3	0.0	-	21.3	-
Motorcycles	2	1	0	0	-	3	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	5
% Motorcycles	0.3	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Cars & Light Goods	563	1698	75	1	-	2337	79	1861	323	1	-	2264	66	451	89	0	-	606	462	400	548	1	-	1411	6618
% Cars & Light Goods	98.1	97.9	100.0	100.0	-	98.0	100.0	98.2	95.0	100.0	-	97.8	98.5	98.7	100.0	-	-	98.9	97.1	98.8	98.0	100.0	-	97.9	98.0
Buses	0	18	0	0	-	18	0	17	4	0	-	21	0	1	0	0	-	1	3	3	2	0	-	8	48
% Buses	0.0	1.0	0.0	0.0	-	0.8	0.0	0.9	1.2	0.0	-	0.9	0.0	0.2	0.0	-	-	0.2	0.6	0.7	0.4	0.0	-	0.6	0.7
Single-Unit Trucks	9	10	0	0	-	19	0	10	12	0	-	22	1	4	0	0	-	5	10	2	7	0	-	19	65
% Single-Unit Trucks	1.6	0.6	0.0	0.0	-	0.8	0.0	0.5	3.5	0.0	-	1.0	1.5	0.9	0.0	-	-	0.8	2.1	0.5	1.3	0.0	-	1.3	1.0
Articulated Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	7	0	0	-	7	0	3	1	0	-	4	0	1	0	0	-	1	1	0	2	0	-	3	15
% Bicycles on Road	0.0	0.4	0.0	0.0	-	0.3	0.0	0.2	0.3	0.0	-	0.2	0.0	0.2	0.0	-	-	0.2	0.2	0.0	0.4	0.0	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	9	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.6	-	-	-	-	-	0.7	-	-	-	-	-	1.6	-	-	-	-	-	0.1	-	-
Pedestrians	-	-	-	-	174	-	-	-	-	-	271	-	-	-	-	-	566	-	-	-	-	-	781	-	-
% Pedestrians	-	-	-	-	99.4	-	-	-	-	-	99.3	-	-	-	-	-	98.4	-	-	-	-	-	99.9	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022

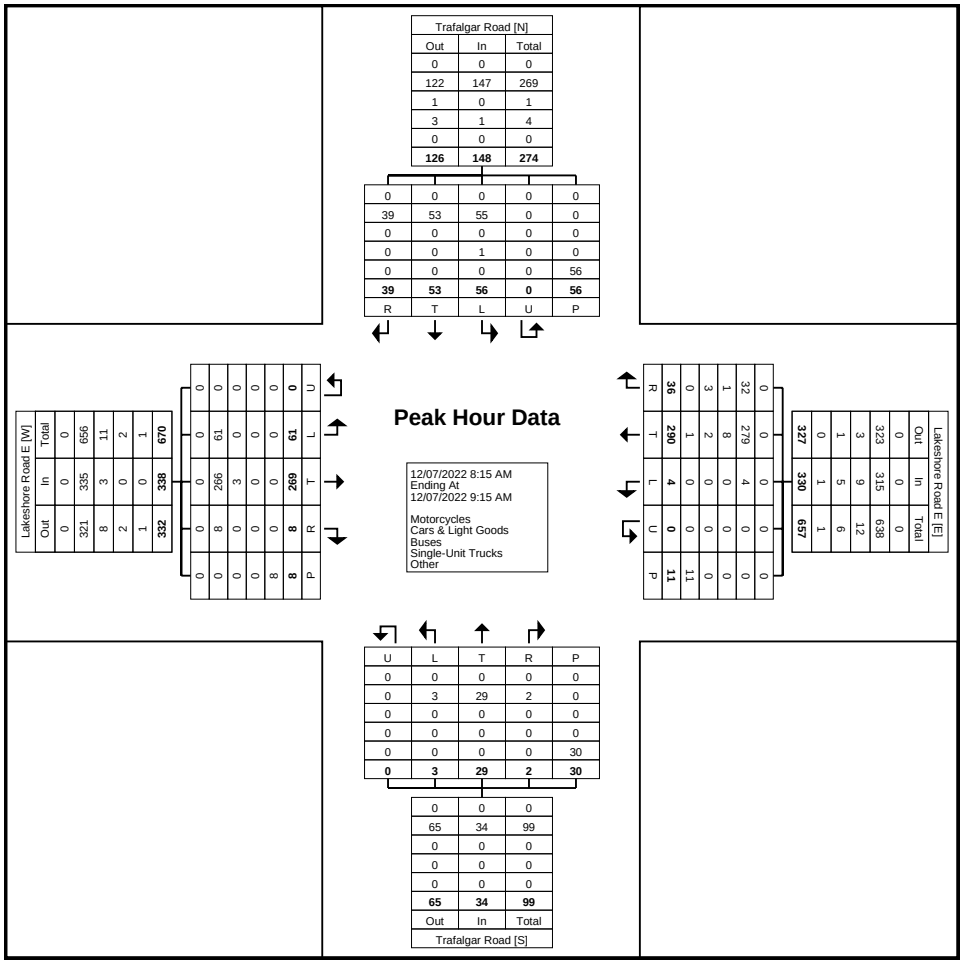
Turning Movement Peak Hour Data (8:15 AM)

Start Time	Lakeshore Road E Eastbound						Lakeshore Road E Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	16	67	3	0	1	86	2	81	12	0	1	95	0	6	0	0	5	6	8	9	11	0	12	28	215
8:30 AM	19	70	1	0	2	90	0	82	5	0	0	87	3	7	0	0	3	10	15	10	8	0	16	33	220
8:45 AM	10	71	2	0	3	83	0	75	11	0	4	86	0	7	1	0	13	8	16	14	12	0	9	42	219
9:00 AM	16	61	2	0	2	79	2	52	8	0	6	62	0	9	1	0	9	10	17	20	8	0	19	45	196
Total	61	269	8	0	8	338	4	290	36	0	11	330	3	29	2	0	30	34	56	53	39	0	56	148	850
Approach %	18.0	79.6	2.4	0.0	-	-	1.2	87.9	10.9	0.0	-	-	8.8	85.3	5.9	0.0	-	-	37.8	35.8	26.4	0.0	-	-	-
Total %	7.2	31.6	0.9	0.0	-	39.8	0.5	34.1	4.2	0.0	-	38.8	0.4	3.4	0.2	0.0	-	4.0	6.6	6.2	4.6	0.0	-	17.4	-
PHF	0.803	0.947	0.667	0.000	-	0.939	0.500	0.884	0.750	0.000	-	0.868	0.250	0.806	0.500	0.000	-	0.850	0.824	0.663	0.813	0.000	-	0.822	0.966
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	61	266	8	0	-	335	4	279	32	0	-	315	3	29	2	0	-	34	55	53	39	0	-	147	831
% Cars & Light Goods	100.0	98.9	100.0	-	-	99.1	100.0	96.2	88.9	-	-	95.5	100.0	100.0	100.0	-	-	100.0	98.2	100.0	100.0	-	-	99.3	97.8
Buses	0	3	0	0	-	3	0	8	1	0	-	9	0	0	0	0	-	0	0	0	0	0	-	0	12
% Buses	0.0	1.1	0.0	-	-	0.9	0.0	2.8	2.8	-	-	2.7	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.4
Single-Unit Trucks	0	0	0	0	-	0	0	2	3	0	-	5	0	0	0	0	-	0	1	0	0	0	-	1	6
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.7	8.3	-	-	1.5	0.0	0.0	0.0	-	-	0.0	1.8	0.0	0.0	-	-	0.7	0.7
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	3.3	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	11	-	-	-	-	-	29	-	-	-	-	-	56	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	96.7	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022

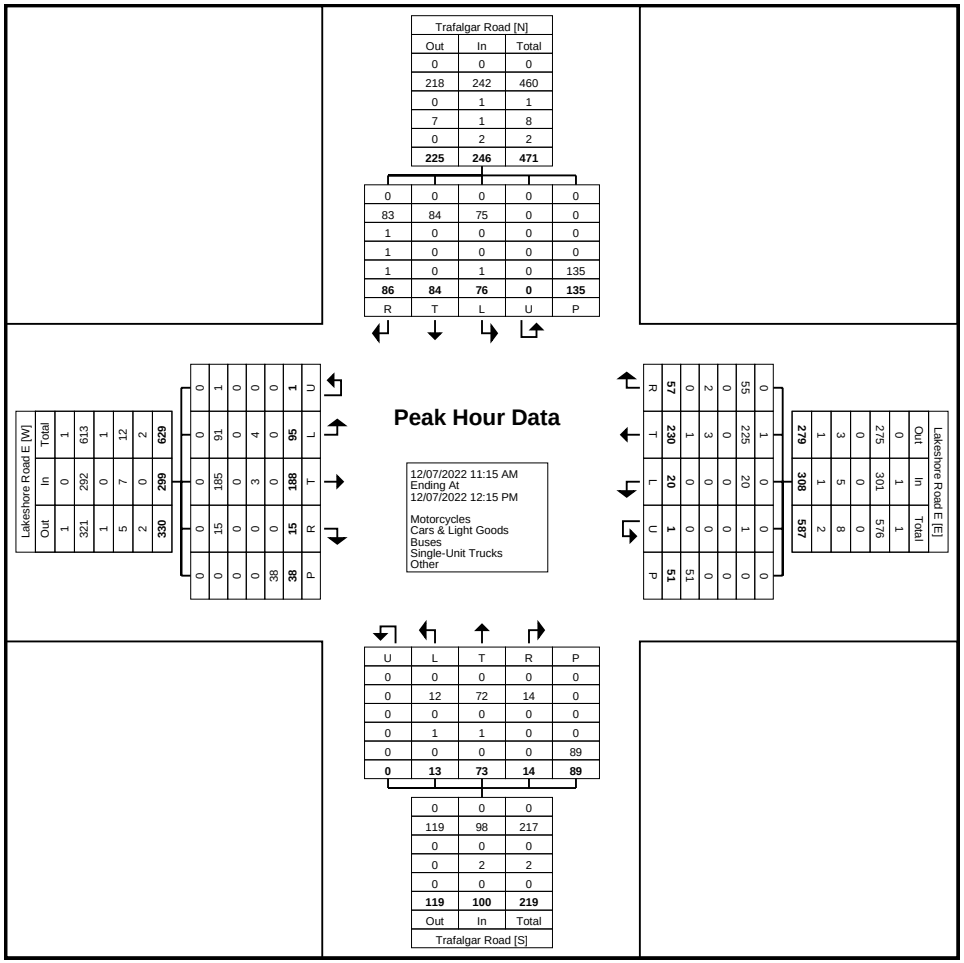
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Lakeshore Road E Eastbound						Lakeshore Road E Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:15 AM	20	52	4	1	4	77	6	53	12	0	9	71	7	15	2	0	14	24	19	25	17	0	39	61	233
11:30 AM	18	44	4	0	8	66	3	61	20	1	8	85	3	13	5	0	17	21	20	26	29	0	36	75	247
11:45 AM	29	41	5	0	14	75	8	43	16	0	12	67	2	18	6	0	25	26	17	20	21	0	26	58	226
12:00 PM	28	51	2	0	12	81	3	73	9	0	22	85	1	27	1	0	33	29	20	13	19	0	34	52	247
Total	95	188	15	1	38	299	20	230	57	1	51	308	13	73	14	0	89	100	76	84	86	0	135	246	953
Approach %	31.8	62.9	5.0	0.3	-	-	6.5	74.7	18.5	0.3	-	-	13.0	73.0	14.0	0.0	-	-	30.9	34.1	35.0	0.0	-	-	-
Total %	10.0	19.7	1.6	0.1	-	31.4	2.1	24.1	6.0	0.1	-	32.3	1.4	7.7	1.5	0.0	-	10.5	8.0	8.8	9.0	0.0	-	25.8	-
PHF	0.819	0.904	0.750	0.250	-	0.923	0.625	0.788	0.713	0.250	-	0.906	0.464	0.676	0.583	0.000	-	0.862	0.950	0.808	0.741	0.000	-	0.820	0.965
Motorcycles	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	91	185	15	1	-	292	20	225	55	1	-	301	12	72	14	0	-	98	75	84	83	0	-	242	933
% Cars & Light Goods	95.8	98.4	100.0	100.0	-	97.7	100.0	97.8	96.5	100.0	-	97.7	92.3	98.6	100.0	-	-	98.0	98.7	100.0	96.5	-	-	98.4	97.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.2	-	-	0.4	0.1
Single-Unit Trucks	4	3	0	0	-	7	0	3	2	0	-	5	1	1	0	0	-	2	0	0	1	0	-	1	15
% Single-Unit Trucks	4.2	1.6	0.0	0.0	-	2.3	0.0	1.3	3.5	0.0	-	1.6	7.7	1.4	0.0	-	-	2.0	0.0	0.0	1.2	-	-	0.4	1.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1	0	1	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	1.3	0.0	1.2	-	-	0.8	0.3
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	2.6	-	-	-	-	-	0.0	-	-	-	-	-	1.1	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	37	-	-	-	-	-	51	-	-	-	-	-	88	-	-	-	-	-	135	-	-
% Pedestrians	-	-	-	-	97.4	-	-	-	-	-	100.0	-	-	-	-	-	98.9	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Trafalgar Road & Lakeshore Road
Site Code: 220623
Start Date: 12/07/2022

Turning Movement Peak Hour Data (3:30 PM)

Start Time	Lakeshore Road E Eastbound						Lakeshore Road E Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:30 PM	27	52	1	0	6	80	5	80	13	0	10	98	3	17	4	0	34	24	16	12	28	0	34	56	258
3:45 PM	21	84	2	0	7	107	2	87	15	0	14	104	4	21	0	0	36	25	16	14	25	0	39	55	291
4:00 PM	28	65	3	0	14	96	2	67	12	0	13	81	4	19	3	0	31	26	18	8	16	0	28	42	245
4:15 PM	20	57	3	0	6	80	3	63	16	0	16	82	1	18	5	0	26	24	21	8	23	0	30	52	238
Total	96	258	9	0	33	363	12	297	56	0	53	365	12	75	12	0	127	99	71	42	92	0	131	205	1032
Approach %	26.4	71.1	2.5	0.0	-	-	3.3	81.4	15.3	0.0	-	-	12.1	75.8	12.1	0.0	-	-	34.6	20.5	44.9	0.0	-	-	-
Total %	9.3	25.0	0.9	0.0	-	35.2	1.2	28.8	5.4	0.0	-	35.4	1.2	7.3	1.2	0.0	-	9.6	6.9	4.1	8.9	0.0	-	19.9	-
PHF	0.857	0.768	0.750	0.000	-	0.848	0.600	0.853	0.875	0.000	-	0.877	0.750	0.893	0.600	0.000	-	0.952	0.845	0.750	0.821	0.000	-	0.915	0.887
Motorcycles	2	0	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3
% Motorcycles	2.1	0.0	0.0	-	-	0.6	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	93	252	9	0	-	354	12	293	54	0	-	359	12	73	12	0	-	97	69	40	89	0	-	198	1008
% Cars & Light Goods	96.9	97.7	100.0	-	-	97.5	100.0	98.7	96.4	-	-	98.4	100.0	97.3	100.0	-	-	98.0	97.2	95.2	96.7	-	-	96.6	97.7
Buses	0	3	0	0	-	3	0	2	1	0	-	3	0	1	0	0	-	1	2	1	1	0	-	4	11
% Buses	0.0	1.2	0.0	-	-	0.8	0.0	0.7	1.8	-	-	0.8	0.0	1.3	0.0	-	-	1.0	2.8	2.4	1.1	-	-	2.0	1.1
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	1	1	0	-	2	4
% Single-Unit Trucks	1.0	0.0	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	1.3	0.0	-	-	1.0	0.0	2.4	1.1	-	-	1.0	0.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	3	0	0	-	3	0	1	1	0	-	2	0	0	0	0	-	0	0	0	1	0	-	1	6
% Bicycles on Road	0.0	1.2	0.0	-	-	0.8	0.0	0.3	1.8	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.1	-	-	0.5	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	1.6	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	33	-	-	-	-	-	53	-	-	-	-	-	125	-	-	-	-	-	131	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	98.4	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Trafalgar Road & Lakeshore Road
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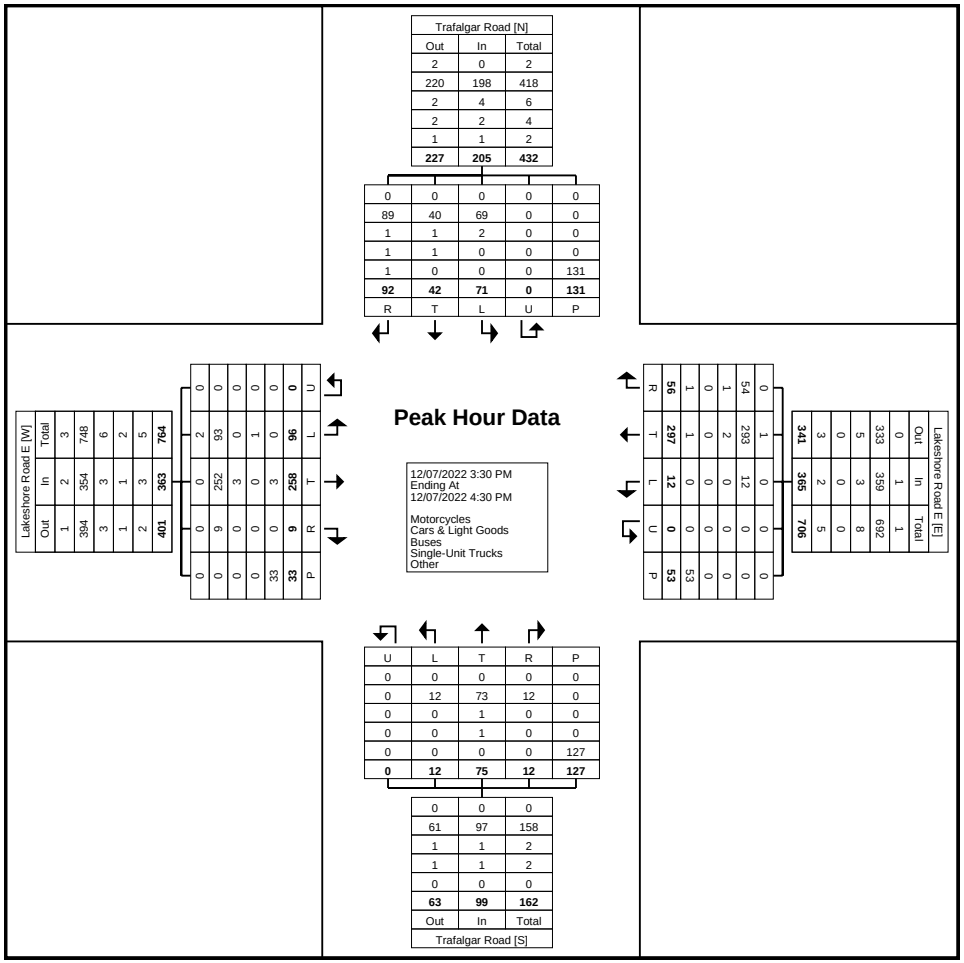


Turning Movement Peak Hour Data Plot (3:30 PM)

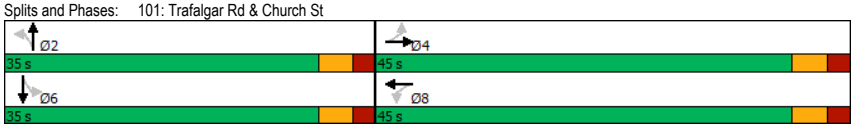
Appendix C

Base Year Traffic Operations Reports

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	23	42	16	6	102	46	212
Future Volume (vph)	23	42	16	6	102	46	212
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6	5.6		5.4		5.4
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	28.3	28.3	28.3		29.7		29.7
Actuated g/C Ratio	0.52	0.52	0.52		0.54		0.54
v/c Ratio	0.06	0.09	0.04		0.08		0.22
Control Delay	12.6	10.3	8.5		10.7		10.5
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay	12.6	10.3	8.5		10.7		10.5
LOS	B	B	A		B		B
Approach Delay		11.0	8.5		10.7		10.5
Approach LOS		B	A		B		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 54.5			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.22			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	32	86	36	143	356
v/c Ratio	0.06	0.09	0.04	0.08	0.22
Control Delay	12.6	10.3	8.5	10.7	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	10.3	8.5	10.7	10.5
Queue Length 50th (m)	2.4	5.0	1.5	5.1	12.9
Queue Length 95th (m)	5.7	8.4	5.4	9.1	21.4
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	747	1253	1214	1804	1659
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.03	0.08	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	42	13	0	16	8	6	102	4	46	212	49
Future Volume (vph)	23	42	13	0	16	8	6	102	4	46	212	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.97			0.94			0.99			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.99	
Satd. Flow (prot)	1421	1824			1770			3463			3265	
Flt Permitted	0.73	1.00			1.00			0.92			0.89	
Satd. Flow (perm)	1097	1824			1770			3192			2915	
Peak-hour factor, PHF	0.72	0.64	0.65	0.25	0.80	0.50	0.50	0.83	0.50	0.80	0.91	0.75
Adj. Flow (vph)	32	66	20	0	20	16	12	123	8	58	233	65
RTOR Reduction (vph)	0	13	0	0	10	0	0	5	0	0	23	0
Lane Group Flow (vph)	32	73	0	0	26	0	0	138	0	0	333	0
Confl. Peds. (#/hr)	16		19	19		16	6		13	13		6
Heavy Vehicles (%)	26%	0%	0%	0%	0%	0%	2%	3%	0%	17%	5%	0%
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4			17.4			18.8			18.8	
Effective Green, g (s)	17.4	17.4			17.4			18.8			18.8	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	404	672			652			1271			1161	
v/s Ratio Prot		c0.04			0.01							
v/s Ratio Perm	0.03							0.04			c0.11	
v/c Ratio	0.08	0.11			0.04			0.11			0.29	
Uniform Delay, d1	9.7	9.8			9.5			8.9			9.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.2			0.1			0.1			0.3	
Delay (s)	9.9	10.0			9.6			9.0			9.9	
Level of Service	A	A			A			A			A	
Approach Delay (s)		9.9			9.6			9.0			9.9	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.20			
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	112	0	0	225
Future Volume (Veh/h)	0	0	112	0	0	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	122	0	0	245
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked						
vC, conflicting volume	244	61			122	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	61			122	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	723	991			1463	

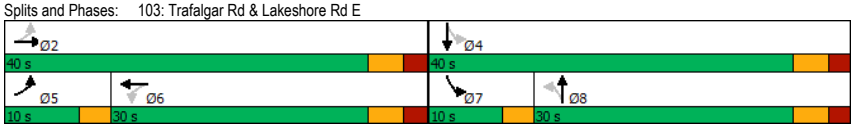
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	81	41	82	163
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1463	1700
Volume to Capacity	0.01	0.05	0.02	0.00	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		9.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	62	274	4	296	3	30	57	54
Future Volume (vph)	62	274	4	296	3	30	57	54
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	35.7	33.9	27.3	27.3	21.2	21.2	27.7	26.0
Actuated g/C Ratio	0.64	0.60	0.49	0.49	0.38	0.38	0.49	0.46
v/c Ratio	0.11	0.27	0.02	0.45	0.03	0.06	0.10	0.15
Control Delay	8.4	10.7	15.5	19.2	22.3	20.9	14.4	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	10.7	15.5	19.2	22.3	20.9	14.4	11.6
LOS	A	B	B	B	C	C	B	B
Approach Delay		10.2		19.2		21.2		12.6
Approach LOS		B		B		C		B

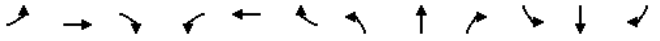
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 56.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	300	8	385	12	41	70	131
v/c Ratio	0.11	0.27	0.02	0.45	0.03	0.06	0.10	0.15
Control Delay	8.4	10.7	15.5	19.2	22.3	20.9	14.4	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	10.7	15.5	19.2	22.3	20.9	14.4	11.6
Queue Length 50th (m)	5.0	23.7	0.7	42.9	1.3	4.1	6.0	7.7
Queue Length 95th (m)	9.7	40.0	1.9	68.6	1.5	10.4	12.3	12.2
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	734	1133	519	865	621	916	717	1098
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.26	0.02	0.45	0.02	0.04	0.10	0.12

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	274	8	4	296	37	3	30	2	57	54	40
Future Volume (vph)	62	274	8	4	296	37	3	30	2	57	54	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.98	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1796	1867		1772	1767		1794	1867		1761	1775	
Flt Permitted	0.34	1.00		0.58	1.00		0.67	1.00		0.56	1.00	
Satd. Flow (perm)	643	1867		1077	1767		1271	1867		1042	1775	
Peak-hour factor, PHF	0.80	0.95	0.67	0.50	0.88	0.75	0.25	0.81	0.50	0.82	0.66	0.81
Adj. Flow (vph)	78	288	12	8	336	49	12	37	4	70	82	49
RTOR Reduction (vph)	0	2	0	0	6	0	0	3	0	0	32	0
Lane Group Flow (vph)	78	298	0	8	379	0	12	38	0	70	99	0
Confl. Peds. (#/hr)	56		30	30		56	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	4%	11%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	23.7	23.7		16.0	16.0		10.0	10.0		16.4	16.4	
Effective Green, g (s)	23.7	23.7		16.0	16.0		10.0	10.0		16.4	16.4	
Actuated g/C Ratio	0.46	0.46		0.31	0.31		0.19	0.19		0.32	0.32	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	862		335	551		247	363		380	567	
v/s Ratio Prot	0.02	c0.16			c0.21			0.02		0.01	c0.06	
v/s Ratio Perm	0.07			0.01			0.01			c0.05		
v/c Ratio	0.19	0.35		0.02	0.69		0.05	0.10		0.18	0.17	
Uniform Delay, d1	8.3	8.8		12.2	15.5		16.8	17.0		12.5	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	3.9		0.1	0.1		0.2	0.1	
Delay (s)	8.5	9.2		12.3	19.3		16.9	17.1		12.7	12.7	
Level of Service	A	A		B	B		B	B		B	B	
Approach Delay (s)		9.0			19.2			17.0			12.7	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	51.3	Sum of lost time (s)	17.2
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

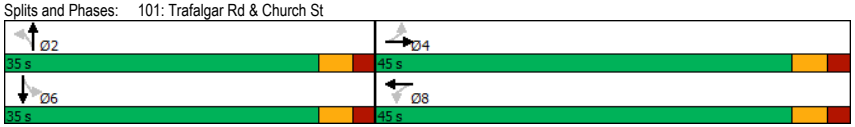
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	103	46	3	37	5	201	20	192
Future Volume (vph)	103	46	3	37	5	201	20	192
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	26.0	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6		5.6		5.4		5.4
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	28.1	28.1		28.1		29.4		29.4
Actuated g/C Ratio	0.52	0.52		0.52		0.54		0.54
v/c Ratio	0.20	0.09		0.12		0.13		0.18
Control Delay	14.4	9.2		7.3		10.8		10.3
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	14.4	9.2		7.3		10.8		10.3
LOS	B	A		A		B		B
Approach Delay		12.3		7.3		10.8		10.3
Approach LOS		B		A		B		B

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 54
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.20
Intersection Signal Delay: 10.5 — Intersection LOS: B
Intersection Capacity Utilization 54.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBL	NBT	SBT
Lane Group Flow (vph)	123	81	106	247	319
v/c Ratio	0.20	0.09	0.12	0.13	0.18
Control Delay	14.4	9.2	7.3	10.8	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	9.2	7.3	10.8	10.3
Queue Length 50th (m)	10.1	4.0	3.7	9.2	11.4
Queue Length 95th (m)	19.6	10.8	12.3	15.7	17.0
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	813	1224	1182	1898	1803
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.07	0.09	0.13	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	46	18	3	37	40	5	201	9	20	192	42
Future Volume (vph)	103	46	18	3	37	40	5	201	9	20	192	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.95			0.93			0.99			0.98	
Flt Protected	0.95	1.00			1.00			1.00			1.00	
Satd. Flow (prot)	1644	1782			1734			3561			3483	
Flt Permitted	0.69	1.00			0.98			0.94			0.91	
Satd. Flow (perm)	1192	1782			1709			3360			3175	
Peak-hour factor, PHF	0.84	0.86	0.64	0.38	0.90	0.70	0.62	0.90	0.56	0.62	0.82	0.79
Adj. Flow (vph)	123	53	28	8	41	57	8	223	16	32	234	53
RTOR Reduction (vph)	0	18	0	0	36	0	0	6	0	0	20	0
Lane Group Flow (vph)	123	63	0	0	70	0	0	241	0	0	299	0
Confl. Peds. (#/hr)	15		35	35		15	10		16	16		10
Heavy Vehicles (%)	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			18.6			18.6	
Effective Green, g (s)	17.3	17.3			17.3			18.6			18.6	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	439	657			630			1332			1259	
v/s Ratio Prot		0.04										
v/s Ratio Perm	c0.10				0.04			0.07			c0.09	
v/c Ratio	0.28	0.10			0.11			0.18			0.24	
Uniform Delay, d1	10.4	9.7			9.7			9.2			9.4	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.1			0.2			0.1			0.2	
Delay (s)	11.1	9.8			9.9			9.3			9.6	
Level of Service	B	A			A			A			A	
Approach Delay (s)		10.6			9.9			9.3			9.6	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.26			
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	215	0	0	213
Future Volume (Veh/h)	0	0	215	0	0	213
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	234	0	0	232
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked						
vC, conflicting volume	350	117			234	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	350	117			234	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	621	913			1331	

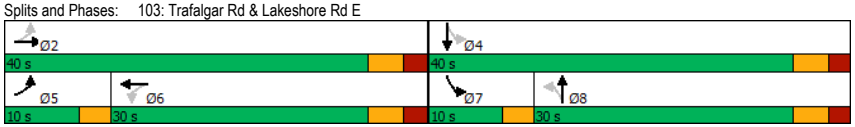
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	156	78	77	155
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1331	1700
Volume to Capacity	0.01	0.09	0.05	0.00	0.09
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		9.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	98	263	12	303	12	77	72	43
Future Volume (vph)	98	263	12	303	12	77	72	43
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	37.2	36.6	29.5	29.5	16.9	16.9	22.4	24.0
Actuated g/C Ratio	0.60	0.59	0.47	0.47	0.27	0.27	0.36	0.39
v/c Ratio	0.21	0.32	0.05	0.49	0.05	0.22	0.20	0.25
Control Delay	9.6	11.8	16.1	20.5	22.8	22.0	15.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	11.8	16.1	20.5	22.8	22.0	15.1	7.7
LOS	A	B	B	C	C	C	B	A
Approach Delay		11.3		20.3		22.1		10.2
Approach LOS		B		C		C		B

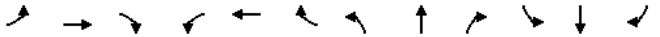
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 62.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	354	20	421	16	107	86	172
v/c Ratio	0.21	0.32	0.05	0.49	0.05	0.22	0.20	0.25
Control Delay	9.6	11.8	16.1	20.5	22.8	22.0	15.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	11.8	16.1	20.5	22.8	22.0	15.1	7.7
Queue Length 50th (m)	7.4	29.1	1.8	47.5	1.8	10.6	7.4	5.2
Queue Length 95th (m)	14.2	38.8	4.1	71.4	5.4	23.3	14.9	12.5
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	535	1098	407	799	527	794	438	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.32	0.05	0.53	0.03	0.13	0.20	0.17

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	263	9	12	303	57	12	77	12	72	43	94
Future Volume (vph)	98	263	9	12	303	57	12	77	12	72	43	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.91	1.00		0.97	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1762	1862		1643	1806		1753	1776		1709	1597	
Flt Permitted	0.36	1.00		0.55	1.00		0.65	1.00		0.54	1.00	
Satd. Flow (perm)	676	1862		950	1806		1196	1776		965	1597	
Peak-hour factor, PHF	0.86	0.77	0.75	0.60	0.85	0.88	0.75	0.89	0.60	0.84	0.75	0.82
Adj. Flow (vph)	114	342	12	20	356	65	16	87	20	86	57	115
RTOR Reduction (vph)	0	1	0	0	7	0	0	13	0	0	82	0
Lane Group Flow (vph)	114	353	0	20	414	0	16	94	0	86	90	0
Confl. Peds. (#/hr)	131		127	127		131	33		53	53		33
Heavy Vehicles (%)	1%	1%	0%	0%	1%	2%	0%	3%	0%	3%	5%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	35.1	35.1		27.1	27.1		10.6	10.6		18.6	18.6	
Effective Green, g (s)	35.1	35.1		27.1	27.1		10.6	10.6		18.6	18.6	
Actuated g/C Ratio	0.54	0.54		0.42	0.42		0.16	0.16		0.29	0.29	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	449	1007		396	754		195	290		333	457	
v/s Ratio Prot	0.02	c0.19			c0.23			c0.05		c0.02	0.06	
v/s Ratio Perm	0.12			0.02			0.01			0.05		
v/c Ratio	0.25	0.35		0.05	0.55		0.08	0.33		0.26	0.20	
Uniform Delay, d1	8.0	8.4		11.2	14.3		23.0	24.0		17.5	17.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.3		0.1	1.0		0.2	0.7		0.4	0.2	
Delay (s)	8.3	8.7		11.3	15.3		23.2	24.6		17.9	17.7	
Level of Service	A	A		B	B		C	C		B	B	
Approach Delay (s)		8.6			15.1			24.5			17.8	
Approach LOS		A			B			C			B	

Intersection Summary				
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	17.2	
Intersection Capacity Utilization	79.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

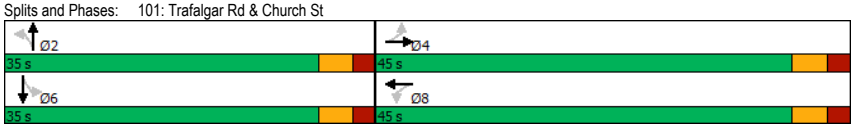
Appendix D

Background Traffic Operations Reports

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	25	46	18	7	113	51	234
Future Volume (vph)	25	46	18	7	113	51	234
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6	5.6		5.4		5.4
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	28.2	28.2	28.2		29.5		29.5
Actuated g/C Ratio	0.52	0.52	0.52		0.54		0.54
v/c Ratio	0.06	0.10	0.04		0.09		0.25
Control Delay	12.7	10.4	8.4		10.8		10.8
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay	12.7	10.4	8.4		10.8		10.8
LOS	B	B	A		B		B
Approach Delay		11.0	8.4		10.8		10.8
Approach LOS		B	A		B		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 54.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.25			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	35	94	41	158	393
v/c Ratio	0.06	0.10	0.04	0.09	0.25
Control Delay	12.7	10.4	8.4	10.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	10.4	8.4	10.8	10.8
Queue Length 50th (m)	2.7	5.5	1.7	5.7	14.6
Queue Length 95th (m)	6.1	8.9	5.9	9.8	23.7
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	743	1254	1216	1793	1649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.03	0.09	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	46	14	0	18	9	7	113	4	51	234	54
Future Volume (vph)	25	46	14	0	18	9	7	113	4	51	234	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.96			0.94			0.99			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.99	
Satd. Flow (prot)	1421	1824			1771			3465			3264	
Flt Permitted	0.73	1.00			1.00			0.91			0.88	
Satd. Flow (perm)	1092	1824			1771			3172			2898	
Peak-hour factor, PHF	0.72	0.64	0.65	0.25	0.80	0.50	0.50	0.83	0.50	0.80	0.91	0.75
Adj. Flow (vph)	35	72	22	0	22	18	14	136	8	64	257	72
RTOR Reduction (vph)	0	14	0	0	11	0	0	5	0	0	23	0
Lane Group Flow (vph)	35	80	0	0	30	0	0	153	0	0	370	0
Confl. Peds. (#/hr)	16		19	19		16	6		13	13		6
Heavy Vehicles (%)	26%	0%	0%	0%	0%	0%	2%	3%	0%	17%	5%	0%
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			18.7			18.7	
Effective Green, g (s)	17.3	17.3			17.3			18.7			18.7	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	401	671			651			1262			1153	
v/s Ratio Prot		c0.04			0.02							
v/s Ratio Perm	0.03							0.05			c0.13	
v/c Ratio	0.09	0.12			0.05			0.12			0.32	
Uniform Delay, d1	9.7	9.8			9.5			9.0			9.8	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.2			0.1			0.1			0.3	
Delay (s)	9.9	10.0			9.6			9.0			10.1	
Level of Service	A	A			A			A			B	
Approach Delay (s)		10.0			9.6			9.0			10.1	
Approach LOS		A			A			A			B	

Intersection Summary				
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.22			
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	124	0	0	248
Future Volume (Veh/h)	0	0	124	0	0	248
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	135	0	0	270
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked						
vC, conflicting volume	270	68			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	68			135	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	697	982			1447	

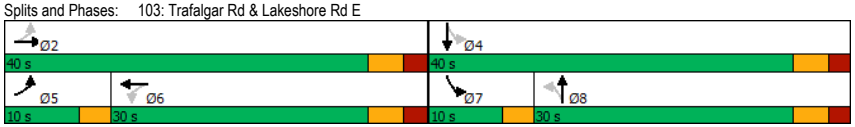
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	90	45	90	180
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1447	1700
Volume to Capacity	0.01	0.05	0.03	0.00	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		10.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	68	303	4	327	3	33	63	60
Future Volume (vph)	68	303	4	327	3	33	63	60
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	37.1	36.4	29.3	29.3	16.8	16.8	20.4	21.9
Actuated g/C Ratio	0.62	0.60	0.49	0.49	0.28	0.28	0.34	0.36
v/c Ratio	0.15	0.29	0.02	0.50	0.03	0.09	0.17	0.21
Control Delay	8.7	10.9	15.5	20.1	22.7	21.2	15.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	10.9	15.5	20.1	22.7	21.2	15.0	12.6
LOS	A	B	B	C	C	C	B	B
Approach Delay		10.5		20.0		21.5		13.4
Approach LOS		B		B		C		B

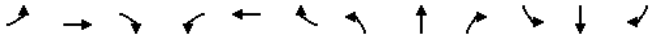
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 60.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	332	8	427	12	45	77	145
v/c Ratio	0.15	0.29	0.02	0.50	0.03	0.09	0.17	0.21
Control Delay	8.7	10.9	15.5	20.1	22.7	21.2	15.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	10.9	15.5	20.1	22.7	21.2	15.0	12.6
Queue Length 50th (m)	5.5	26.8	0.7	49.0	1.3	4.6	6.6	9.1
Queue Length 95th (m)	10.3	44.4	1.9	77.7	1.5	11.2	13.3	13.6
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	565	1132	467	801	569	853	449	1097
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.29	0.02	0.53	0.02	0.05	0.17	0.13

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	303	9	4	327	41	3	33	2	63	60	44
Future Volume (vph)	68	303	9	4	327	41	3	33	2	63	60	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1867		1766	1765		1792	1869		1759	1775	
Flt Permitted	0.37	1.00		0.56	1.00		0.66	1.00		0.57	1.00	
Satd. Flow (perm)	690	1867		1042	1765		1254	1869		1052	1775	
Peak-hour factor, PHF	0.80	0.95	0.67	0.50	0.88	0.75	0.25	0.81	0.50	0.82	0.66	0.81
Adj. Flow (vph)	85	319	13	8	372	55	12	41	4	77	91	54
RTOR Reduction (vph)	0	1	0	0	6	0	0	3	0	0	34	0
Lane Group Flow (vph)	85	331	0	8	421	0	12	42	0	77	111	0
Confl. Peds. (#/hr)	56		30	30		56	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	4%	11%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	35.0	35.0		27.0	27.0		10.7	10.7		17.3	17.3	
Effective Green, g (s)	35.0	35.0		27.0	27.0		10.7	10.7		17.3	17.3	
Actuated g/C Ratio	0.55	0.55		0.43	0.43		0.17	0.17		0.27	0.27	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	467	1029		443	750		211	314		326	483	
v/s Ratio Prot	0.01	c0.18			c0.24			0.02		0.01	c0.06	
v/s Ratio Perm	0.09			0.01			0.01			c0.05		
v/c Ratio	0.18	0.32		0.02	0.56		0.06	0.13		0.24	0.23	
Uniform Delay, d1	7.4	7.8		10.6	13.8		22.2	22.5		17.7	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	1.2		0.1	0.2		0.4	0.2	
Delay (s)	7.5	8.0		10.6	15.0		22.3	22.6		18.0	18.2	
Level of Service	A	A		B	B		C	C		B	B	
Approach Delay (s)		7.9			14.9			22.6			18.1	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	17.2
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

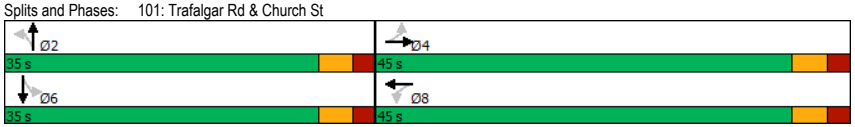
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	51	3	41	6	222	22	212
Future Volume (vph)	114	51	3	41	6	222	22	212
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	26.0	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6		5.6		5.4		5.4
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	28.1	28.1		28.1		29.4		29.4
Actuated g/C Ratio	0.52	0.52		0.52		0.54		0.54
v/c Ratio	0.22	0.10		0.13		0.15		0.20
Control Delay	14.7	9.2		7.3		10.8		10.5
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	14.7	9.2		7.3		10.8		10.5
LOS	B	A		A		B		B
Approach Delay		12.6		7.3		10.8		10.5
Approach LOS		B		A		B		B

Intersection Summary

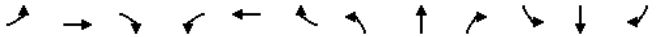
Cycle Length: 80
Actuated Cycle Length: 54
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.22
Intersection Signal Delay: 10.7 — Intersection LOS: B
Intersection Capacity Utilization 55.6% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	136	90	117	275	352
v/c Ratio	0.22	0.10	0.13	0.15	0.20
Control Delay	14.7	9.2	7.3	10.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	9.2	7.3	10.8	10.5
Queue Length 50th (m)	11.3	4.5	4.1	10.4	12.8
Queue Length 95th (m)	21.4	11.7	13.0	17.4	18.7
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	805	1224	1186	1890	1795
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.07	0.10	0.15	0.20

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	51	20	3	41	44	6	222	10	22	212	46
Future Volume (vph)	114	51	20	3	41	44	6	222	10	22	212	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.95			0.93			0.99			0.98	
Flt Protected	0.95	1.00			1.00			1.00			1.00	
Satd. Flow (prot)	1645	1783			1735			3560			3484	
Flt Permitted	0.68	1.00			0.98			0.94			0.90	
Satd. Flow (perm)	1180	1783			1711			3347			3161	
Peak-hour factor, PHF	0.84	0.86	0.64	0.38	0.90	0.70	0.62	0.90	0.56	0.62	0.82	0.79
Adj. Flow (vph)	136	59	31	8	46	63	10	247	18	35	259	58
RTOR Reduction (vph)	0	20	0	0	40	0	0	6	0	0	20	0
Lane Group Flow (vph)	136	70	0	0	77	0	0	269	0	0	332	0
Confl. Peds. (#/hr)	15		35	35		15	10		16	16		10
Heavy Vehicles (%)	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			18.6			18.6	
Effective Green, g (s)	17.3	17.3			17.3			18.6			18.6	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	435	657			631			1327			1253	
v/s Ratio Prot		0.04										
v/s Ratio Perm	c0.12				0.05			0.08			c0.11	
v/c Ratio	0.31	0.11			0.12			0.20			0.27	
Uniform Delay, d1	10.6	9.7			9.8			9.3			9.5	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.2			0.2			0.2			0.2	
Delay (s)	11.4	9.9			10.0			9.4			9.8	
Level of Service	B	A			A			A			A	
Approach Delay (s)		10.8			10.0			9.4			9.8	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	238	0	0	235
Future Volume (Veh/h)	0	0	238	0	0	235
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	259	0	0	255
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked	1.00					
vC, conflicting volume	386	130			259	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376	130			259	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	596	896			1303	

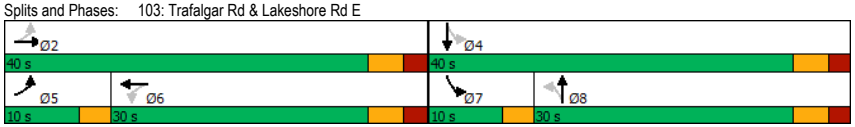
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	173	86	85	170
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1303	1700
Volume to Capacity	0.01	0.10	0.05	0.00	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		9.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	108	290	13	335	13	85	79	47
Future Volume (vph)	108	290	13	335	13	85	79	47
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	34.9	32.2	24.6	24.6	15.3	15.3	25.4	22.8
Actuated g/C Ratio	0.53	0.48	0.37	0.37	0.23	0.23	0.38	0.34
v/c Ratio	0.32	0.43	0.07	0.69	0.06	0.28	0.20	0.30
Control Delay	10.9	13.3	16.4	25.8	23.1	23.0	15.2	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	13.3	16.4	25.8	23.1	23.0	15.2	7.9
LOS	B	B	B	C	C	C	B	A
Approach Delay		12.7		25.3		23.0		10.3
Approach LOS		B		C		C		B

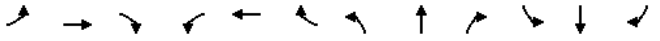
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 66.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	126	390	22	466	17	118	94	190
v/c Ratio	0.32	0.43	0.07	0.69	0.06	0.28	0.20	0.30
Control Delay	10.9	13.3	16.4	25.8	23.1	23.0	15.2	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	13.3	16.4	25.8	23.1	23.0	15.2	7.9
Queue Length 50th (m)	8.3	32.8	2.0	54.5	1.9	12.0	8.2	5.8
Queue Length 95th (m)	15.5	42.9	4.3	81.0	5.6	25.4	16.0	13.2
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	398	980	336	678	439	675	459	900
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.40	0.07	0.69	0.04	0.17	0.20	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	290	10	13	335	63	13	85	13	79	47	104
Future Volume (vph)	108	290	10	13	335	63	13	85	13	79	47	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.91	1.00		0.97	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1771	1862		1644	1805		1752	1776		1705	1596	
Flt Permitted	0.27	1.00		0.53	1.00		0.64	1.00		0.57	1.00	
Satd. Flow (perm)	510	1862		919	1805		1176	1776		1022	1596	
Peak-hour factor, PHF	0.86	0.77	0.75	0.60	0.85	0.88	0.75	0.89	0.60	0.84	0.75	0.82
Adj. Flow (vph)	126	377	13	22	394	72	17	96	22	94	63	127
RTOR Reduction (vph)	0	2	0	0	8	0	0	12	0	0	83	0
Lane Group Flow (vph)	126	388	0	22	458	0	17	106	0	94	107	0
Confl. Peds. (#/hr)	131		127	127		131	33		53	53		33
Heavy Vehicles (%)	1%	1%	0%	0%	1%	2%	0%	3%	0%	3%	5%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.9	32.9		24.6	24.6		15.3	15.3		23.6	23.6	
Effective Green, g (s)	32.9	32.9		24.6	24.6		15.3	15.3		23.6	23.6	
Actuated g/C Ratio	0.49	0.49		0.36	0.36		0.23	0.23		0.35	0.35	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	346	904		333	655		265	401		409	556	
v/s Ratio Prot	0.03	c0.21			c0.25			0.06		c0.02	0.07	
v/s Ratio Perm	0.15			0.02			0.01			c0.06		
v/c Ratio	0.36	0.43		0.07	0.70		0.06	0.27		0.23	0.19	
Uniform Delay, d1	10.9	11.3		14.1	18.4		20.6	21.6		15.3	15.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4		0.1	3.5		0.1	0.4		0.3	0.2	
Delay (s)	11.6	11.8		14.2	21.9		20.7	21.9		15.6	15.6	
Level of Service	B	B		B	C		C	C		B	B	
Approach Delay (s)		11.7			21.6			21.8			15.6	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	17.2
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

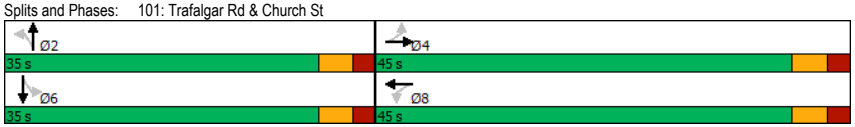
Appendix E

Total Traffic Operations Reports

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	25	46	18	7	114	51	236
Future Volume (vph)	25	46	18	7	114	51	236
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6	5.6		5.4		5.4
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	28.2	28.2	28.2		29.5		29.5
Actuated g/C Ratio	0.52	0.52	0.52		0.54		0.54
v/c Ratio	0.06	0.10	0.04		0.09		0.25
Control Delay	12.7	10.4	8.4		10.7		10.8
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay	12.7	10.4	8.4		10.7		10.8
LOS	B	B	A		B		B
Approach Delay		11.0	8.4		10.7		10.8
Approach LOS		B	A		B		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 54.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.25			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	35	94	41	161	395
v/c Ratio	0.06	0.10	0.04	0.09	0.25
Control Delay	12.7	10.4	8.4	10.7	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	10.4	8.4	10.7	10.8
Queue Length 50th (m)	2.7	5.5	1.7	5.7	14.7
Queue Length 95th (m)	6.1	8.9	5.9	9.9	23.8
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	743	1254	1216	1791	1649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.03	0.09	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	46	14	0	18	9	7	114	5	51	236	54
Future Volume (vph)	25	46	14	0	18	9	7	114	5	51	236	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.96			0.94			0.99			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.99	
Satd. Flow (prot)	1421	1824			1771			3459			3265	
Flt Permitted	0.73	1.00			1.00			0.91			0.88	
Satd. Flow (perm)	1092	1824			1771			3168			2897	
Peak-hour factor, PHF	0.72	0.64	0.65	0.25	0.80	0.50	0.50	0.83	0.50	0.80	0.91	0.75
Adj. Flow (vph)	35	72	22	0	22	18	14	137	10	64	259	72
RTOR Reduction (vph)	0	14	0	0	11	0	0	6	0	0	23	0
Lane Group Flow (vph)	35	80	0	0	30	0	0	155	0	0	372	0
Confl. Peds. (#/hr)	16		19	19		16	6		13	13		6
Heavy Vehicles (%)	26%	0%	0%	0%	0%	0%	2%	3%	0%	17%	5%	0%
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			18.7			18.7	
Effective Green, g (s)	17.3	17.3			17.3			18.7			18.7	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	401	671			651			1260			1152	
v/s Ratio Prot		c0.04			0.02							
v/s Ratio Perm	0.03							0.05			c0.13	
v/c Ratio	0.09	0.12			0.05			0.12			0.32	
Uniform Delay, d1	9.7	9.8			9.5			9.0			9.8	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.2			0.1			0.1			0.3	
Delay (s)	9.9	10.0			9.6			9.1			10.1	
Level of Service	A	A			A			A			B	
Approach Delay (s)		10.0			9.6			9.1			10.1	
Approach LOS		A			A			A			B	

Intersection Summary				
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.23			
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	124	3	2	248
Future Volume (Veh/h)	3	2	124	3	2	248
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	135	3	2	270
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked						
vC, conflicting volume	276	69			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	276	69			138	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	690	980			1443	

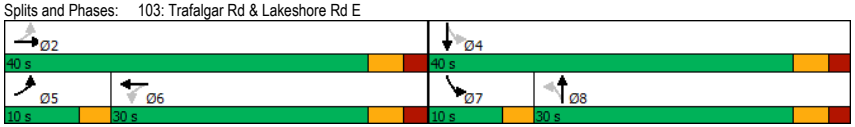
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	5	90	48	92	180
Volume Left	3	0	0	2	0
Volume Right	2	0	3	0	0
cSH	783	1700	1700	1443	1700
Volume to Capacity	0.01	0.05	0.03	0.00	0.11
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	9.6	0.0	0.0	0.2	0.0
Lane LOS	A			A	
Approach Delay (s)	9.6	0.0		0.1	
Approach LOS	A				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	18.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	70	303	4	327	3	33	64	60
Future Volume (vph)	70	303	4	327	3	33	64	60
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	37.1	36.4	29.3	29.3	16.8	16.8	20.4	21.9
Actuated g/C Ratio	0.62	0.60	0.49	0.49	0.28	0.28	0.34	0.36
v/c Ratio	0.16	0.29	0.02	0.50	0.03	0.09	0.17	0.22
Control Delay	8.8	10.9	15.5	20.1	22.7	21.2	15.1	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	10.9	15.5	20.1	22.7	21.2	15.1	12.4
LOS	A	B	B	C	C	C	B	B
Approach Delay		10.5		20.1		21.5		13.3
Approach LOS		B		C		C		B

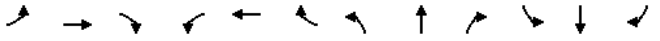
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 60.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	88	332	8	428	12	45	78	148
v/c Ratio	0.16	0.29	0.02	0.50	0.03	0.09	0.17	0.22
Control Delay	8.8	10.9	15.5	20.1	22.7	21.2	15.1	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	10.9	15.5	20.1	22.7	21.2	15.1	12.4
Queue Length 50th (m)	5.7	26.8	0.7	49.2	1.3	4.6	6.7	9.1
Queue Length 95th (m)	10.6	44.4	1.9	77.7	1.5	11.2	13.4	13.6
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	565	1132	467	800	567	853	449	1096
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.29	0.02	0.54	0.02	0.05	0.17	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	303	9	4	327	42	3	33	2	64	60	46
Future Volume (vph)	70	303	9	4	327	42	3	33	2	64	60	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1867		1766	1764		1792	1869		1759	1771	
Flt Permitted	0.36	1.00		0.56	1.00		0.66	1.00		0.57	1.00	
Satd. Flow (perm)	689	1867		1042	1764		1250	1869		1052	1771	
Peak-hour factor, PHF	0.80	0.95	0.67	0.50	0.88	0.75	0.25	0.81	0.50	0.82	0.66	0.81
Adj. Flow (vph)	88	319	13	8	372	56	12	41	4	78	91	57
RTOR Reduction (vph)	0	1	0	0	6	0	0	3	0	0	36	0
Lane Group Flow (vph)	88	331	0	8	422	0	12	42	0	78	112	0
Confl. Peds. (#/hr)	56		30	30		56	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	4%	11%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	35.0	35.0		27.0	27.0		10.7	10.7		17.3	17.3	
Effective Green, g (s)	35.0	35.0		27.0	27.0		10.7	10.7		17.3	17.3	
Actuated g/C Ratio	0.55	0.55		0.43	0.43		0.17	0.17		0.27	0.27	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	466	1029		443	750		210	314		326	482	
v/s Ratio Prot	0.01	c0.18			c0.24			0.02		0.01	c0.06	
v/s Ratio Perm	0.09			0.01			0.01			c0.05		
v/c Ratio	0.19	0.32		0.02	0.56		0.06	0.13		0.24	0.23	
Uniform Delay, d1	7.4	7.8		10.6	13.8		22.2	22.5		17.7	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	1.2		0.1	0.2		0.4	0.2	
Delay (s)	7.6	8.0		10.6	15.0		22.3	22.6		18.0	18.2	
Level of Service	A	A		B	B		C	C		B	B	
Approach Delay (s)		7.9			14.9			22.6			18.1	
Approach LOS		A			B			C			B	

Intersection Summary				
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	17.2	
Intersection Capacity Utilization	72.3%	ICU Level of Service	C	
Analysis Period (min)	15			

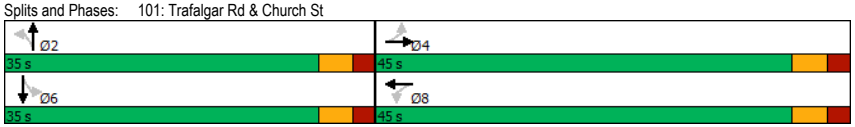
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	51	3	41	6	224	22	214
Future Volume (vph)	114	51	3	41	6	224	22	214
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	26.0	26.0	26.0	26.0	28.0	28.0	28.0	28.0
Minimum Split (s)	31.6	31.6	31.6	31.6	33.4	33.4	33.4	33.4
Total Split (s)	45.0	45.0	45.0	45.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6		5.6		5.4		5.4
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	28.1	28.1		28.1		29.4		29.4
Actuated g/C Ratio	0.52	0.52		0.52		0.54		0.54
v/c Ratio	0.22	0.10		0.13		0.15		0.20
Control Delay	14.7	9.1		7.3		10.8		10.5
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	14.7	9.1		7.3		10.8		10.5
LOS	B	A		A		B		B
Approach Delay		12.5		7.3		10.8		10.5
Approach LOS		B		A		B		B

Intersection Summary

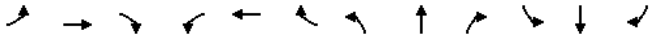
Cycle Length: 80
Actuated Cycle Length: 54
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.22
Intersection Signal Delay: 10.7 — Intersection LOS: B
Intersection Capacity Utilization 55.7% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 101: Trafalgar Rd & Church St



Lane Group	EBL	EBT	WBL	NBT	SBT
Lane Group Flow (vph)	136	92	117	279	354
v/c Ratio	0.22	0.10	0.13	0.15	0.20
Control Delay	14.7	9.1	7.3	10.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	9.1	7.3	10.8	10.5
Queue Length 50th (m)	11.3	4.5	4.1	10.5	13.0
Queue Length 95th (m)	21.4	11.8	13.0	17.5	18.8
Internal Link Dist (m)		48.2	78.4	19.1	48.8
Turn Bay Length (m)	25.0				
Base Capacity (vph)	805	1222	1186	1890	1794
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.08	0.10	0.15	0.20

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	51	21	3	41	44	6	224	11	22	214	46
Future Volume (vph)	114	51	21	3	41	44	6	224	11	22	214	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.4			5.4	
Lane Util. Factor	1.00	1.00			1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.95			0.93			0.99			0.98	
Flt Protected	0.95	1.00			1.00			1.00			1.00	
Satd. Flow (prot)	1645	1778			1735			3556			3485	
Flt Permitted	0.68	1.00			0.98			0.94			0.90	
Satd. Flow (perm)	1180	1778			1711			3343			3161	
Peak-hour factor, PHF	0.84	0.86	0.64	0.38	0.90	0.70	0.62	0.90	0.56	0.62	0.82	0.79
Adj. Flow (vph)	136	59	33	8	46	63	10	249	20	35	261	58
RTOR Reduction (vph)	0	21	0	0	40	0	0	7	0	0	19	0
Lane Group Flow (vph)	136	71	0	0	77	0	0	272	0	0	335	0
Confl. Peds. (#/hr)	15		35	35		15	10		16	16		10
Heavy Vehicles (%)	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			18.6			18.6	
Effective Green, g (s)	17.3	17.3			17.3			18.6			18.6	
Actuated g/C Ratio	0.37	0.37			0.37			0.40			0.40	
Clearance Time (s)	5.6	5.6			5.6			5.4			5.4	
Vehicle Extension (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	435	655			631			1325			1253	
v/s Ratio Prot		0.04										
v/s Ratio Perm	c0.12				0.05			0.08			c0.11	
v/c Ratio	0.31	0.11			0.12			0.21			0.27	
Uniform Delay, d1	10.6	9.7			9.8			9.3			9.5	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.2			0.2			0.2			0.2	
Delay (s)	11.4	9.9			10.0			9.5			9.8	
Level of Service	B	A			A			A			A	
Approach Delay (s)		10.8			10.0			9.5			9.8	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	55.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	237	6	5	233
Future Volume (Veh/h)	5	5	237	6	5	233
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	258	7	5	253
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			47			43
pX, platoon unblocked	1.00					
vC, conflicting volume	398	132			265	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	386	132			265	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	585	892			1296	

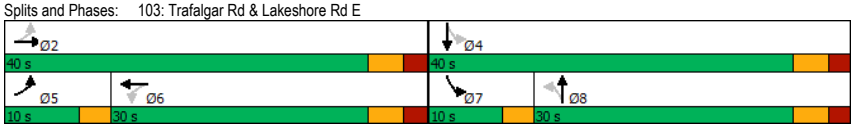
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	10	172	93	89	169
Volume Left	5	0	0	5	0
Volume Right	5	0	7	0	0
cSH	707	1700	1700	1296	1700
Volume to Capacity	0.01	0.10	0.05	0.00	0.10
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0
Control Delay (s)	10.2	0.0	0.0	0.5	0.0
Lane LOS	B			A	
Approach Delay (s)	10.2	0.0		0.2	
Approach LOS	B				

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	20.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	111	290	13	335	13	85	80	47
Future Volume (vph)	111	290	13	335	13	85	80	47
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	5	2		6		8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	24.0	24.0	24.0	15.0	15.0	7.0	15.0
Minimum Split (s)	10.0	33.7	33.7	33.7	34.5	34.5	10.0	34.5
Total Split (s)	10.0	40.0	30.0	30.0	30.0	30.0	10.0	40.0
Total Split (%)	12.5%	50.0%	37.5%	37.5%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	0.0	2.4	2.4	2.4	2.2	2.2	0.0	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.7	5.7	5.7	5.5	5.5	3.0	5.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	34.9	32.2	24.6	24.6	15.3	15.3	25.4	22.8
Actuated g/C Ratio	0.53	0.48	0.37	0.37	0.23	0.23	0.38	0.34
v/c Ratio	0.32	0.43	0.07	0.69	0.06	0.28	0.21	0.30
Control Delay	11.0	13.3	16.4	25.9	23.1	23.0	15.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	13.3	16.4	25.9	23.1	23.0	15.2	7.8
LOS	B	B	B	C	C	C	B	A
Approach Delay		12.7		25.5		23.0		10.3
Approach LOS		B		C		C		B

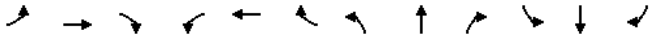
Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 66.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	390	22	468	17	118	95	192
v/c Ratio	0.32	0.43	0.07	0.69	0.06	0.28	0.21	0.30
Control Delay	11.0	13.3	16.4	25.9	23.1	23.0	15.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	13.3	16.4	25.9	23.1	23.0	15.2	7.8
Queue Length 50th (m)	8.5	32.8	2.0	54.9	1.9	12.0	8.3	5.8
Queue Length 95th (m)	15.9	42.9	4.3	81.4	5.6	25.4	16.1	13.2
Internal Link Dist (m)		56.1		56.3		57.2		22.6
Turn Bay Length (m)	25.0		25.0		25.0			
Base Capacity (vph)	397	980	336	677	438	675	459	900
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.40	0.07	0.69	0.04	0.17	0.21	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	290	10	13	335	65	13	85	13	80	47	106
Future Volume (vph)	111	290	10	13	335	65	13	85	13	80	47	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.91	1.00		0.97	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1771	1862		1644	1803		1752	1776		1705	1595	
Flt Permitted	0.27	1.00		0.53	1.00		0.64	1.00		0.57	1.00	
Satd. Flow (perm)	506	1862		919	1803		1174	1776		1022	1595	
Peak-hour factor, PHF	0.86	0.77	0.75	0.60	0.85	0.88	0.75	0.89	0.60	0.84	0.75	0.82
Adj. Flow (vph)	129	377	13	22	394	74	17	96	22	95	63	129
RTOR Reduction (vph)	0	2	0	0	8	0	0	12	0	0	84	0
Lane Group Flow (vph)	129	388	0	22	460	0	17	106	0	95	108	0
Confl. Peds. (#/hr)	131		127	127		131	33		53	53		33
Heavy Vehicles (%)	1%	1%	0%	0%	1%	2%	0%	3%	0%	3%	5%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.9	32.9		24.6	24.6		15.3	15.3		23.6	23.6	
Effective Green, g (s)	32.9	32.9		24.6	24.6		15.3	15.3		23.6	23.6	
Actuated g/C Ratio	0.49	0.49		0.36	0.36		0.23	0.23		0.35	0.35	
Clearance Time (s)	3.0	5.7		5.7	5.7		5.5	5.5		3.0	5.5	
Vehicle Extension (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	344	904		333	655		265	401		409	556	
v/s Ratio Prot	0.03	c0.21			c0.26			0.06		c0.02	0.07	
v/s Ratio Perm	0.15			0.02			0.01			c0.06		
v/c Ratio	0.38	0.43		0.07	0.70		0.06	0.27		0.23	0.19	
Uniform Delay, d1	11.0	11.3		14.1	18.4		20.6	21.6		15.3	15.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4		0.1	3.7		0.1	0.4		0.3	0.2	
Delay (s)	11.7	11.8		14.2	22.1		20.7	21.9		15.6	15.6	
Level of Service	B	B		B	C		C	C		B	B	
Approach Delay (s)		11.7			21.7			21.8			15.6	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	17.2
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group