

RANGEVIEW ESTATES

Urban Transportation Considerations
City of Mississauga
Official Plan Amendment (OPA)

APPENDICES

Prepared For: Rangeview Landowners Group Inc.

May 2025



Appendix A: Rangeview Estates Landowner Map



RANGEVIEW ESTATES

Rangeview Development Master Plan

Ownership Map



- Dorsay (Lakeshore) Inc.
Dorsay (Lakefront Promenade) Inc.
Dorsay (Rangeview) Inc.
- Elgroup Holdings Inc.
Elias Bros. Construction Limited
- Rangeview 1035 Holding Inc.
Rangeview 1045 Holding Inc.
1207238 Ontario Limited Inc.
- 2120412 Ontario Inc.
- Whiterock 880 Rangeview Inc.
- 447111 Ontario Limited
- 1127792 Ontario Limited
- ILSCO of Canada Limited
- Kotyck Investments Ltd.

Legend Rangeview Estates Precinct Area (Gross Area = ~25.67 ha) X Non-Participating Landowners --- Existing Parcel Lines

Appendix B: Rangeview Estates Master Plan





Rangeview Development Master Plan

Concept Plan V7

LOG Approved

Rangeview Estates Precinct Area
Mississauga ON

April 2024

RANGEVIEW ESTATES PRECINCT

Rangeview Development Master Plan

Ownership Map



Legend Rangeview Estates Precinct Area (Gross Area = ~25.67 ha) X Non-Participating Landowners --- Existing Parcel Lines

MASTER PLAN V7

Rangeview Development Master Plan

Concept Plan

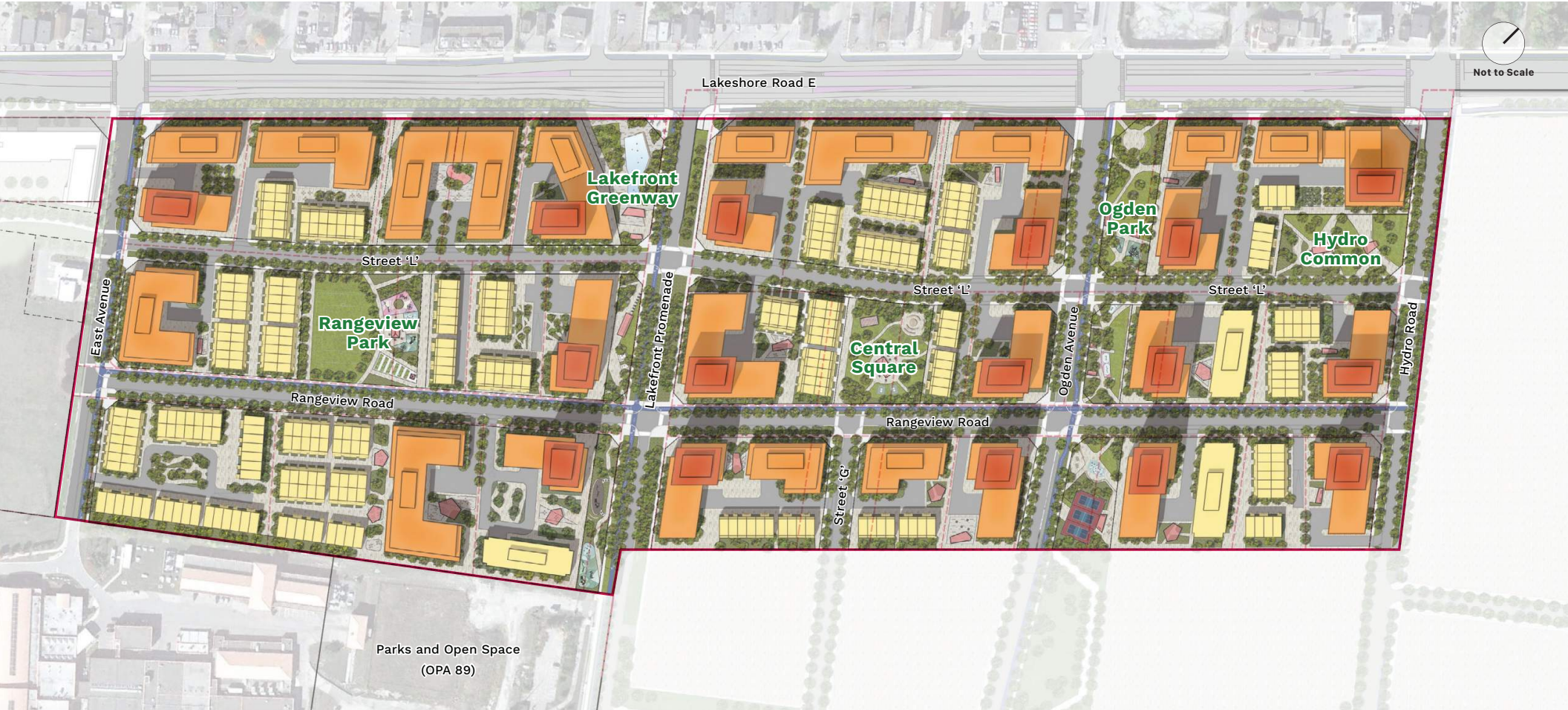


Legend Rangeview Estates Precinct Area --- Existing Parcel Lines

MASTER PLAN V7

Rangeview Development Master Plan

Built Form Typology



Legend

Rangeview Estates Precinct Area

Existing Parcel Lines

Low-rise
(Up to 4-Stories)

Mid-rise / Podium (Tall Building)
(5- to 8-Stories)

Tower Element (Tall Building)
(Up to 15-Stories)

Appendix C: Pre-Consultation Terms of Reference Checklist



Appendix A

Certification Form

Individuals submitting reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Mississauga's Official Plan, Transportation Master Plan, and Transportation Impact Study Guidelines.

By submitting the attached report (and any associated documents) and signing this document, I acknowledge that:

- I have reviewed and have a sound understanding of the objectives, needs, and requirements of the City of Mississauga's Official Plan, Transportation Master Plan, and the Transportation Impact Study Guidelines as they apply to this submission;
- I have sound knowledge of industry standard practices pertaining to the preparation of development-related transportation study reports;
- I have substantial experience (more than five years) in completing development-related transportation studies and strong background knowledge of the transportation planning and engineering principles underpinning these studies; and
- I am registered as a Professional Engineer (P.Eng.), Licensed Engineering Technologist (LET), Certified Engineering Technologist (C.E.T.), or Registered Professional Planner (RPP) in good standing in the Province of Ontario with specific training in transportation planning and engineering.

Dated at __Toronto, ON_ this_18th day of March, 2024.

Name: Steve Krossey, P.Eng. _____

Professional Title: Professional Engineer and Principal at BA Group _____

Signature:  _____

Office Contact Information (Please Print) Address:

City/Postal Code: 95 St. Clair Avenue West, Suite 1000 | Toronto, M4V 1N6 _____

Telephone/Extension: 416 961 7110 x153 _____

E-mail Address: krossey@bagroup.com _____

Appendix B

APPROVED

By Michael Turco at 1:27 pm, Apr 04, 2024

Pre-Study Consultation Checklist – March 18, 2024

Description	Information	Section Reference
Development Information – Rangeview Estates Development Master Plan (DMP) and Development Master Plan (DMP) Official Plan Amendment (OPA)		
Development Description (land use, size, and number of phases of development)	BA Group has been retained by the Rangeview Landowners Group to provide transportation consulting services related to a proposed mixed-use development on a site known as Rangeview Estates (herein referred to as "the Site" and "Rangeview"), in the City of Mississauga. The Site is generally bounded by East Avenue to the west, Lakeshore Road East to the north, Hydro Road to the east and the land parcels located beyond the south side of Rangeview Road. A Transportation Considerations Report dated September 2023, was previously prepared by BA Group as part of the Development Master Plan (DMP) and Official Plan Amendment (OPA) initially submitted to the City. This Transportation Considerations Report is now being updated to in order to address comments provided by the City, including consideration for Lakeview with 16,000 residential units. The proposed development concept for Rangeview includes consideration for up to 5,300 residential units, as well as a total of 95,000 ft² GFA of retail and office uses. The detailed traffic analysis for this study will also consider the travel demands of the adjacent lands to the south and east, inclusive of Lakeview Village (up to 16,000 residential units, along with up to 1.7 million ft² GFA of non-residential uses) and Serson (449,000 ft² GFA of non-residential uses). The latest version of the TMIG Lakeview Village TIS (2023) will be used to update the BA Group report accordingly. Key traffic analysis scenarios (potential phases) to be evaluated are as follows: • Rangeview with 3,700 residential units and Lakeview with 8,050 residential units; • Rangeview with 5,300 residential units and Lakeview with 8,050 residential units; and	2.3.6

Description	Information	Section Reference
	~~Rangeview with 5,300 residential units and Lakeview with 10,000 residential units;~~ ~~Rangeview with 5,300 residential units and Lakeview with 12,000 residential units;~~ ~~Rangeview with 5,300 residential units and Lakeview with 14,000 residential units; and~~ - Rangeview with 5,300 residential units and Lakeview with 16,000 residential units.	
Transportation Impact Assessment		
Step 1 – Screening		
Type of Application (attach a drawing)	x Official Plan Amendment ☐ Zoning Amendment ☐ Site Plan Control Application ~~x Draft Plan of Subdivision~~ x Development Master Plan See Attachment	2.3.5
Screening Criteria	X Trip Generation Trigger Satisfied X Location Trigger Satisfied X Operational/Safety Trigger Satisfied	2.2.1
Type of Study	X Transportation Impact Study Access Review (but at a later stage of the planning process) ☐ No Additional Study Required	2.2.1
Step 2 – Scoping		
Study Area (intersections to be analyzed) Note: The Transportation Consultant is responsible to identify any further intersections impacted as the study progresses.	Signalized Intersections - Lakeshore Road East & East Avenue - Lakeshore Road East & Lakefront Promenade - Lakeshore Road East & Ogden Avenue - Lakeshore Road East & Hydro Road - Lakeshore Road East & Haig Boulevard - Lakeshore Road East & Cawthra Road - Lakeshore Road East & Dixie Road Unsignalized Intersections - Street L & East Avenue - Street L & Lakefront Promenade - Street L & Ogden Avenue - Street L & Hydro Road	2.3.8

Description	Information	Section Reference
	- Rangeview Road & East Avenue - Rangeview Road & Lakefront Promenade - Rangeview Road & Ogden Avenue - Rangeview Road & Hydro Road - Rangeview Road & Street C - Lakeshore Road East & West Avenue - Lakeshore Road East & Greaves Avenue - Lakeshore Road East & Westmount Avenue - Lakeshore Road East & Alexandra Avenue - Lakeshore Road East & Meredith Avenue - Lakeshore Road East & Edgeleigh Avenue - Lakeshore Road East & Strathy Avenue - Lakeshore Road East & Orchard Road - Lakeshore Road East & Fergus Avenue	
Horizon Years	☐ 5 years from date of TIS ☐ Interim years _____ X Existing, 2031, and 2041	2.3.9
Analysis Periods	X AM weekday peak hour of adjacent roadway x PM weekday peak hour of adjacent roadway ☐ Saturday peak hour of adjacent roadway ☐ AM weekday peak hour of development ☐ PM weekday peak hour of development ☐ Saturday peak hour of development ☐ Other _____	2.3.10
Input Parameters and Assumptions (potential deviations)	As development density increases, the updated BA Group traffic analysis will consider, and provide justification for, an auto mode share that ranges from 3540% to 4560% . It is noted that BA Group's previous work considered an auto mode share of 50% but this was for the 8,050 residential units proposed for Lakeview, not the 16,000 units currently being considered for Lakeview.	2.3.13
Existing Transportation Conditions	☐ City data sources X New data collection _____ ~~*2022 Spectrum traffic counts~~	2.3.14

Planned Network Improvements (with timing) Timing of network improvements to be confirmed at a later stage in the planning process but the analysis will consider horizon years for completion of the planned road improvements from 2031 to 2041.	Please see attached map for additional future area road network details. Planned road network includes extension of Ogden Avenue from Lakeshore Road East to Rangeview Road, connection of Haig Boulevard and a dual northbound left-turn phase at Lakeshore Road East at Lakefront Promenade. Other planned upgrades include: • BRT and cycle tracks on Lakeshore Road East; • Westbound right-turn lane and dual eastbound left-turn lanes at Cawthra Road and Lakeshore Road East; • Westbound right-turn lane at Dixie Road and Lakeshore Road East; • Eastbound right-turn lane, dual northbound left-turn lanes and a right-turn lane at Lakefront Promenade and Lakeshore Road East; • Eastbound right-turn lane, northbound left-turn lane, northbound through lane and northbound right-turn lane at Ogden Avenue at Lakeshore Road East.	2.3.16

Description	Information	Section Reference
	- Eastbound right-turn lane, northbound lanes reconfigured East to include a dedicated left-turn lane and a shared through/right lane at Hydro Road and Lakeshore Road; - Signalization of Hydro Road and Lakeshore Road East intersection. - Eastbound right-turn, northbound left-turn and northbound through/right at Haig Boulevard and Lakeshore Road East.	
Other Planned Developments (per City's Website)	~~No additional planned developments to be considered beyond Lakeview and Serson. The BA Group report will align with the planned development considered within the 2023 TMIG Report.~~ All in-stream and recently approved developments within approximately 1 km of the subject site shall be included OR ensure all background developments are included within the City provided growth rates.	2.3.17
Identification of Mitigation Improvement Measures	☐ Neighbourhood Traffic Management Plan ☐ Other _____	2.3.23
Safety Analysis (any special issues)	Safety analysis can be undertaken at a later stage in the planning process.	2.3.25
Site Access and Circulation (design vehicles)	☐ Passenger Car (P) ☐ Light Single Unit Truck (LSU) ☐ Medium Single Unit Truck (MSU) ☐ Heavy Single Unit Truck (HSU) ☐ Pumper Fire Truck ☐ WB-20 Tractor Semi-Trailer Truck VMD's to be provided at a later stage of the planning process.	2.3.26
Impacts During Construction (any special issues)	To be considered at a later stage of the planning process.	2.3.27
Step 3 – Forecasting		
Growth Rate	X Obtained from City ☐ Historical traffic counts ☐ Travel demand forecasts ~~No additional growth will be considered. To determine the background traffic volumes for this study, traffic volume layers, inclusive of Site traffic volumes and background traffic volumes, will be referenced from the 2023 TMIG Report. These traffic volume layers will be adjusted based upon the following:~~ ~~Development statistics considered by scenario;~~	2.3.15

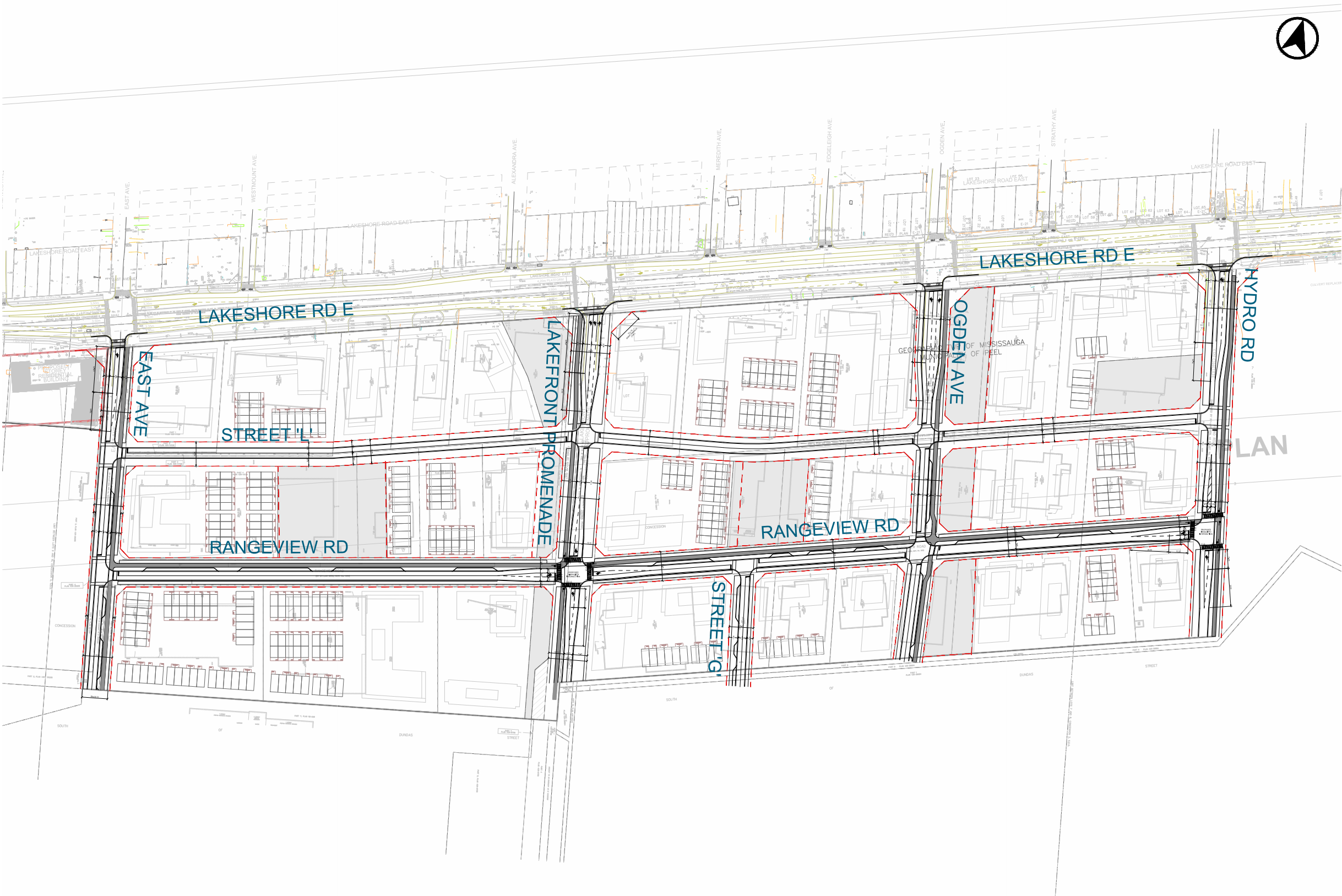
Description	Information	Section Reference
	~~• Driveway removals, and~~ ~~• Proposed road network/ access points. Traffic volume layers will be created for both the Rangeview and Lakeview Village sites that could be added to the future background layers.~~	
Site Trip Generation	☒ ITE Trip Generation Manual ☐ "First Principles" ☐ Observed rates for similar developments in area ~~✗ Other~~ ~~Trip rates to be established based on the 2023 TMIG report.~~	2.3.19
Trip Reductions	☐ Internal capture reductions for mixed-use developments ☐ Pass-by reductions ☒ Trip reductions to be established based on the 2023 TMIG report but none expected.	2.3.19
Trip Distribution	☐ Local traffic patterns ☐ TTS ☐ Travel demand model ☐ Population and employment distribution ☐ Market analysis of catchment area ☒ Trip distribution to be established based on the 2023 TMIG report.	2.3.20
Trip Assignment	☐ Local traffic patterns ☐ Shortest distance ☐ Site layout, access design and logical routing ☐ Existing turning movements ☒ Trip assignment to be established based on the 2023 TMIG report.	2.3.21
Transportation Demand Management Plan		
Format	☒ Within a TIA Report ☐ Standalone	3.2.1
Type of Transportation Demand Management Plan	☐ TDM Statement ☒ TDM Scheme (Plan) - and will be further refined at a later stage in the planning process.	3.2.2
Pedestrian Circulation Plan		
Format	☒ Within the TIA Report and will be further refined at a later stage in the planning process. ☐ Standalone	4.2.1

Additional Comments		
Description	Information	Section Reference
• Microsimulation Analysis: A VISSIM analysis is required. Note the following requirements for the VISSIM analysis: (i) The consultant will be responsible to produce a calibrated / validated VISSIM model to ensure the model is representative of existing conditions. (ii) The consultant will be responsible for collecting all necessary data needed to calibrate/ validate the VISSIM model. (iii) This VISSIM model shall be calibrated as per industry accepted guidelines (example Federal Highway Administration Microsimulation Guidelines). • Sensitivity Analysis: A sensitivity analysis without the Ogden Avenue extension shall also be included. • Community Impacts: Any transportation related impacts on the existing community and comments from the public through the planning approvals process shall be addressed in the report. • Traffic Infiltration: Assess potential for traffic infiltration through adjacent residential streets • Traffic Control Warrants: (e.g. all-way stop, traffic control signals, roundabouts): Traffic Control Warrants are to be provided, where applicable, for all three scenarios (existing, future background, future total) including for internal public road intersections ○ A roundabout feasibility study shall be included for the intersection of Lakefront Promenade and Rangeview Road • Recommendations: A detailed Recommendations section shall be included. This section shall contain, but not be limited to: a. A list of proposed on-site and off-site roadway/infrastructure improvements and remedial measures, including timing, necessary to accommodate the projected site generated traffic; b. Access management recommendations, based on the City's OP policies and industry best practices, for future development blocks within the proposed road network; c. Provisions for future traffic monitoring and transportation impact studies, including warrants for auxiliary turn lanes, all-way stop controls, and traffic signals; d. Implementation of Interim and Ultimate conditions in accordance with the proposed development phasing including the consideration of participating and non-participating land owners. It is unclear how an interim road network could be achieved. Please confirm.		

Appendix D:

Rangeview Estates Functional Road Plan





LEGEND

PROPOSED RIGHT OF WAY

PROPOSED BIKE LANES (3m)



BA Group

BA Consulting Group Ltd.
300 - 45 St. Clair Ave. W.
Toronto ON M6Y 1K5
tel. 416 961 7110
email: baigroup@baigroup.com

MOVEMENT
IN URBAN
ENVIRONMENTS
BAGROUP.COM

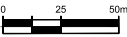
DORSAY PROPERTIES

ULTIMATE ROAD PLAN

Date: May 21, 2025

Project No.: 8061-01

Scale: 1:1,500



Appendix E: Proposed Interim Property Access



Temporary Access for Properties Along Lakeshore Road



- 
-  INTERIM DRIVEWAYS TO LAKESHORE RD EAST.
TO BE CLOSED POST DELIVERY OF STREET 'L'.
DRIVEWAYS TO BE CONVERTED TO PEDESTRIAN MID BLOCK
CONNECTIONS
 -  INTERIM DRIVEWAY / ULTIMATE ROW DEDICATION
 -  INTERIM & ULTIMATE PUDO / LOADING / VEHICULAR AREA
 -  PARK AREA



Appendix F: Travel Mode Share Studies



Kipling / Six Points / Islington
AM

Thu Feb 08 2024 17:27:13 GMT-0500 (Eastern Standard Time) - Run Time: 3653ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dwelling unit - dwell_typ
and
Start time of trip - start_time In
and
Trip purpos 2 3
and
2006 GTA zone of household - gta06

Trip 2016
Table:

	312	313	TOTAL			
Transit excl	540	2863	3403			
Cycle	0	22	22			
Auto driver	684	1778	2462			
GO rail only	65	28	93			
Auto passei	115	204	319			
School bus	24	120	144			
Taxi passer	0	17	17			
Walk	106	419	525			
TOTAL	1534	5451				
Mode	312		313	TOTAL		
Auto Drive	684	45%	1778	33%	2462	35%
Auto Passer	139	9%	341	6%	480	7%
Transit	605	39%	2891	53%	3496	50%
Active Trai	106	7%	441	8%	547	8%
TOTAL	1534	100%	5451	100%	6985	100%
					6985	

PM

Thu Feb 08 2024 17:43:20 GMT-0500 (Eastern Standard Time) - Run Time: 2083ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dwelling unit - dwell_typ
and
Start time of trip - start_time In
and
Trip purpos 2 3
and
2006 GTA zone of household - gta06

Trip 2016
Table:

	312	313	TOTAL			
Transit excl	752	2346	3098			
Cycle	0	22	22			
Auto driver	823	1933	2756			
GO rail only	56	28	84			
Motorcycle	0	22	22			
Auto passei	170	343	513			
Paid ridesh:	0	22	22			
Walk	50	288	338			
TOTAL	1851	5004				
Mode	312		313	TOTAL		
Auto Drive	823	44%	1933	39%	2756	40%
Auto Passer	170	9%	387	8%	557	8%
Transit	808	44%	2374	47%	3182	46%
Active Trai	50	3%	310	6%	360	5%
TOTAL	1851	100%	5004	100%	6855	100%
					6855	

Liberty Village
AM

Wed Apr 10 2024 09:14:47 GMT-0400 (Eastern Daylight Time) - Run Time: 1915ms

Cross Tabulation Query Form - Trip - 2016

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dwelling unit - dwell_ty 3
and
Start time of trip - start_time In 600-859
and
Trip purpose - trip_purp In 1 2 3
and
2006 GTA zone of household - 88 89)

Trip 2016
Table:

	89	
Transit excluding GO rail	2379	
Cycle	253	
Auto driver	2425	
GO rail only	93	
Joint GO rail and local transit	14	
Motorcycle	20	
Other	23	
Auto passenger	272	
Taxi passenger	88	
Paid rideshare	166	
Walk	791	
	6524	

Mode		
Auto Driver	2468	38%
Auto Passenger	526	8%
Transit	2486	38%
Active Transportation	1044	16%
TOTAL	6524	100%

PM

Wed Apr 10 2024 09:18:12 GMT-0400 (Eastern Daylight Time) - Run Time: 1953ms

Cross Tabulation Query Form - Trip - 2016

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dwelling unit - dwell_t 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpose - trip_purp In 1 2 3
and
2006 GTA zone of household 88 89)

Trip 2016
Table:

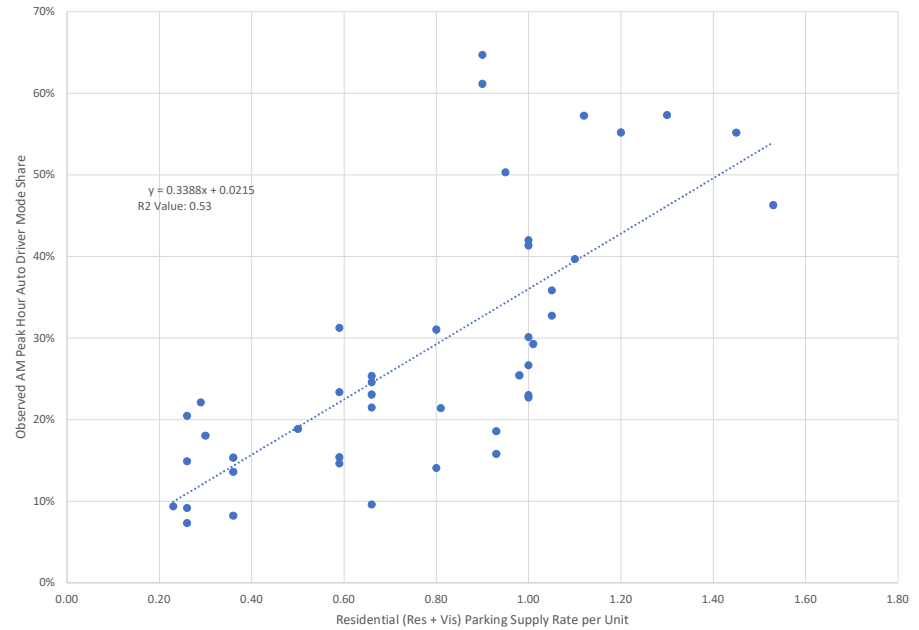
	89	
Transit excluding GO rail	2412	
Cycle	383	
Auto driver	2295	
GO rail only	96	
Joint GO rail and local transit	14	
Motorcycle	14	
Auto passenger	302	
Taxi passenger	168	
Paid rideshare	162	
Walk	1164	
	7010	

Mode		
Auto Driver	2309	33%
Auto Passenger	632	9%
Transit	2522	36%
Active Transportation	1547	22%
TOTAL	7010	100%

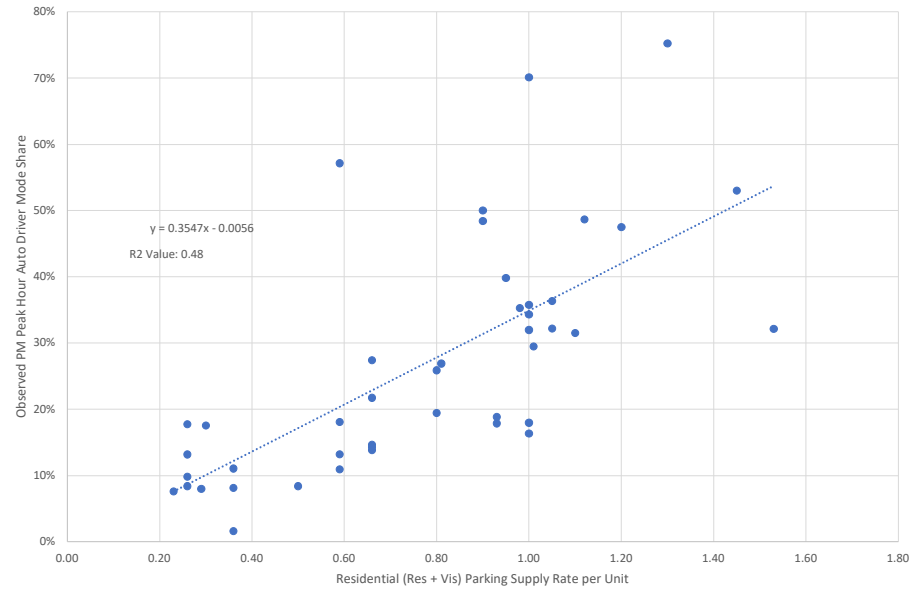
Site	Municipality	Combined Residential		AM Mode Share	PM Mode Share
		Parking Rate	Date		
18 Erskine Avenue	Toronto	0.26	Thurs., Sept. 29, 2022	7%	8%
18 Erskine Avenue	Toronto	0.26	Thurs., Oct. 5, 2023	9%	10%
25 Montgomery Avenue	Toronto	0.59	Thurs., Sept. 29, 2022	15%	11%
25 Montgomery Avenue	Toronto	0.59	Tues., Mar. 28, 2023	15%	13%
58 Orchard View Boulevard	Toronto	0.59	Thurs., Sept. 29, 2022	23%	18%
58 Orchard View Boulevard	Toronto	0.59	Wedn., Oct. 4, 2023	31%	57%
150 Redpath Avenue & 161 Roehampton / Toronto	Toronto	0.26	Thurs., Sept. 29, 2022	15%	13%
150 Redpath Avenue & 161 Roehampton / Toronto	Toronto	0.26	Tues., Mar. 28, 2023	20%	18%
8 Hillsdale Avenue&5 Soudan Avenue(Art S Toronto	Toronto	0.36	Wedn., Oct. 25, 2023	15%	11%
2855 Bloor Street West (Kingsway Condon Toronto	Toronto	1.53	Wedn., Sept. 13, 2023	46%	32%
185 Oneida Cres. (The Royal of Bayview GI Richmond Hill	Toronto	1.30	Tues., Oct. 10, 2023	57%	75%
2662 Bloor Street West (The Terraces of O Toronto	Toronto	1.45	Thurs., Sept. 21, 2023	55%	53%
6 Parkwood Avenue	Toronto	0.98	Tues., Jun. 13, 2023	25%	35%
50 & 60 Ann O'Reilly Road	Toronto	0.90	Tues., Mar. 21, 2023	61%	48%
55 Ann O'Reilly Road	Toronto	0.90	Wedn., Mar. 8, 2023	65%	50%
69 Old Mill Terrace	Toronto	0.81	Thurs., Sept. 14, 2023	21%	27%
77 Mutual Street	Toronto	0.29	Wedn., Aug. 2, 2023	22%	8%
100 John Street	Brampton	1.00	Tues., May 30, 2023	41%	70%
188 Doris Avenue	Toronto	1.00	Wedn., Jun. 21, 2023	27%	18%
210 Simcoe Street	Toronto	0.36	Wedn., Dec. 13, 2023	8%	2%
223 St. Clair Avenue West	Toronto	0.80	Tues., June 13, 2023	31%	26%
238 Doris Avenue	Toronto	1.00	Wedn., Jun. 21, 2023	23%	16%
403 Church Street	Toronto	0.36	Wedn., Aug. 2, 2023	14%	8%
950 Portage Parkway	Vaughan	0.93	Wedn., Apr. 12, 2023	19%	19%
1638 Bloor Street West	Toronto	1.01	Wedn., Mar. 29, 2023	29%	30%
3091 Dufferin Street	Toronto	1.12	Tues., Jun. 13, 2023	57%	49%
5249 Dundas Street West (Station Place)	Toronto	0.80	Thurs., Mar. 30, 2023	14%	19%
5229 & 5233 Dundas Street West (The Ess Toronto	Toronto	1.05	Thurs., Mar. 30, 2023	36%	36%
5791 & 5793 Yonge Street (Luxe)	Toronto	1.00	Wedn., Feb. 1, 2023	42%	34%
5791 & 5793 Yonge Street (Luxe)	Toronto	1.00	Wedn., Mar. 22, 2023	30%	36%
5791 & 5793 Yonge Street (Luxe)	Toronto	1.00	Wedn., Oct. 11, 2023	23%	32%
7895 Jane Street (The Met)	Vaughan	0.95	Thurs., Mar. 9, 2023	50%	40%
99 Broadway Avenue (City Light Condos)	Toronto	0.30	Tues., Mar. 28, 2023	18%	18%
503 & 509 Beecroft Road (Continental Cor Toronto	Toronto	1.10	Wedn., Feb. 15, 2023	40%	32%
39 Roehampton Avenue (E2 Condos)	Toronto	0.23	Tues., Mar. 28, 2023	9%	8%
2025-2045 Sheppard Avenue East (Yorklar Toronto	Toronto	1.20	Tues., Apr. 4, 2023	55%	48%
20 Richardson Street & 15 Lower Jarvis Str Toronto	Toronto	0.66	Thurs., Mar. 30, 2023	10%	14%
12-16 Bonnycastle Street (Monde Condos) Toronto	Toronto	0.66	Thurs., Mar. 30, 2023	23%	22%
228-230 Queen Quay Blvd W (Riviera Conc Toronto	Toronto	0.66	Thurs., Mar. 30, 2023	25%	14%
21 Park Street East (TANU Condos)	Mississauga	1.05	Tues., Jul. 25, 2023	33%	32%
898 Portage Pkwy & 5 Buttermill Ave (Tran Vaughan	Toronto	0.50	Wedn., Apr. 12, 2023	19%	8%
15, 29, 39 Queens Quay Blvd E (Pier 27 Co Toronto	Toronto	0.93	Tues., June 6, 2023	16%	18%
118 Merchant's Wharf (Aqualina Condos) Toronto	Toronto	0.66	Wedn., May 17, 2023	25%	27%
15 & 55 Merchant's Wharf (Aqualina Cond Toronto	Toronto	0.66	Thurs., May 25, 2023	21%	15%

AM R2: 0.53
PM R2: 0.48

AM Auto Driver Mode Share vs. Resident Parking Supply Rate per Unit



PM Auto Driver Mode Share vs. Resident Parking Supply Rate per Unit



North York
AM

Thu Feb 08 2024 17:13:36 GMT-0500 (Eastern Standard Time) - Run Time: 4142ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dw 3
and
Start time of trip - start_time In 600-859
and
Trip purpose 2 3
and
2006 GTA zone 443 444 448 450 452)

Trip 2016													
Table:													
	442	443	444	448	450	452	TOTAL						
Transit excl	1183	1608	1321	978	2590	2058	9738						
Cycle	15	17	0	29	4	0	65						
Auto driver	630	1317	476	721	1479	1430	6053						
Auto passer	114	330	210	110	172	161	1097						
School bus	8	27	0	0	31	0	66						
Taxi passer	0	0	0	0	0	11	11						
Walk	270	197	132	61	717	665	2042						
TOTAL	2220	3496	2139	1899	4993	4325							
Mode	442		443		444		448						
Auto Drive	630	28%	1317	38%	476	22%	721						
Auto Passer	122	5%	357	10%	210	10%	110						
Transit	1183	53%	1608	46%	1321	62%	978						
Active Trai	285	13%	214	6%	132	6%	90						
TOTAL	2220	100%	3496	100%	2139	100%	1899						

PM

Thu Feb 08 2024 17:45:59 GMT-0500 (Eastern Standard Time) - Run Time: 2197ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dw 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpose 2 3
and
2006 GTA zone 443 444 448 450 452)

Trip 2016 Table:														
	442	443	444	448	450	452	TOTAL							
Transit excl	1139	1633	950	1339	2785	1951	9797							
Cycle	80	61	0	29	8	13	191							
Auto driver	981	1657	496	521	1804	1741	7200							
Other	0	0	0	0	0	11	11							
Auto passer	225	362	161	83	608	261	1700							
School bus	0	0	0	0	4	0	4							
Taxi passer	23	36	0	0	22	46	127							
Walk	263	303	159	106	426	567	1824							
TOTAL	2711	4052	1766	2078	5657	4590								
Mode	442		443		444		448		450		452	TOTAL		
Auto Drive	981	36%	1657	41%	496	28%	521	25%	1804	32%	1752	38%	5459	34%
Auto Passer	248	9%	398	10%	161	9%	83	4%	634	11%	307	7%	1524	9%
Transit	1139	42%	1633	40%	950	54%	1339	64%	2785	49%	1951	43%	7846	48%
Active Trai	343	13%	364	9%	159	9%	135	6%	434	8%	580	13%	1435	9%
TOTAL	2711	100%	4052	100%	1766	100%	2078	100%	5657	100%	4590	100%	16264	100%
													16264	

Region of Peel
AM

Fri Feb 09 2024 12:06:32 GMT-0500 (Eastern Standard Time) - Run Time: 1961ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:
(Type of dw 3
and
Start time of trip - start_time In 600-859
and
Trip purpose 2 3
and
Planning district 35 36)

Trip 2016
Table:

	Caledon	Brampton	Mississauga	TOTAL
Transit excl	29	5362	18696	24087
Cycle	0	535	636	1171
Auto driver	1563	33146	72016	106725
GO rail only	0	617	3402	4019
Joint GO rail	13	528	2228	2769
Motorcycle	0	41	23	64
Other	0	26	82	108
Auto passer	203	7088	15831	23122
School bus	65	2192	4067	6324
Taxi passer	32	75	351	458
Paid rideshare	0	168	434	602
Walk	39	4543	12168	16750
	1944	54321	129934	186199

Mode		
Auto Drive	106897	57%
Auto Passenger	30506	16%
Transit	30875	17%
Active Transportation	17921	10%
TOTAL	186199	100%

PM

Fri Feb 09 2024 12:08:58 GMT-0500 (Eastern Standard Time) - Run Time: 2275ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:
(Type of dw 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpose 2 3
and
Planning district 35 36)

Trip 2016
Table:

	Caledon	Brampton	Mississauga	TOTAL
Transit excl	0	5115	16665	21780
Cycle	0	435	335	770
Auto driver	1513	32702	70704	104919
GO rail only	0	542	3125	3667
Joint GO rail	13	461	1944	2418
Motorcycle	0	52	32	84
Other	0	28	43	71
Auto passer	147	6634	14034	20815
School bus	0	157	389	546
Taxi passer	21	180	435	636
Paid rideshare	0	103	677	780
Walk	6	1267	4645	5918
	1700	47676	113028	162404

Mode		
Auto Drive	105074	65%
Auto Passenger	22777	14%
Transit	27865	17%
Active Transportation	6688	4%
TOTAL	162404	100%

Toronto

AM

Fri Feb 09 2024 11:31:36 GMT-0500 (Eastern Standard Time) - Run Time: 2970ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(Type of dw 3
and
Start time of trip - start_time In 600-859
and
Trip purpos 2 3
and
Planning di 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16)

Trip 2016

Table:

	PD 1 of T	PD 2 of T	PD 3 of T	PD 4 of T	PD 5 of T	PD 6 of T	PD 7 of T	PD 8 of T	PD 9 of T	PD 10 of T	PD 11 of T	PD 12 of T	PD 13 of T	PD 14 of T	PD 15 of T	PD 16 of T	TOTAL
Transit excl	36792	25214	22542	26045	11646	19085	4574	14468	5717	13013	25545	7409	20480	3371	3710	12936	252547
Cycle	6217	5722	800	1187	115	2023	248	247	44	84	279	115	365	0	0	188	17634
Auto driver	22866	16138	15946	16288	13693	11236	9649	18520	10350	12496	21976	8316	19441	4013	4316	22176	227420
GO rail only	264	340	56	0	13	125	689	287	226	10	56	38	223	221	420	316	3284
Joint GO ra	391	101	116	38	0	132	94	35	5	0	19	73	16	60	60	12	1152
Motorcycle	191	107	52	37	0	43	110	109	0	107	0	0	12	0	44	23	835
Other	114	0	34	0	0	0	28	57	4	0	0	0	0	0	13	0	250
Auto passei	2479	2292	2894	2869	3087	1999	1206	3020	3161	3591	4090	2078	5778	1275	1012	5517	46348
School bus	178	139	639	360	336	366	152	1315	585	835	566	214	737	82	349	787	7640
Taxi passer	788	324	65	148	51	371	16	117	33	77	11	7	39	0	61	256	2364
Paid ridesh.	795	92	102	182	168	231	57	57	122	39	149	71	271	61	19	155	2571
Walk	40690	6294	3618	6801	2330	4350	863	2239	3374	4135	4377	2657	4406	1303	1431	3853	92721
TOTAL	111765	56763	46864	53955	31439	39961	17686	40471	23621	34387	57068	20978	51768	10386	11435	46219	654766

Mode

Auto Drive	228505	35%
Auto Passi	58923	9%
Transit	256983	39%
Active Trai	110355	17%
TOTAL	654766	100%

PM

Fri Feb 09 2024 11:37:43 GMT-0500 (Eastern Standard Time) - Run Time: 2214ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(Type of dw 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpos 2 3
and
Planning di 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16)

Trip 2016

Table:

	PD 1 of T	PD 2 of T	PD 3 of T	PD 4 of T	PD 5 of T	PD 6 of T	PD 7 of T	PD 8 of T	PD 9 of T	PD 10 of T	PD 11 of T	PD 12 of T	PD 13 of T	PD 14 of T	PD 15 of T	PD 16 of T	TOTAL
Transit excl	37546	26315	20892	26060	10626	17919	4447	11938	4028	10273	23991	6754	18934	2697	2751	11398	236569
Cycle	8570	7492	897	1468	44	1653	289	218	44	25	492	43	267	14	37	227	21780
Auto driver	25877	15779	15183	17794	14181	13523	9933	20541	8612	11697	24952	9138	18566	4066	4851	22967	237660
GO rail only	312	390	41	0	13	164	635	329	226	10	69	45	248	121	314	328	3245
Joint GO ra	453	101	54	99	0	61	99	84	0	8	0	0	29	74	60	17	1139
Motorcycle	241	253	114	37	0	168	98	22	0	57	0	0	12	0	44	23	1069
Other	50	35	13	0	0	89	14	33	0	0	24	0	39	0	0	0	297
Auto passei	4312	2634	3393	3322	3208	2269	1501	3559	1888	3142	4951	2138	5726	1058	1557	5509	50167
School bus	42	41	116	118	45	85	0	21	0	145	79	24	136	0	258	40	1150
Taxi passer	1531	243	210	209	78	435	143	176	0	200	204	24	389	59	0	39	3940
Paid ridesh.	1602	653	279	287	132	554	203	181	63	206	213	97	214	54	0	285	5023
Walk	47809	7987	2556	5316	1477	2796	776	981	1618	1560	3724	831	1395	1192	972	2010	83000
TOTAL	128345	61923	43748	54710	29804	39716	18138	38083	16479	27323	58699	19094	45955	9335	10844	42843	645039

Mode

Auto Drive	239026	37%
Auto Passi	60280	9%
Transit	240953	37%
Active Trai	104780	16%
TOTAL	645039	100%

Yonge-Eglinton
AM

Thu Feb 08 2024 16:15:43 GMT-0500 (Eastern Standard Time) - Run Time: 4051ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dwelling unit - dwell_ 3
and
Start time of trip - start_time In 600-859
and
Trip purpose - trip_purp In 1 2 3
and
2006 GTA zone of household - gta06_hhld 201 209 210 211)

Trip 2016
Table:

	200	201	209	210	211	TOTAL					
Transit excluding GO rail	170	816	2245	1911	3990	9132					
Cycle	0	122	93	65	82	362					
Auto driver	26	314	852	885	1762	3839					
Auto passenger	0	0	81	62	84	227					
Paid rideshare	0	0	4	20	0	24					
Walk	58	206	648	469	872	2253					
TOTAL	254	1458	3923	3412	6790						
Mode	200		201		209		210		211	TOTAL	
Auto Driver	26	10%	314	22%	852	22%	885	26%	1762	26%	3839
Auto Passenger	0	0%	0	0%	85	2%	82	1%	84	1%	251
Transit	170	67%	816	56%	2245	57%	1911	56%	3990	59%	9132
Active Transportation	58	23%	328	22%	741	19%	534	16%	954	14%	2615
TOTAL	254	100%	1458	100%	3923	100%	3412	100%	6790	100%	15837

PM

Thu Feb 08 2024 17:54:41 GMT-0500 (Eastern Standard Time) - Run Time: 2011ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(Type of dw 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpos 2 3
and
2006 GTA : 201 209 210 211)

Trip 2016
Table:

	200	201	209	210	211	TOTAL					
Transit excl	100	642	2529	1836	4321	9428					
Cycle	0	63	183	65	150	461					
Auto driver	26	455	956	875	2073	4385					
Joint GO ra	0	0	0	14	0	14					
Auto passe	77	33	171	137	262	680					
Taxi passen	0	0	0	53	0	53					
Paid ridesh	0	0	27	50	32	109					
Walk	65	378	356	371	1157	2327					
TOTAL	268	1571	4222	3401	7995						
Mode	200		201		209		210		211	TOTAL	
Auto Drive	26	10%	455	29%	956	23%	875	26%	2073	26%	4385
Auto Pass	77	29%	33	2%	198	5%	240	7%	294	4%	842
Transit	100	37%	642	41%	2529	60%	1850	54%	4321	54%	9442
Active Tra	65	24%	441	28%	539	13%	436	13%	1307	16%	2788
TOTAL	268	100%	1571	100%	4222	100%	3401	100%	7995	100%	17457

Appendix G: Vehicle Turning Movement Counts





Turning Movement Count (6 . LAKESHORE RD E & ALEXANDRA AVE)

Start Time	N Approach ALEXANDRA AVE						E Approach LAKESHORE RD E						S Approach						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	UTurn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	UTurn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	UTurn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	UTurn W-W	Peds W:	Approach Total			
07:30:00	1	2	1	0	2	4	7	109	18	0	2	134	29	3	10	0	2	42	21	201	0	0	0	222	402		
07:45:00	5	1	4	0	3	10	7	143	10	0	1	160	21	1	11	0	2	33	24	235	5	0	0	264	467		
08:00:00	6	1	4	0	4	11	8	182	17	0	0	207	26	3	11	0	2	40	20	225	9	0	0	254	512		
08:15:00	14	2	6	0	3	22	13	196	16	0	1	225	27	2	9	0	0	38	28	212	13	0	0	253	538	1919	
08:30:00	9	4	5	0	4	18	3	208	18	0	1	229	28	2	11	0	5	41	22	227	8	0	0	257	545	2062	
08:45:00	5	1	2	0	1	8	5	183	13	0	0	201	18	2	9	0	2	29	18	237	7	0	0	262	500	2095	
09:00:00	4	3	3	0	6	10	7	139	15	0	1	161	25	6	8	0	3	39	23	175	2	1	2	201	411	1994	
09:15:00	4	3	2	0	4	9	4	119	12	0	0	135	23	2	19	0	2	44	19	112	3	0	1	134	322	1778	
BREAK																											
16:00:00	3	0	3	0	9	6	19	296	9	0	0	324	11	3	3	0	7	17	14	237	9	0	0	260	607		
16:15:00	5	0	3	0	5	8	14	239	10	0	0	263	23	0	9	0	3	32	14	186	10	0	1	210	513		
16:30:00	9	2	5	0	8	16	6	293	11	0	0	310	20	1	10	0	5	31	9	186	6	0	0	201	558		
16:45:00	5	0	3	0	9	8	15	269	11	0	0	295	12	0	5	0	8	17	9	200	9	0	0	218	538	2216	
17:00:00	4	0	3	0	5	7	14	282	7	0	0	303	15	1	6	0	7	22	8	218	9	0	0	235	567	2176	
17:15:00	13	0	2	0	6	15	13	307	12	0	0	332	8	0	7	0	6	15	9	237	8	0	0	254	616	2279	
17:30:00	3	0	2	0	13	5	7	274	11	1	0	293	17	0	7	0	5	24	11	197	10	0	0	218	540	2261	
17:45:00	4	2	3	0	8	9	10	215	8	0	0	233	15	0	7	0	3	22	20	237	10	0	0	267	531	2254	
Grand Total	94	21	51	0	90	166	152	3454	198	1	6	3805	318	26	142	0	62	486	269	3322	118	1	4	3710	8167	-	
Approach%	56.6%	12.7%	30.7%	0%	-	-	4%	90.8%	5.2%	0%	-	-	65.4%	5.3%	29.2%	0%	-	-	7.3%	89.5%	3.2%	0%	-	-	-	-	
Totals %	1.2%	0.3%	0.6%	0%	2%	2%	1.9%	42.3%	2.4%	0%	46.6%	46.6%	3.9%	0.3%	1.7%	0%	6%	6%	3.3%	40.7%	1.4%	0%	45.4%	45.4%	-	-	
Heavy	3	0	4	0	-	-	1	127	4	0	-	-	4	0	1	0	-	-	2	121	2	0	-	-	-	-	
Heavy %	3.2%	0%	7.8%	0%	-	-	0.7%	3.7%	2%	0%	-	-	1.3%	0%	0.7%	0%	-	-	0.7%	3.6%	1.7%	0%	-	-	-	-	
Bicycles	0	0	0	0	-	-	4	8	2	0	-	-	0	2	0	0	-	-	0	5	0	0	-	-	-	-	
Bicycle %	0%	0%	0%	0%	-	-	2.6%	0.2%	1%	0%	-	-	0%	7.7%	0%	0%	-	-	0%	0.2%	0%	0%	-	-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

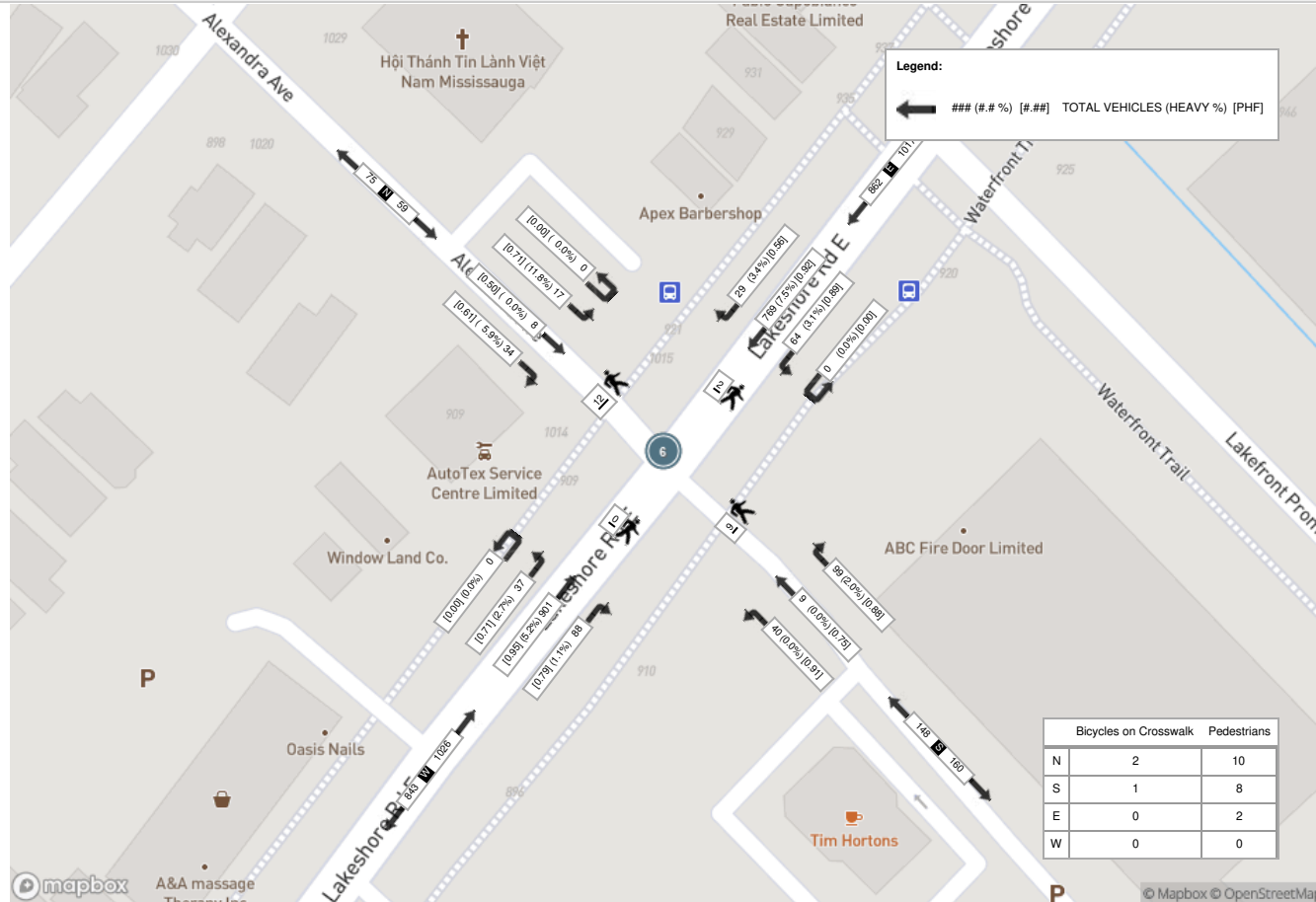
Start Time	N Approach ALEXANDRA AVE						E Approach LAKESHORE RD E						S Approach						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	6	1	4	0	4	11	8	182	17	0	0	207	26	3	11	0	2	40	20	225	9	0	0	254	512
08:15:00	14	2	6	0	3	22	13	196	16	0	1	225	27	2	9	0	0	38	28	212	13	0	0	253	538
08:30:00	9	4	5	0	4	18	3	208	18	0	1	229	28	2	11	0	5	41	22	227	8	0	0	257	545
08:45:00	5	1	2	0	1	8	5	183	13	0	0	201	18	2	9	0	2	29	18	237	7	0	0	262	500
Grand Total	34	8	17	0	12	59	29	769	64	0	2	862	99	9	40	0	9	148	88	901	37	0	0	1026	2095
Approach%	57.6%	13.6%	28.8%	0%		-	3.4%	89.2%	7.4%	0%		-	66.9%	6.1%	27%	0%		-	8.6%	87.8%	3.6%	0%		-	-
Totals %	1.6%	0.4%	0.8%	0%		2.8%	1.4%	36.7%	3.1%	0%		41.1%	4.7%	0.4%	1.9%	0%		7.1%	4.2%	43%	1.8%	0%		49%	-
PHF	0.61	0.5	0.71	0		0.67	0.56	0.92	0.89	0		0.94	0.88	0.75	0.91	0		0.9	0.79	0.95	0.71	0		0.98	-
Heavy	2	0	2	0		4	1	58	2	0		61	2	0	0	0		2	1	47	1	0		49	-
Heavy %	5.9%	0%	11.8%	0%		6.8%	3.4%	7.5%	3.1%	0%		7.1%	2%	0%	0%	0%		1.4%	1.1%	5.2%	2.7%	0%		4.8%	-
Lights	32	8	15	0		55	28	711	62	0		801	97	9	40	0		146	87	854	36	0		977	-
Lights %	94.1%	100%	88.2%	0%		93.2%	96.6%	92.5%	96.9%	0%		92.9%	98%	100%	100%	0%		98.6%	98.9%	94.8%	97.3%	0%		95.2%	-
Single-Unit Trucks	0	0	1	0		1	0	42	2	0		44	2	0	0	0		2	1	35	1	0		37	-
Single-Unit Trucks %	0%	0%	5.9%	0%		1.7%	0%	5.5%	3.1%	0%		5.1%	2%	0%	0%	0%		1.4%	1.1%	3.9%	2.7%	0%		3.6%	-
Buses	2	0	1	0		3	1	12	0	0		13	0	0	0	0		0	0	5	0	0		5	-
Buses %	5.9%	0%	5.9%	0%		5.1%	3.4%	1.6%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	-
Articulated Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	7	0	0		7	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.7%	-
Pedestrians	-	-	-	-	10	-	-	-	-	2	-	-	-	-	-	-	8	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	43.5%	-	-	-	-	8.7%	-	-	-	-	-	-	34.8%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	2	1	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	8.7%	-	-	-	-	0%	-	-	-	-	-	4.3%	-	-	-	-	-	-	0%	-	-



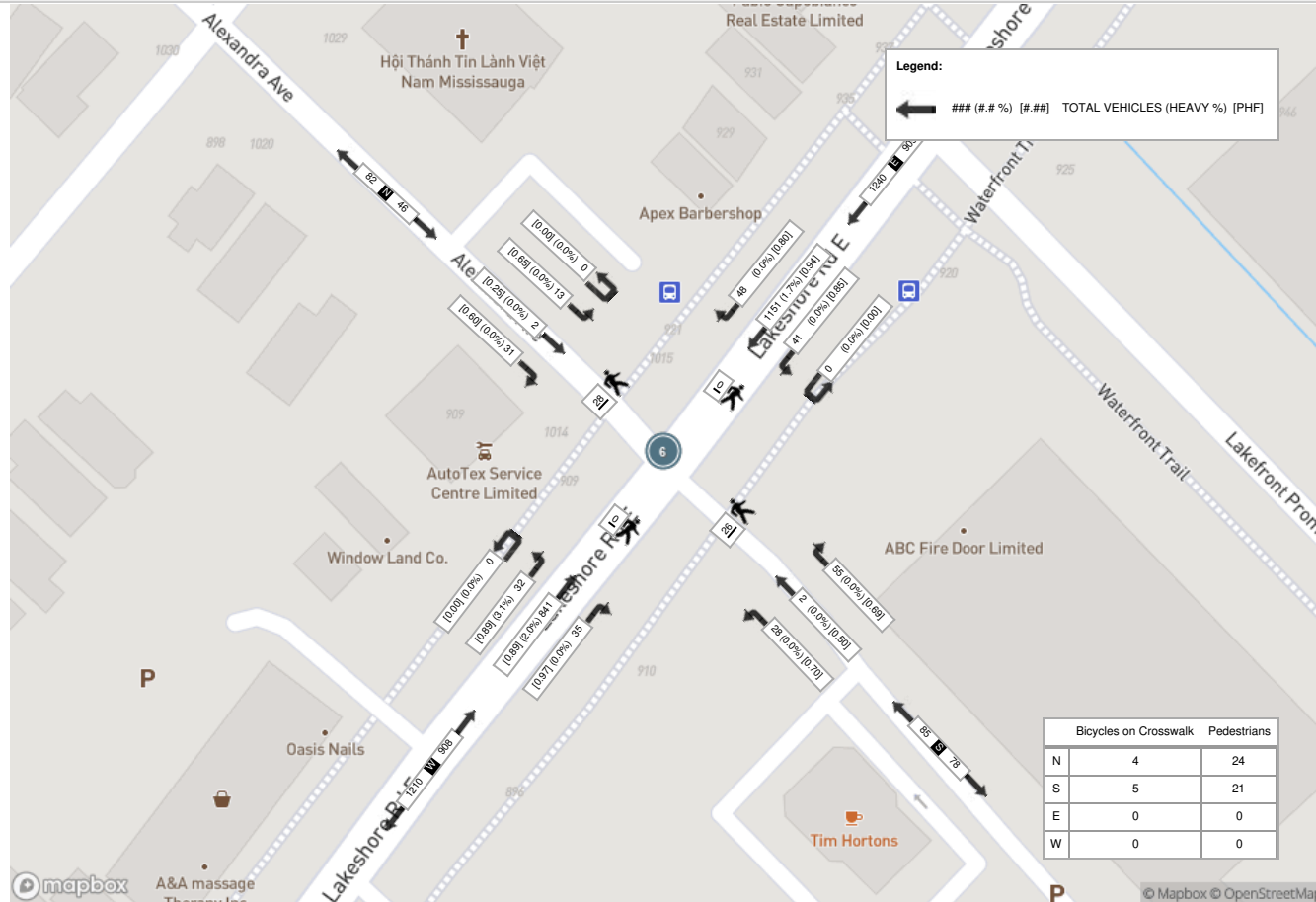
Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach ALEXANDRA AVE						E Approach LAKESHORE RD E						S Approach						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	9	2	5	0	8	16	6	293	11	0	0	310	20	1	10	0	5	31	9	186	6	0	0	201	558
16:45:00	5	0	3	0	9	8	15	269	11	0	0	295	12	0	5	0	8	17	9	200	9	0	0	218	538
17:00:00	4	0	3	0	5	7	14	282	7	0	0	303	15	1	6	0	7	22	8	218	9	0	0	235	567
17:15:00	13	0	2	0	6	15	13	307	12	0	0	332	8	0	7	0	6	15	9	237	8	0	0	254	616
Grand Total	31	2	13	0	28	46	48	1151	41	0	0	1240	55	2	28	0	26	85	35	841	32	0	0	908	2279
Approach%	67.4%	4.3%	28.3%	0%	-	-	3.9%	92.8%	3.3%	0%	-	-	64.7%	2.4%	32.9%	0%	-	-	3.9%	92.6%	3.5%	0%	-	-	-
Totals %	1.4%	0.1%	0.6%	0%	2%	2%	2.1%	50.5%	1.8%	0%	54.4%	54.4%	2.4%	0.1%	1.2%	0%	3.7%	3.7%	1.5%	36.9%	1.4%	0%	39.8%	39.8%	-
PHF	0.6	0.25	0.65	0	0.72	0.72	0.8	0.94	0.85	0	0.93	0.93	0.69	0.5	0.7	0	0.69	0.69	0.97	0.89	0.89	0	0.89	0.89	-
Heavy	0	0	0	0	0	0	0	19	0	0	19	19	0	0	0	0	0	0	0	17	1	0	18	18	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.7%	0%	0%	1.5%	1.5%	0%	0%	0%	0%	0%	0%	0%	2%	3.1%	0%	2%	2%	-
Lights	31	2	13	0	46	46	48	1132	41	0	1221	1221	55	2	28	0	85	85	35	824	31	0	890	890	-
Lights %	100%	100%	100%	0%	100%	100%	100%	98.3%	100%	0%	98.5%	98.5%	100%	100%	100%	0%	100%	100%	100%	98%	96.9%	0%	98%	98%	-
Single-Unit Trucks	0	0	0	0	0	0	0	11	0	0	11	11	0	0	0	0	0	0	0	13	1	0	14	14	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	1.5%	3.1%	0%	1.5%	1.5%	-
Buses	0	0	0	0	0	0	0	4	0	0	4	4	0	0	0	0	0	0	0	2	0	0	2	2	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0.2%	-
Articulated Trucks	0	0	0	0	0	0	0	4	0	0	4	4	0	0	0	0	0	0	0	2	0	0	2	2	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0.2%	-
Pedestrians	-	-	-	-	24	-	-	-	-	0	-	-	-	-	-	-	21	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	44.4%	-	-	-	-	0%	-	-	-	-	-	-	38.9%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	4	4	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	0	-	-	-	-	-	-	5	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	7.4%	-	-	-	-	0%	-	-	-	-	-	-	9.3%	-	-	-	-	-	0%	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (9 . LAKESHORE RD E & EDGELEIGH AVE)

Start Time	N Approach EDGELEIGH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:30:00	2	0	0	0	2	2	1	136	1	0	0	138	2	0	0	0	2	2	0	244	0	0	0	244	386		
07:45:00	0	0	1	0	3	1	0	161	0	0	0	161	0	0	0	0	4	0	0	227	2	0	0	229	391		
08:00:00	0	0	1	0	1	1	0	201	0	0	0	201	0	0	0	0	3	0	1	239	2	0	0	242	444		
08:15:00	3	0	0	0	5	3	0	231	2	0	0	233	1	0	2	0	4	3	2	235	2	0	0	239	478	1699	
08:30:00	0	0	1	0	5	1	0	208	0	0	0	208	2	0	0	0	9	2	3	247	4	0	0	254	465	1778	
08:45:00	2	0	2	0	4	4	1	203	3	0	0	207	0	0	2	0	4	2	3	230	1	0	0	234	447	1834	
09:00:00	0	0	0	0	3	0	2	141	2	0	0	145	0	0	0	0	2	0	2	196	0	0	0	198	343	1733	
09:15:00	1	0	1	0	5	2	3	122	1	0	0	126	1	0	0	0	4	1	0	121	1	0	0	122	251	1506	
BREAK																											
16:00:00	1	0	1	0	4	2	0	289	2	0	0	291	1	0	2	0	15	3	3	243	4	0	3	250	546		
16:15:00	2	0	1	0	2	3	2	258	1	0	0	261	3	0	2	0	6	5	3	200	5	0	0	208	477		
16:30:00	1	0	0	0	9	1	0	284	4	0	0	288	0	0	2	0	10	2	4	181	2	0	0	187	478		
16:45:00	1	0	1	0	6	2	2	283	2	0	0	287	4	0	0	0	12	4	4	218	3	0	0	225	518	2019	
17:00:00	1	0	4	0	6	5	3	294	1	0	0	298	4	0	4	0	10	8	3	219	0	1	0	223	534	2007	
17:15:00	0	0	3	0	5	3	0	313	0	0	0	313	4	0	2	0	10	6	5	235	1	0	0	241	563	2093	
17:30:00	2	0	0	0	10	2	3	266	3	0	0	272	2	0	4	0	8	6	0	202	1	0	0	203	483	2098	
17:45:00	1	0	2	0	9	3	6	225	0	0	0	231	2	0	1	0	4	3	0	245	1	0	0	246	483	2063	
Grand Total	17	0	18	0	79	35	23	3615	22	0	0	3660	26	0	21	0	107	47	33	3482	29	1	3	3545	7287	-	
Approach%	48.6%	0%	51.4%	0%		-	0.6%	98.8%	0.6%	0%		-	55.3%	0%	44.7%	0%		-	0.9%	98.2%	0.8%	0%		-	-	-	
Totals %	0.2%	0%	0.2%	0%		0.5%	0.3%	49.6%	0.3%	0%		50.2%	0.4%	0%	0.3%	0%		0.6%	0.5%	47.8%	0.4%	0%		48.6%	-	-	
Heavy	0	0	0	0		-	2	122	6	0		-	3	0	1	0		-	1	119	0	0		-	-	-	
Heavy %	0%	0%	0%	0%		-	8.7%	3.4%	27.3%	0%		-	11.5%	0%	4.8%	0%		-	3%	3.4%	0%	0%		-	-	-	
Bicycles	0	1	0	0		-	2	10	0	0		-	0	1	0	0		-	0	7	0	0		-	-	-	
Bicycle %	0%	0%	0%	0%		-	8.7%	0.3%	0%	0%		-	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

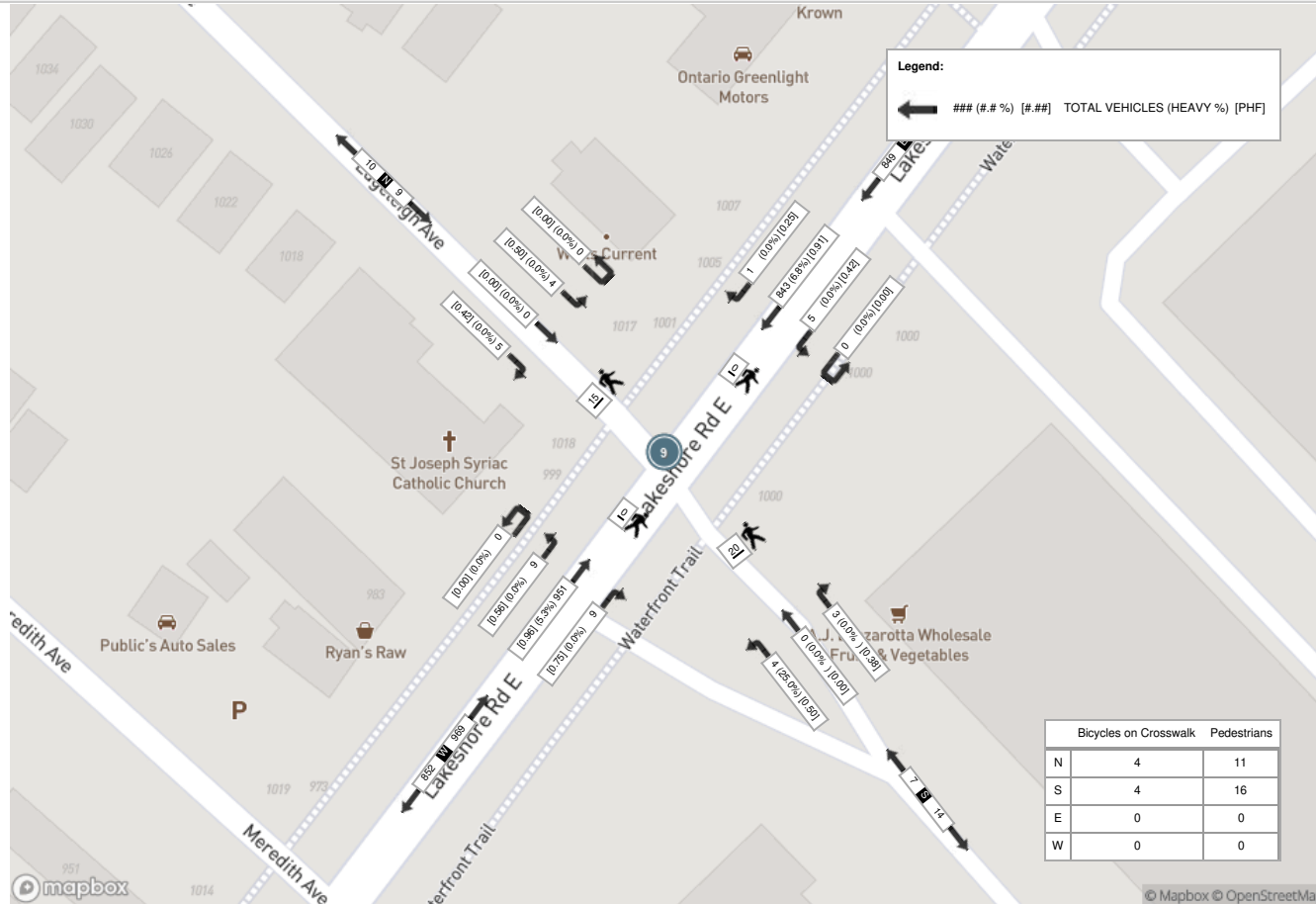
Start Time	N Approach EDGELEIGH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	0	0	1	0	1	1	0	201	0	0	0	201	0	0	0	0	3	0	1	239	2	0	0	242	444
08:15:00	3	0	0	0	5	3	0	231	2	0	0	233	1	0	2	0	4	3	2	235	2	0	0	239	478
08:30:00	0	0	1	0	5	1	0	208	0	0	0	208	2	0	0	0	9	2	3	247	4	0	0	254	465
08:45:00	2	0	2	0	4	4	1	203	3	0	0	207	0	0	2	0	4	2	3	230	1	0	0	234	447
Grand Total	5	0	4	0	15	9	1	843	5	0	0	849	3	0	4	0	20	7	9	951	9	0	0	969	1834
Approach%	55.6%	0%	44.4%	0%	-	-	0.1%	99.3%	0.6%	0%	-	-	42.9%	0%	57.1%	0%	-	-	0.9%	98.1%	0.9%	0%	-	-	
Totals %	0.3%	0%	0.2%	0%	0.5%	0.5%	0.1%	46%	0.3%	0%	46.3%	0.2%	0%	0.2%	0%	0.4%	0.5%	51.9%	0.5%	0%	52.8%	-	-		
PHF	0.42	0	0.5	0	0.56	0.56	0.25	0.91	0.42	0	0.91	0.38	0	0.5	0	0.58	0.75	0.96	0.56	0	0.95	-	-		
Heavy	0	0	0	0	0	0	0	57	0	0	57	0	0	1	0	1	0	50	0	0	50	-	-		
Heavy %	0%	0%	0%	0%	0%	0%	0%	6.8%	0%	0%	6.7%	0%	0%	25%	0%	14.3%	0%	5.3%	0%	0%	5.2%	-	-		
Lights	5	0	4	0	9	9	1	786	5	0	792	3	0	3	0	6	9	901	9	0	919	-	-		
Lights %	100%	0%	100%	0%	100%	100%	100%	93.2%	100%	0%	93.3%	100%	0%	75%	0%	85.7%	100%	94.7%	100%	0%	94.8%	-	-		
Single-Unit Trucks	0	0	0	0	0	0	0	39	0	0	39	0	0	1	0	1	0	39	0	0	39	-	-		
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	4.6%	0%	0%	4.6%	0%	0%	25%	0%	14.3%	0%	4.1%	0%	0%	4%	-	-		
Buses	0	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	6	0	0	6	-	-		
Buses %	0%	0%	0%	0%	0%	0%	0%	1.5%	0%	0%	1.5%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.6%	-	-		
Articulated Trucks	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	-	-		
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.6%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	-	-		
Pedestrians	-	-	-	-	11	-	-	-	-	0	-	-	-	-	16	-	-	-	-	-	0	-	-		
Pedestrians%	-	-	-	-	31.4%	-	-	-	-	0%	-	-	-	-	45.7%	-	-	-	-	0%	-	-			
Bicycles on Road	0	0	0	0	0	-	0	3	0	0	-	0	0	0	0	0	-	0	2	0	0	-	-		
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-			
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	0	-	-	-	-	4	-	-	-	-	-	0	-	-		
Bicycles on Crosswalk%	-	-	-	-	11.4%	-	-	-	-	0%	-	-	-	-	11.4%	-	-	-	-	0%	-	-			



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach EDGELEIGH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	1	0	1	0	6	2	2	283	2	0	0	287	4	0	0	0	12	4	4	218	3	0	0	225	518
17:00:00	1	0	4	0	6	5	3	294	1	0	0	298	4	0	4	0	10	8	3	219	0	1	0	223	534
17:15:00	0	0	3	0	5	3	0	313	0	0	0	313	4	0	2	0	10	6	5	235	1	0	0	241	563
17:30:00	2	0	0	0	10	2	3	266	3	0	0	272	2	0	4	0	8	6	0	202	1	0	0	203	483
Grand Total	4	0	8	0	27	12	8	1156	6	0	0	1170	14	0	10	0	40	24	12	874	5	1	0	892	2098
Approach%	33.3%	0%	66.7%	0%	-	-	0.7%	98.8%	0.5%	0%	-	-	58.3%	0%	41.7%	0%	-	-	1.3%	98%	0.6%	0.1%	-	-	
Totals %	0.2%	0%	0.4%	0%	0.6%	0.6%	0.4%	55.1%	0.3%	0%	55.8%	0.7%	0%	0.5%	0%	1.1%	0.6%	41.7%	0.2%	0%	42.5%	-	-		
PHF	0.5	0	0.5	0	0.6	0.67	0.92	0.5	0	0.93	0.88	0	0.63	0	0.75	0.6	0.93	0.42	0.25	0.93	-	-			
Heavy	0	0	0	0	0	0	0	13	2	0	15	1	0	0	0	1	1	11	0	0	12	-			
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.1%	33.3%	0%	1.3%	7.1%	0%	0%	0%	4.2%	8.3%	1.3%	0%	0%	1.3%	-			
Lights	4	0	8	0	12	8	1143	4	0	1155	13	0	10	0	23	11	863	5	1	880	-				
Lights %	100%	0%	100%	0%	100%	100%	100%	98.9%	66.7%	0%	98.7%	92.9%	0%	100%	0%	95.8%	91.7%	98.7%	100%	100%	98.7%	-			
Single-Unit Trucks	0	0	0	0	0	0	0	10	2	0	12	1	0	0	0	1	1	8	0	0	9	-			
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.9%	33.3%	0%	1%	7.1%	0%	0%	0%	4.2%	8.3%	0.9%	0%	0%	1%	-			
Buses	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	-			
Buses %	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	-			
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	-			
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	-			
Pedestrians	-	-	-	-	23	-	-	-	-	0	-	-	-	-	32	-	-	-	-	-	0	-			
Pedestrians%	-	-	-	-	34.3%	-	-	-	-	0%	-	-	-	-	47.8%	-	-	-	-	-	0%	-			
Bicycles on Road	0	0	0	0	0	-	1	1	0	0	0	0	0	0	0	-	0	2	0	0	0	-			
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-			
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	0	-	-	-	-	8	-	-	-	-	-	0	-			
Bicycles on Crosswalk%	-	-	-	-	6%	-	-	-	-	0%	-	-	-	-	11.9%	-	-	-	-	-	0%	-			

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)





Turning Movement Count (15 . LAKESHORE RD E & FERGUS AVE)

Start Time	N Approach FERGUS AVE						E Approach LAKESHORE RD E						S Approach FERGUS AVE						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:30:00	5	0	1	0	5	6	3	137	1	0	0	141	2	0	5	0	7	7	6	218	1	0	3	225	379		
07:45:00	9	0	2	0	4	11	4	165	6	0	0	175	1	0	1	0	2	2	10	224	1	0	0	235	423		
08:00:00	9	0	6	0	4	15	3	206	11	0	0	220	4	0	7	0	6	11	9	227	4	0	0	240	486		
08:15:00	14	0	2	0	5	16	4	241	13	0	0	258	3	0	2	0	9	5	16	225	9	0	1	250	529	1817	
08:30:00	8	0	3	0	5	11	1	207	10	0	2	218	12	0	12	0	11	24	5	230	3	0	2	238	491	1929	
08:45:00	7	0	6	0	1	13	2	196	5	0	0	203	9	0	5	0	10	14	6	233	5	0	1	244	474	1980	
09:00:00	9	0	0	0	3	9	2	145	5	0	0	152	4	0	4	0	5	8	4	188	2	0	1	194	363	1857	
09:15:00	8	0	3	0	1	11	0	122	3	0	0	125	2	0	6	0	3	8	3	135	3	0	0	141	285	1613	
BREAK																											
16:00:00	7	0	3	0	8	10	5	262	0	0	0	267	15	0	14	0	18	29	0	254	5	0	1	259	565		
16:15:00	5	0	6	0	7	11	8	270	1	1	1	280	16	0	9	0	21	25	1	224	6	0	3	231	547		
16:30:00	7	0	2	0	7	9	6	288	0	0	0	294	1	0	4	0	19	5	0	211	9	0	2	220	528		
16:45:00	7	0	4	0	4	11	4	304	0	0	2	308	0	0	1	0	16	1	2	222	7	0	0	231	551	2191	
17:00:00	9	0	2	0	9	11	3	301	1	0	0	305	3	0	4	0	22	7	1	244	9	0	0	254	577	2203	
17:15:00	8	0	4	0	3	12	1	321	1	0	1	323	6	0	4	0	18	10	0	240	11	0	2	251	596	2252	
17:30:00	8	0	1	0	8	9	6	289	0	1	0	296	4	0	8	0	20	12	0	213	10	0	0	223	540	2264	
17:45:00	6	0	4	0	9	10	4	250	2	0	0	256	3	0	5	0	13	8	1	247	10	0	0	258	532	2245	
Grand Total	126	0	49	0	83	175	56	3704	59	2	6	3821	85	0	91	0	200	176	64	3535	95	0	16	3694	7866	-	
Approach%	72%	0%	28%	0%		-	1.5%	96.9%	1.5%	0.1%		-	48.3%	0%	51.7%	0%		-	1.7%	95.7%	2.6%	0%		-	-	-	
Totals %	1.6%	0%	0.6%	0%		2.2%	0.7%	47.1%	0.8%	0%		48.6%	1.1%	0%	1.2%	0%		2.2%	0.8%	44.9%	1.2%	0%		47%	-	-	
Heavy	8	0	1	0		-	0	131	28	0		-	28	0	28	0		-	32	118	6	0		-	-	-	
Heavy %	6.3%	0%	2%	0%		-	0%	3.5%	47.5%	0%		-	32.9%	0%	30.8%	0%		-	50%	3.3%	6.3%	0%		-	-	-	
Bicycles	1	0	1	0		-	1	14	0	0		-	0	0	1	0		-	0	16	0	0		-	-	-	
Bicycle %	0.8%	0%	2%	0%		-	1.8%	0.4%	0%	0%		-	0%	0%	1.1%	0%		-	0%	0.5%	0%	0%		-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

Start Time	N Approach FERGUS AVE						E Approach LAKESHORE RD E						S Approach FERGUS AVE						W Approach LAKESHORE RD E						Int. Total (15 min)	
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total		
08:00:00	9	0	6	0	4	15	3	206	11	0	0	220	4	0	7	0	6	11	9	227	4	0	0	240	486	
08:15:00	14	0	2	0	5	16	4	241	13	0	0	258	3	0	2	0	9	5	16	225	9	0	1	250	529	
08:30:00	8	0	3	0	5	11	1	207	10	0	2	218	12	0	12	0	11	24	5	230	3	0	2	238	491	
08:45:00	7	0	6	0	1	13	2	196	5	0	0	203	9	0	5	0	10	14	6	233	5	0	1	244	474	
Grand Total	38	0	17	0	15	55	10	850	39	0	2	899	28	0	26	0	36	54	36	915	21	0	4	972	1980	
Approach%	69.1%	0%	30.9%	0%		-	1.1%	94.5%	4.3%	0%		-	51.9%	0%	48.1%	0%		-	3.7%	94.1%	2.2%	0%		-	-	
Totals %	1.9%	0%	0.9%	0%		2.8%	0.5%	42.9%	2%	0%		45.4%	1.4%	0%	1.3%	0%		2.7%	1.8%	46.2%	1.1%	0%		49.1%	-	
PHF	0.68	0	0.71	0		0.86	0.63	0.88	0.75	0		0.87	0.58	0	0.54	0		0.56	0.56	0.98	0.58	0		0.97	-	
Heavy	5	0	0	0		5	0	56	22	0		78	19	0	15	0		34	21	38	1	0		60	-	
Heavy %	13.2%	0%	0%	0%		9.1%	0%	6.6%	56.4%	0%		8.7%	67.9%	0%	57.7%	0%		63%	58.3%	4.2%	4.8%	0%		6.2%	-	
Lights	33	0	17	0		50	10	794	17	0		821	9	0	11	0		20	15	877	20	0		912	-	
Lights %	86.8%	0%	100%	0%		90.9%	100%	93.4%	43.6%	0%		91.3%	32.1%	0%	42.3%	0%		37%	41.7%	95.8%	95.2%	0%		93.8%	-	
Single-Unit Trucks	1	0	0	0		1	0	29	21	0		50	19	0	14	0		33	18	25	1	0		44	-	
Single-Unit Trucks %	2.6%	0%	0%	0%		1.8%	0%	3.4%	53.8%	0%		5.6%	67.9%	0%	53.8%	0%		61.1%	50%	2.7%	4.8%	0%		4.5%	-	
Buses	4	0	0	0		4	0	19	0	0		19	0	0	0	0		0	0	11	0	0		11	-	
Buses %	10.5%	0%	0%	0%		7.3%	0%	2.2%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.1%	-	
Articulated Trucks	0	0	0	0		0	0	8	1	0		9	0	0	1	0		1	3	2	0	0		5	-	
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.9%	2.6%	0%		1%	0%	0%	3.8%	0%		1.9%	8.3%	0.2%	0%	0%		0.5%	-	
Pedestrians	-	-	-	-	15	-	-	-	-	2		-	-	-	-	15		-	-	-	-	-	4		-	-
Pedestrians%	-	-	-	-	26.3%	-	-	-	-	3.5%		-	-	-	-	26.3%		-	-	-	-	-	7%		-	-
Bicycles on Road	1	0	0	0	0	-	1	2	0	0	0	-	0	0	0	0	0	-	0	4	0	0	0	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	-	0%		-	
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0		-	-	-	-	21		-	-	-	-	-	0	-	-	
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%		-	-	-	-	36.8%		-	-	-	-	-	0%		-	



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach FERGUS AVE						E Approach LAKESHORE RD E						S Approach FERGUS AVE						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	7	0	4	0	4	11	4	304	0	0	2	308	0	0	1	0	16	1	2	222	7	0	0	231	551
17:00:00	9	0	2	0	9	11	3	301	1	0	0	305	3	0	4	0	22	7	1	244	9	0	0	254	577
17:15:00	8	0	4	0	3	12	1	321	1	0	1	323	6	0	4	0	18	10	0	240	11	0	2	251	596
17:30:00	8	0	1	0	8	9	6	289	0	1	0	296	4	0	8	0	20	12	0	213	10	0	0	223	540
Grand Total	32	0	11	0	24	43	14	1215	2	1	3	1232	13	0	17	0	76	30	3	919	37	0	2	959	2264
Approach%	74.4%	0%	25.6%	0%	-	-	1.1%	98.6%	0.2%	0.1%	-	-	43.3%	0%	56.7%	0%	-	-	0.3%	95.8%	3.9%	0%	-	-	-
Totals %	1.4%	0%	0.5%	0%	1.9%	1.9%	0.6%	53.7%	0.1%	0%	54.4%	0.6%	0%	0.8%	0%	1.3%	0.1%	40.6%	1.6%	0%	42.4%	-	-	-	
PHF	0.89	0	0.69	0	0.9	0.9	0.58	0.95	0.5	0.25	0.95	0.54	0	0.53	0	0.63	0.38	0.94	0.84	0	0.94	-	-	-	
Heavy	1	0	0	0	1	1	0	16	0	0	16	0	0	2	0	2	1	24	1	0	26	-	-	-	
Heavy %	3.1%	0%	0%	0%	2.3%	2.3%	0%	1.3%	0%	0%	1.3%	0%	0%	11.8%	0%	6.7%	33.3%	2.6%	2.7%	0%	2.7%	-	-	-	
Lights	31	0	11	0	42	42	14	1199	2	1	1216	13	0	15	0	28	2	895	36	0	933	-	-	-	
Lights %	96.9%	0%	100%	0%	97.7%	97.7%	100%	98.7%	100%	100%	98.7%	100%	0%	88.2%	0%	93.3%	66.7%	97.4%	97.3%	0%	97.3%	-	-	-	
Single-Unit Trucks	1	0	0	0	1	1	0	9	0	0	9	0	0	2	0	2	1	15	1	0	17	-	-	-	
Single-Unit Trucks %	3.1%	0%	0%	0%	2.3%	2.3%	0%	0.7%	0%	0%	0.7%	0%	0%	11.8%	0%	6.7%	33.3%	1.6%	2.7%	0%	1.8%	-	-	-	
Buses	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	8	0	0	8	-	-	-	
Buses %	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.8%	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	-	-	-	
Pedestrians	-	-	-	-	20	-	-	-	-	-	3	-	-	-	-	14	-	-	-	-	2	-	-	-	
Pedestrians%	-	-	-	-	19%	-	-	-	-	-	2.9%	-	-	-	-	13.3%	-	-	-	-	1.9%	-	-	-	
Bicycles on Road	0	0	1	0	0	-	0	4	0	0	0	-	0	0	0	0	-	0	4	0	0	0	-	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	62	-	-	-	-	0	-	-	-	
Bicycles on Crosswalk%	-	-	-	-	3.8%	-	-	-	-	-	0%	-	-	-	-	59%	-	-	-	-	0%	-	-	-	

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (3 . LAKESHORE RD E & GREAVES AVE)

Start Time	N Approach GREAVES AVE					E Approach LAKESHORE RD E					W Approach LAKESHORE RD E					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:30:00	1	0	0	2	1	0	122	0	0	122	244	2	0	0	246	369	
07:45:00	1	2	0	2	3	4	161	0	0	165	280	1	0	0	281	449	
08:00:00	2	3	0	1	5	3	188	0	1	191	255	0	0	0	255	451	
08:15:00	2	2	0	1	4	5	210	0	1	215	273	3	0	0	276	495	1764
08:30:00	0	0	0	6	0	2	213	0	2	215	273	1	0	2	274	489	1884
08:45:00	3	2	0	4	5	4	211	0	2	215	237	3	0	0	240	460	1895
09:00:00	2	0	0	3	2	1	133	0	1	134	224	2	0	0	226	362	1806
09:15:00	1	2	0	0	3	1	151	0	0	152	144	1	0	0	145	300	1611
BREAK																	
16:00:00	1	1	0	4	2	13	288	0	0	301	287	6	0	0	293	596	
16:15:00	2	0	0	2	2	5	250	0	0	255	213	7	0	0	220	477	
16:30:00	6	0	0	3	6	13	274	0	2	287	207	9	1	0	217	510	
16:45:00	3	1	0	5	4	11	263	0	0	274	229	5	0	0	234	512	2095
17:00:00	1	0	0	7	1	17	256	0	0	273	252	8	0	0	260	534	2033
17:15:00	4	0	0	7	4	6	293	0	0	299	224	6	0	0	230	533	2089
17:30:00	5	0	0	11	5	13	237	0	0	250	251	12	0	2	263	518	2097
17:45:00	3	1	0	14	4	11	232	0	1	243	246	4	0	0	250	497	2082
Grand Total	37	14	0	72	51	109	3482	0	10	3591	3839	70	1	4	3910	7552	-
Approach%	72.5%	27.5%	0%		-	3%	97%	0%		-	98.2%	1.8%	0%		-	-	-
Totals %	0.5%	0.2%	0%		0.7%	1.4%	46.1%	0%		47.6%	50.8%	0.9%	0%		51.8%	-	-
Heavy	2	0	0		-	1	133	0		-	130	1	0		-	-	-
Heavy %	5.4%	0%	0%		-	0.9%	3.8%	0%		-	3.4%	1.4%	0%		-	-	-
Bicycles	0	0	0		-	0	8	0		-	8	0	0		-	-	-
Bicycle %	0%	0%	0%		-	0%	0.2%	0%		-	0.2%	0%	0%		-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

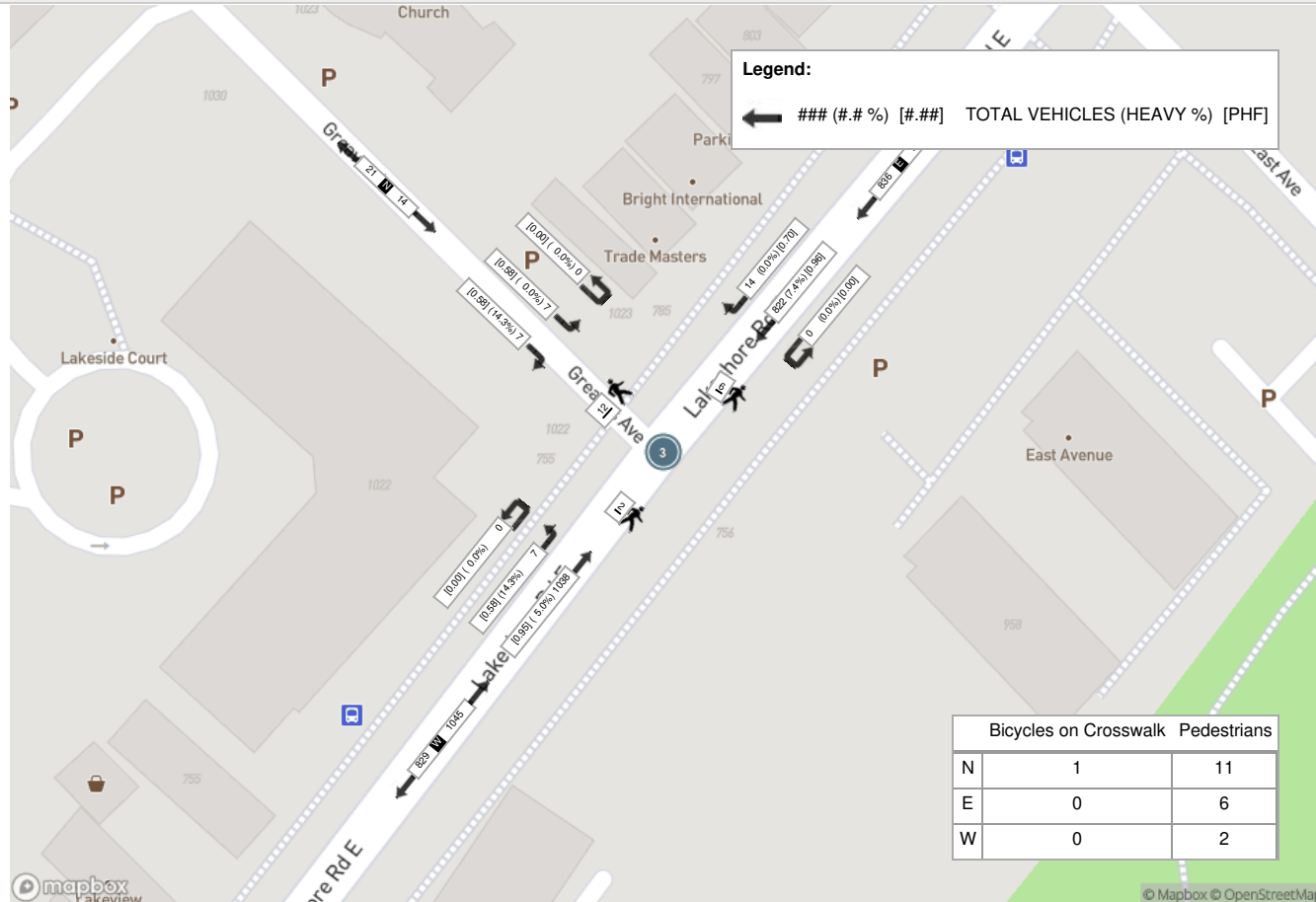
Start Time	N Approach GREAVES AVE					E Approach LAKESHORE RD E					W Approach LAKESHORE RD E					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	2	3	0	1	5	3	188	0	1	191	255	0	0	0	255	451
08:15:00	2	2	0	1	4	5	210	0	1	215	273	3	0	0	276	495
08:30:00	0	0	0	6	0	2	213	0	2	215	273	1	0	2	274	489
08:45:00	3	2	0	4	5	4	211	0	2	215	237	3	0	0	240	460
Grand Total	7	7	0	12	14	14	822	0	6	836	1038	7	0	2	1045	1895
Approach%	50%	50%	0%		-	1.7%	98.3%	0%		-	99.3%	0.7%	0%		-	-
Totals %	0.4%	0.4%	0%		0.7%	0.7%	43.4%	0%		44.1%	54.8%	0.4%	0%		55.1%	-
PHF	0.58	0.58	0		0.7	0.7	0.96	0		0.97	0.95	0.58	0		0.95	-
Heavy	1	0	0		1	0	61	0		61	52	1	0		53	-
Heavy %	14.3%	0%	0%		7.1%	0%	7.4%	0%		7.3%	5%	14.3%	0%		5.1%	-
Lights	6	7	0		13	14	761	0		775	986	6	0		992	-
Lights %	85.7%	100%	0%		92.9%	100%	92.6%	0%		92.7%	95%	85.7%	0%		94.9%	-
Single-Unit Trucks	0	0	0		0	0	41	0		41	39	0	0		39	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	5%	0%		4.9%	3.8%	0%	0%		3.7%	-
Buses	1	0	0		1	0	15	0		15	6	1	0		7	-
Buses %	14.3%	0%	0%		7.1%	0%	1.8%	0%		1.8%	0.6%	14.3%	0%		0.7%	-
Articulated Trucks	0	0	0		0	0	5	0		5	7	0	0		7	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.6%	0%		0.6%	0.7%	0%	0%		0.7%	-
Pedestrians	-	-	-	11	-	-	-	-	6	-	-	-	-	2	-	-
Pedestrians%	-	-	-	55%	-	-	-	-	30%	-	-	-	-	10%	-	-
Bicycles on Road	0	0	0	0	-	0	2	0	0	-	1	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	5%	-	-	-	-	0%	-	-	-	-	0%	-	-



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)

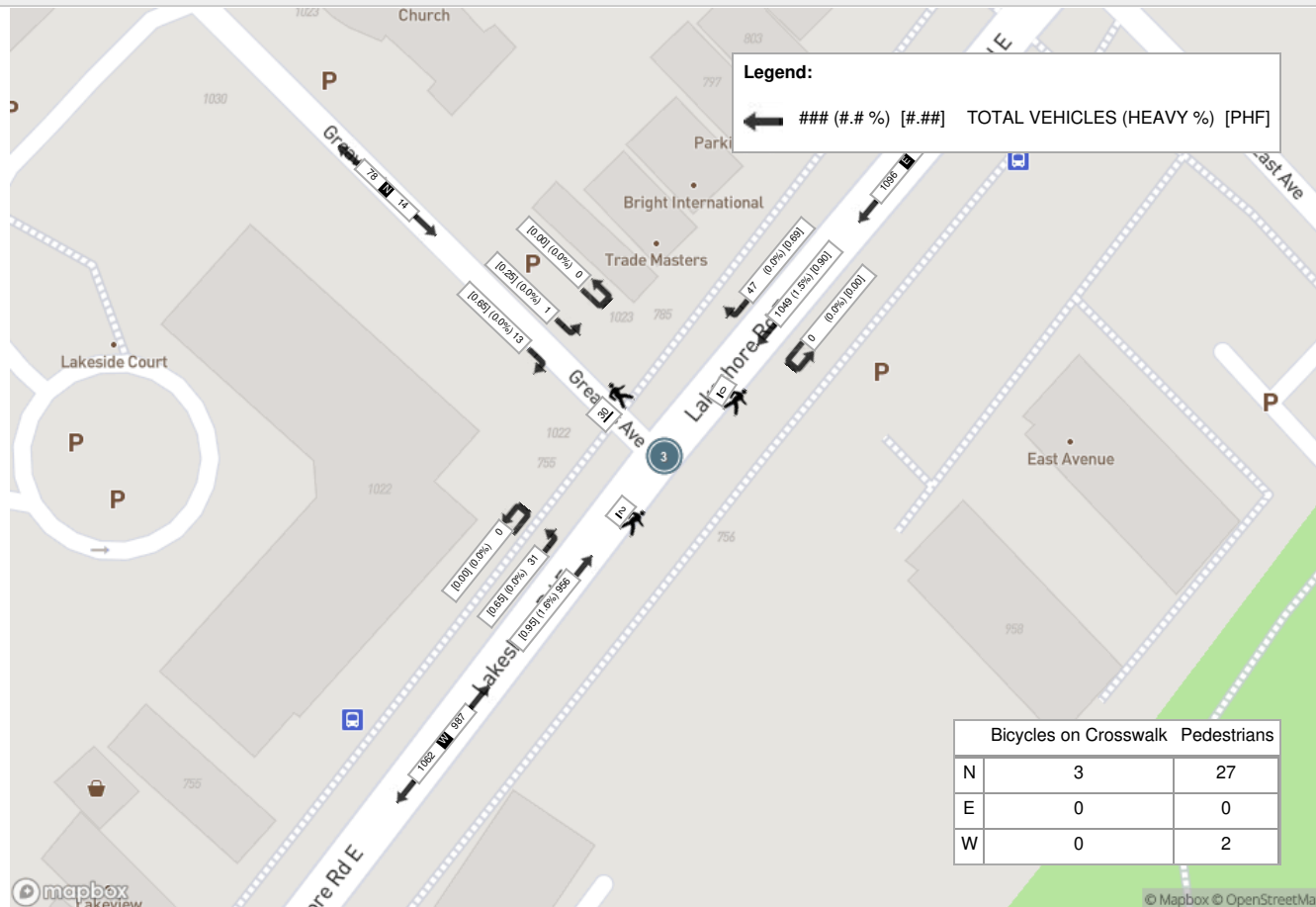
Start Time	N Approach GREAVES AVE					E Approach LAKESHORE RD E					W Approach LAKESHORE RD E					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	3	1	0	5	4	11	263	0	0	274	229	5	0	0	234	512
17:00:00	1	0	0	7	1	17	256	0	0	273	252	8	0	0	260	534
17:15:00	4	0	0	7	4	6	293	0	0	299	224	6	0	0	230	533
17:30:00	5	0	0	11	5	13	237	0	0	250	251	12	0	2	263	518
Grand Total	13	1	0	30	14	47	1049	0	0	1096	956	31	0	2	987	2097
Approach%	92.9%	7.1%	0%	-	-	4.3%	95.7%	0%	-	-	96.9%	3.1%	0%	-	-	-
Totals %	0.6%	0%	0%	0.7%	0.7%	2.2%	50%	0%	52.3%	45.6%	1.5%	0%	47.1%	-	-	-
PHF	0.65	0.25	0	0.7	0.7	0.69	0.9	0	0.92	0.95	0.65	0	0.94	-	-	-
Heavy	0	0	0	0	0	0	16	0	16	15	0	0	15	-	-	-
Heavy %	0%	0%	0%	0%	0%	0%	1.5%	0%	1.5%	1.6%	0%	0%	1.5%	-	-	-
Lights	13	1	0	14	14	47	1033	0	1080	941	31	0	972	-	-	-
Lights %	100%	100%	0%	100%	100%	100%	98.5%	0%	98.5%	98.4%	100%	0%	98.5%	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	11	0	11	12	0	0	12	-	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	1%	0%	1%	1.3%	0%	0%	1.2%	-	-	-
Buses	0	0	0	0	0	0	2	0	2	2	0	0	2	-	-	-
Buses %	0%	0%	0%	0%	0%	0%	0.2%	0%	0.2%	0.2%	0%	0%	0.2%	-	-	-
Articulated Trucks	0	0	0	0	0	0	3	0	3	1	0	0	1	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.3%	0%	0.3%	0.1%	0%	0%	0.1%	-	-	-
Pedestrians	-	-	-	27	-	-	-	-	0	-	-	-	2	-	-	-
Pedestrians%	-	-	-	84.4%	-	-	-	-	0%	-	-	-	6.3%	-	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	2	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	0%	-	-	-
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	0	-	-	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	9.4%	-	-	-	-	0%	-	-	-	0%	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)





Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (8 . LAKESHORE RD E & MEREDITH AVE)

Start Time	N Approach MEREDITH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:30:00	3	0	3	0	4	6	0	135	0	0	0	135	0	0	0	0	2	0	1	217	1	0	0	219	360		
07:45:00	3	0	2	0	3	5	1	159	0	0	0	160	0	0	1	0	4	1	2	230	0	0	0	232	398		
08:00:00	1	0	5	0	2	6	2	203	1	0	0	206	0	0	0	0	2	0	1	237	2	0	0	240	452		
08:15:00	1	0	7	0	3	8	1	231	0	0	0	232	1	0	0	0	1	1	0	234	4	0	0	238	479	1689	
08:30:00	4	0	1	0	3	5	1	228	0	0	0	229	0	0	0	0	7	0	1	252	4	0	0	257	491	1820	
08:45:00	0	0	5	0	3	5	3	197	2	0	0	202	0	0	2	0	1	2	1	232	1	0	0	234	443	1865	
09:00:00	2	0	1	0	3	3	2	142	1	0	0	145	1	0	1	0	0	2	0	195	2	0	0	197	347	1760	
09:15:00	1	0	1	0	2	2	1	120	1	0	0	122	0	0	0	0	3	0	2	129	0	0	0	131	255	1536	
BREAK																											
16:00:00	3	0	1	0	4	4	1	275	2	0	0	278	10	1	8	0	11	19	0	246	1	0	0	247	548		
16:15:00	3	0	1	0	2	4	5	260	0	0	0	265	0	0	3	0	6	3	0	187	0	0	0	187	459		
16:30:00	1	0	5	0	8	6	6	281	0	0	0	287	1	0	0	0	13	1	0	205	4	0	0	209	503		
16:45:00	3	0	2	0	9	5	6	274	2	0	0	282	2	0	0	0	11	2	1	187	1	0	0	189	478	1988	
17:00:00	0	0	5	0	4	5	7	283	0	0	0	290	6	0	3	0	5	9	2	238	1	0	0	241	545	1985	
17:15:00	5	0	2	0	2	7	5	315	0	0	0	320	2	0	1	0	6	3	1	226	2	0	0	229	559	2085	
17:30:00	3	0	0	0	14	3	4	273	0	0	0	277	2	0	0	0	6	2	0	213	1	0	0	214	496	2078	
17:45:00	2	0	3	0	9	5	3	221	0	0	0	224	1	0	0	0	3	1	0	221	2	0	0	223	453	2053	
Grand Total	35	0	44	0	75	79	48	3597	9	0	0	3654	26	1	19	0	81	46	12	3449	26	0	0	3487	7266	-	
Approach%	44.3%	0%	55.7%	0%	-	-	1.3%	98.4%	0.2%	0%	-	-	56.5%	2.2%	41.3%	0%	-	-	0.3%	98.9%	0.7%	0%	-	-	-	-	
Totals %	0.5%	0%	0.6%	0%	1.1%	1.1%	0.7%	49.5%	0.1%	0%	50.3%	0.4%	0%	0.3%	0%	0%	0.6%	0.2%	47.5%	0.4%	0%	48%	-	-	-		
Heavy	1	0	1	0	-	-	0	123	0	0	-	-	0	0	0	0	-	-	0	120	0	0	-	-	-	-	
Heavy %	2.9%	0%	2.3%	0%	-	-	0%	3.4%	0%	0%	-	-	0%	0%	0%	0%	-	0%	3.5%	0%	0%	-	-	-	-		
Bicycles	0	0	1	0	-	-	0	9	0	0	-	-	0	0	0	0	-	0	6	0	0	-	-	-	-		
Bicycle %	0%	0%	2.3%	0%	-	-	0%	0.3%	0%	0%	-	-	0%	0%	0%	0%	-	0%	0.2%	0%	0%	-	-	-	-		



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

Start Time	N Approach MEREDITH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	1	0	5	0	2	6	2	203	1	0	0	206	0	0	0	0	2	0	1	237	2	0	0	240	452
08:15:00	1	0	7	0	3	8	1	231	0	0	0	232	1	0	0	0	1	1	0	234	4	0	0	238	479
08:30:00	4	0	1	0	3	5	1	228	0	0	0	229	0	0	0	0	7	0	1	252	4	0	0	257	491
08:45:00	0	0	5	0	3	5	3	197	2	0	0	202	0	0	2	0	1	2	1	232	1	0	0	234	443
Grand Total	6	0	18	0	11	24	7	859	3	0	0	869	1	0	2	0	11	3	3	955	11	0	0	969	1865
Approach%	25%	0%	75%	0%		-	0.8%	98.8%	0.3%	0%		-	33.3%	0%	66.7%	0%		-	0.3%	98.6%	1.1%	0%		-	-
Totals %	0.3%	0%	1%	0%		1.3%	0.4%	46.1%	0.2%	0%		46.6%	0.1%	0%	0.1%	0%		0.2%	0.2%	51.2%	0.6%	0%		52%	-
PHF	0.38	0	0.64	0		0.75	0.58	0.93	0.38	0		0.94	0.25	0	0.25	0		0.38	0.75	0.95	0.69	0		0.94	-
Heavy	0	0	1	0		1	0	59	0	0		59	0	0	0	0		0	0	49	0	0		49	-
Heavy %	0%	0%	5.6%	0%		4.2%	0%	6.9%	0%	0%		6.8%	0%	0%	0%	0%		0%	0%	5.1%	0%	0%		5.1%	-
Lights	6	0	17	0		23	7	800	3	0		810	1	0	2	0		3	3	906	11	0		920	-
Lights %	100%	0%	94.4%	0%		95.8%	100%	93.1%	100%	0%		93.2%	100%	0%	100%	0%		100%	100%	94.9%	100%	0%		94.9%	-
Single-Unit Trucks	0	0	1	0		1	0	42	0	0		42	0	0	0	0		0	0	38	0	0		38	-
Single-Unit Trucks %	0%	0%	5.6%	0%		4.2%	0%	4.9%	0%	0%		4.8%	0%	0%	0%	0%		0%	0%	4%	0%	0%		3.9%	-
Buses	0	0	0	0		0	0	13	0	0		13	0	0	0	0		0	0	6	0	0		6	-
Buses %	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	-
Articulated Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	5	0	0		5	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	36.4%	-	-	-	-	-	0%	-	-	-	-	-	31.8%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	13.6%	-	-	-	-	-	0%	-	-	-	-	-	18.2%	-	-	-	-	-	0%	-	-



Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach MEREDITH AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	1	0	5	0	8	6	6	281	0	0	0	287	1	0	0	0	13	1	0	205	4	0	0	209	503
16:45:00	3	0	2	0	9	5	6	274	2	0	0	282	2	0	0	0	11	2	1	187	1	0	0	189	478
17:00:00	0	0	5	0	4	5	7	283	0	0	0	290	6	0	3	0	5	9	2	238	1	0	0	241	545
17:15:00	5	0	2	0	2	7	5	315	0	0	0	320	2	0	1	0	6	3	1	226	2	0	0	229	559
Grand Total	9	0	14	0	23	23	24	1153	2	0	0	1179	11	0	4	0	35	15	4	856	8	0	0	868	2085
Approach%	39.1%	0%	60.9%	0%	-	-	2%	97.8%	0.2%	0%	-	-	73.3%	0%	26.7%	0%	-	-	0.5%	98.6%	0.9%	0%	-	-	-
Totals %	0.4%	0%	0.7%	0%	1.1%	1.1%	1.2%	55.3%	0.1%	0%	56.5%	56.5%	0.5%	0%	0.2%	0%	0.7%	0.2%	41.1%	0.4%	0%	41.6%	41.6%	-	-
PHF	0.45	0	0.7	0	0.82	0.82	0.86	0.92	0.25	0	0.92	0.92	0.46	0	0.33	0	0.42	0.5	0.9	0.5	0	0.9	0.9	-	-
Heavy	0	0	0	0	0	0	0	15	0	0	15	15	0	0	0	0	0	0	0	16	0	0	16	16	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.3%	0%	0%	1.3%	1.3%	0%	0%	0%	0%	0%	0%	1.9%	0%	0%	1.8%	1.8%	-	-
Lights	9	0	14	0	23	23	24	1138	2	0	1164	1164	11	0	4	0	15	4	840	8	0	852	852	-	-
Lights %	100%	0%	100%	0%	100%	100%	100%	98.7%	100%	0%	98.7%	98.7%	100%	0%	100%	0%	100%	100%	98.1%	100%	0%	98.2%	98.2%	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	9	0	0	9	9	0	0	0	0	0	0	14	0	0	14	14	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.8%	0%	0%	0.8%	0.8%	0%	0%	0%	0%	0%	0%	1.6%	0%	0%	1.6%	1.6%	-	-
Buses	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	2	0	0	2	2	-	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0.2%	-	-
Articulated Trucks	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	18	-	-	-	-	0	-	-	-	-	-	28	-	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	-	31%	-	-	-	-	0%	-	-	-	-	48.3%	-	-	-	-	-	0%	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	4	0	0	0	-	0	0	0	0	0	-	0	2	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	-	8.6%	-	-	-	-	0%	-	-	-	-	-	12.1%	-	-	-	-	-	0%	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (14 . LAKESHORE RD E & ORCHARD RD)

Start Time	N Approach ORCHARD RD						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	UTurn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	UTurn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	UTurn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	UTurn W-W	Peds W:	Approach Total			
07:30:00	2	0	3	0	4	5	0	151	0	0	1	151	0	0	0	0	5	0	0	227	3	0	0	230	386		
07:45:00	3	0	5	0	10	8	0	167	1	0	0	168	0	0	0	0	6	0	0	233	0	0	0	233	409		
08:00:00	5	0	2	1	5	8	0	222	0	0	0	222	1	0	0	0	8	1	1	250	3	0	0	254	485		
08:15:00	3	0	0	0	11	3	2	239	0	0	0	241	0	0	0	0	6	0	0	232	1	0	1	233	477	1757	
08:30:00	3	0	2	0	5	5	4	238	1	0	0	243	0	0	1	0	9	1	0	253	3	0	0	256	505	1876	
08:45:00	3	0	2	0	9	5	2	193	0	0	0	195	0	0	0	0	10	0	0	238	0	0	0	238	438	1905	
09:00:00	2	0	1	0	6	3	2	165	0	0	0	167	0	0	1	0	2	1	0	200	1	0	0	201	372	1792	
09:15:00	2	0	1	0	3	3	1	135	1	0	0	137	0	0	0	0	3	0	2	132	1	0	0	135	275	1590	
BREAK																											
16:00:00	1	0	1	0	17	2	1	307	0	0	1	308	0	0	0	0	18	0	0	271	6	0	0	277	587		
16:15:00	2	0	0	0	9	2	2	256	0	0	1	258	1	0	0	0	22	1	0	214	2	1	0	217	478		
16:30:00	0	0	2	0	12	2	3	315	0	1	0	319	0	0	1	0	15	1	0	230	1	0	0	231	553		
16:45:00	2	0	0	0	6	2	0	295	0	0	0	295	0	0	0	0	17	0	0	227	0	0	0	227	524	2142	
17:00:00	2	0	2	0	5	4	3	327	0	0	0	330	0	0	0	0	20	0	0	250	2	1	0	253	587	2142	
17:15:00	0	1	1	0	7	2	2	310	0	0	0	312	0	0	0	0	17	0	1	241	1	0	0	243	557	2221	
17:30:00	1	0	3	0	8	4	8	322	0	0	0	330	0	0	1	0	25	1	0	232	1	0	0	233	568	2236	
17:45:00	3	0	1	0	8	4	5	238	0	0	0	243	0	0	0	0	14	0	0	247	4	0	0	251	498	2210	
Grand Total	34	1	26	1	125	62	35	3880	3	1	3	3919	2	0	4	0	197	6	4	3677	29	2	1	3712	7699	-	
Approach%	54.8%	1.6%	41.9%	1.6%	-	-	0.9%	99%	0.1%	0%	-	-	33.3%	0%	66.7%	0%	-	-	0.1%	99.1%	0.8%	0.1%	-	-	-		
Totals %	0.4%	0%	0.3%	0%	0.8%	0.5%	50.4%	0%	0%	0%	50.9%	0%	0%	0.1%	0%	0%	0.1%	0.1%	47.8%	0.4%	0%	-	48.2%	-	-		
Heavy	0	0	0	0	-	1	161	2	0	-	1	0	0	0	0	0	-	0	153	0	0	-	-	-	-		
Heavy %	0%	0%	0%	0%	-	2.9%	4.1%	66.7%	0%	-	50%	0%	0%	0%	-	0%	-	0%	4.2%	0%	0%	-	-	-	-		
Bicycles	1	0	0	0	-	0	15	0	0	-	0	0	0	0	0	0	-	0	15	0	0	-	-	-	-		
Bicycle %	2.9%	0%	0%	0%	-	0%	0.4%	0%	0%	-	0%	0%	0%	0%	-	0%	-	0%	0.4%	0%	0%	-	-	-	-		



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

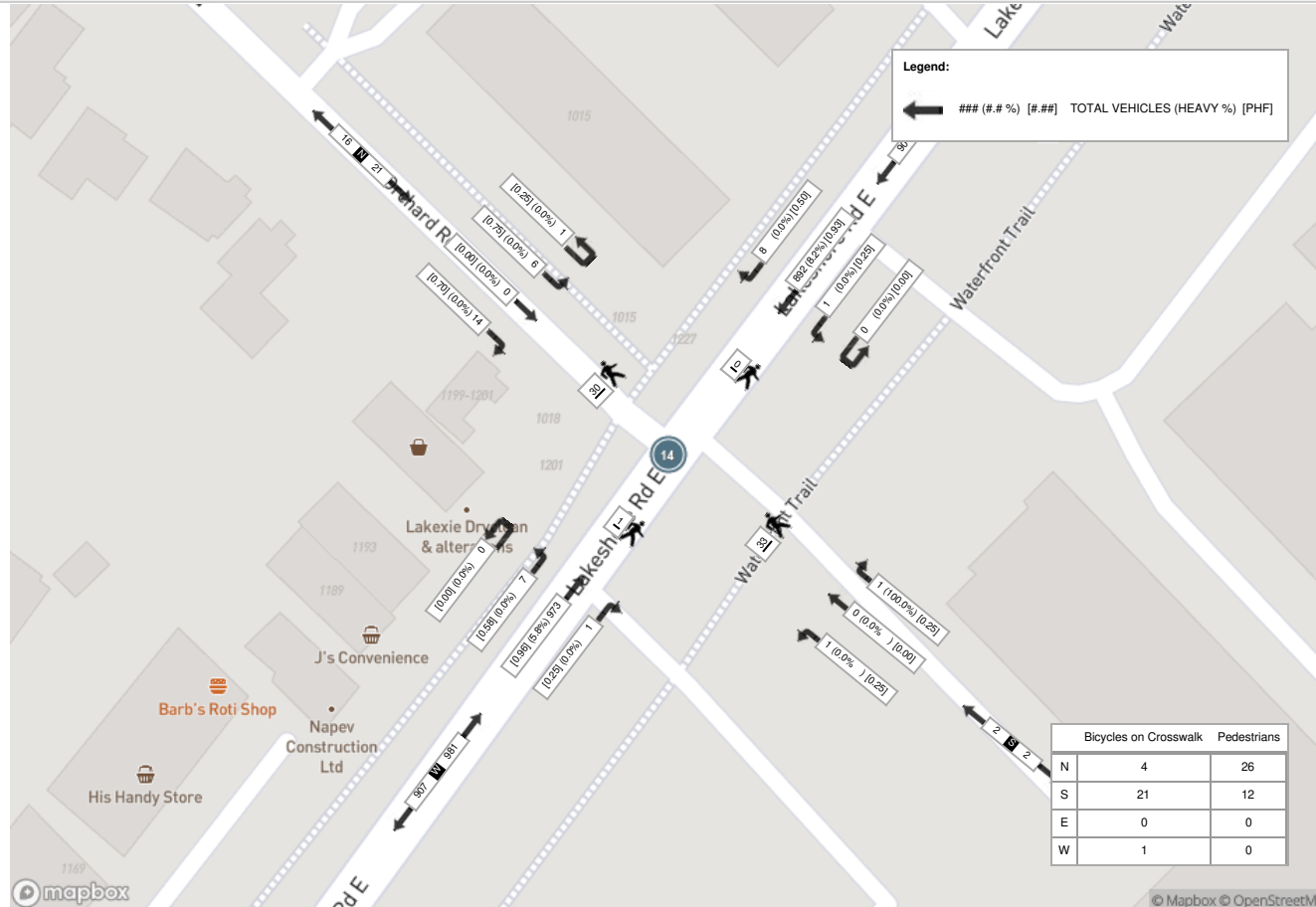
Start Time	N Approach ORCHARD RD						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	5	0	2	1	5	8	0	222	0	0	0	222	1	0	0	0	8	1	1	250	3	0	0	254	485
08:15:00	3	0	0	0	11	3	2	239	0	0	0	241	0	0	0	0	6	0	0	232	1	0	1	233	477
08:30:00	3	0	2	0	5	5	4	238	1	0	0	243	0	0	1	0	9	1	0	253	3	0	0	256	505
08:45:00	3	0	2	0	9	5	2	193	0	0	0	195	0	0	0	0	10	0	0	238	0	0	0	238	438
Grand Total	14	0	6	1	30	21	8	892	1	0	0	901	1	0	1	0	33	2	1	973	7	0	1	981	1905
Approach%	66.7%	0%	28.6%	4.8%		-	0.9%	99%	0.1%	0%		-	50%	0%	50%	0%		-	0.1%	99.2%	0.7%	0%		-	-
Totals %	0.7%	0%	0.3%	0.1%		1.1%	0.4%	46.8%	0.1%	0%		47.3%	0.1%	0%	0.1%	0%		0.1%	0.1%	51.1%	0.4%	0%		51.5%	-
PHF	0.7	0	0.75	0.25		0.66	0.5	0.93	0.25	0		0.93	0.25	0	0.25	0		0.5	0.25	0.96	0.58	0		0.96	-
Heavy	0	0	0	0		0	0	73	0	0		73	1	0	0	0		1	0	56	0	0		56	-
Heavy %	0%	0%	0%	0%		0%	0%	8.2%	0%	0%		8.1%	100%	0%	0%	0%		50%	0%	5.8%	0%	0%		5.7%	-
Lights	14	0	6	1		21	8	819	1	0		828	0	0	1	0		1	1	917	7	0		925	-
Lights %	100%	0%	100%	100%		100%	100%	91.8%	100%	0%		91.9%	0%	0%	100%	0%		50%	100%	94.2%	100%	0%		94.3%	-
Single-Unit Trucks	0	0	0	0		0	0	43	0	0		43	1	0	0	0		1	0	40	0	0		40	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	4.8%	0%	0%		4.8%	100%	0%	0%	0%		50%	0%	4.1%	0%	0%		4.1%	-
Buses	0	0	0	0		0	0	22	0	0		22	0	0	0	0		0	0	12	0	0		12	-
Buses %	0%	0%	0%	0%		0%	0%	2.5%	0%	0%		2.4%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	-
Articulated Trucks	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	4	0	0		4	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	-
Pedestrians	-	-	-	-	26	-	-	-	-	-	0	-	-	-	-	-	12	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	40.6%	-	-	-	-	-	0%	-	-	-	-	-	18.8%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	3	0	0	0	-	0	0	0	0	0	-	0	4	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	21	-	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	-	6.3%	-	-	-	-	-	0%	-	-	-	-	-	32.8%	-	-	-	-	-	1.6%	-	-



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach ORCHARD RD						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	2	0	0	0	6	2	0	295	0	0	0	295	0	0	0	0	17	0	0	227	0	0	0	227	524
17:00:00	2	0	2	0	5	4	3	327	0	0	0	330	0	0	0	0	20	0	0	250	2	1	0	253	587
17:15:00	0	1	1	0	7	2	2	310	0	0	0	312	0	0	0	0	17	0	1	241	1	0	0	243	557
17:30:00	1	0	3	0	8	4	8	322	0	0	0	330	0	0	1	0	25	1	0	232	1	0	0	233	568
Grand Total	5	1	6	0	26	12	13	1254	0	0	0	1267	0	0	1	0	79	1	1	950	4	1	0	956	2236
Approach%	41.7%	8.3%	50%	0%	-	-	1%	99%	0%	0%	-	-	0%	0%	100%	0%	-	-	0.1%	99.4%	0.4%	0.1%	-	-	-
Totals %	0.2%	0%	0.3%	0%	0.5%	0.5%	0.6%	56.1%	0%	0%	56.7%	0%	0%	0%	0%	0%	0%	0%	0%	42.5%	0.2%	0%	42.8%	-	-
PHF	0.63	0.25	0.5	0	0.75	0.75	0.41	0.96	0	0	0.96	0	0	0.25	0	0.25	0.25	0.95	0.5	0.25	0.94	0.94	-	-	-
Heavy	0	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	0	0	0	21	0	0	21	-	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.4%	0%	0%	1.4%	0%	0%	0%	0%	0%	0%	0%	0%	2.2%	0%	0%	2.2%	-	-
Lights	5	1	6	0	12	12	13	1236	0	0	1249	0	0	1	0	1	929	4	1	935	-	-	-	-	-
Lights %	100%	100%	100%	0%	100%	100%	100%	98.6%	0%	0%	98.6%	0%	0%	100%	0%	100%	100%	100%	100%	97.8%	100%	100%	97.8%	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	0	0	14	0	0	14	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	0%	0%	1.5%	0%	0%	1.5%	-	-
Buses	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	6	0	0	6	-	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.6%	-	-
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	0	-	-	-	-	12	-	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	17.1%	-	-	-	-	0%	-	-	-	-	11.4%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	1	0	0	0	0	-	0	3	0	0	0	-	0	0	0	0	0	-	0	3	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	8	-	-	-	-	0	-	-	-	-	67	-	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	7.6%	-	-	-	-	0%	-	-	-	-	63.8%	-	-	-	-	-	-	-	0%	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

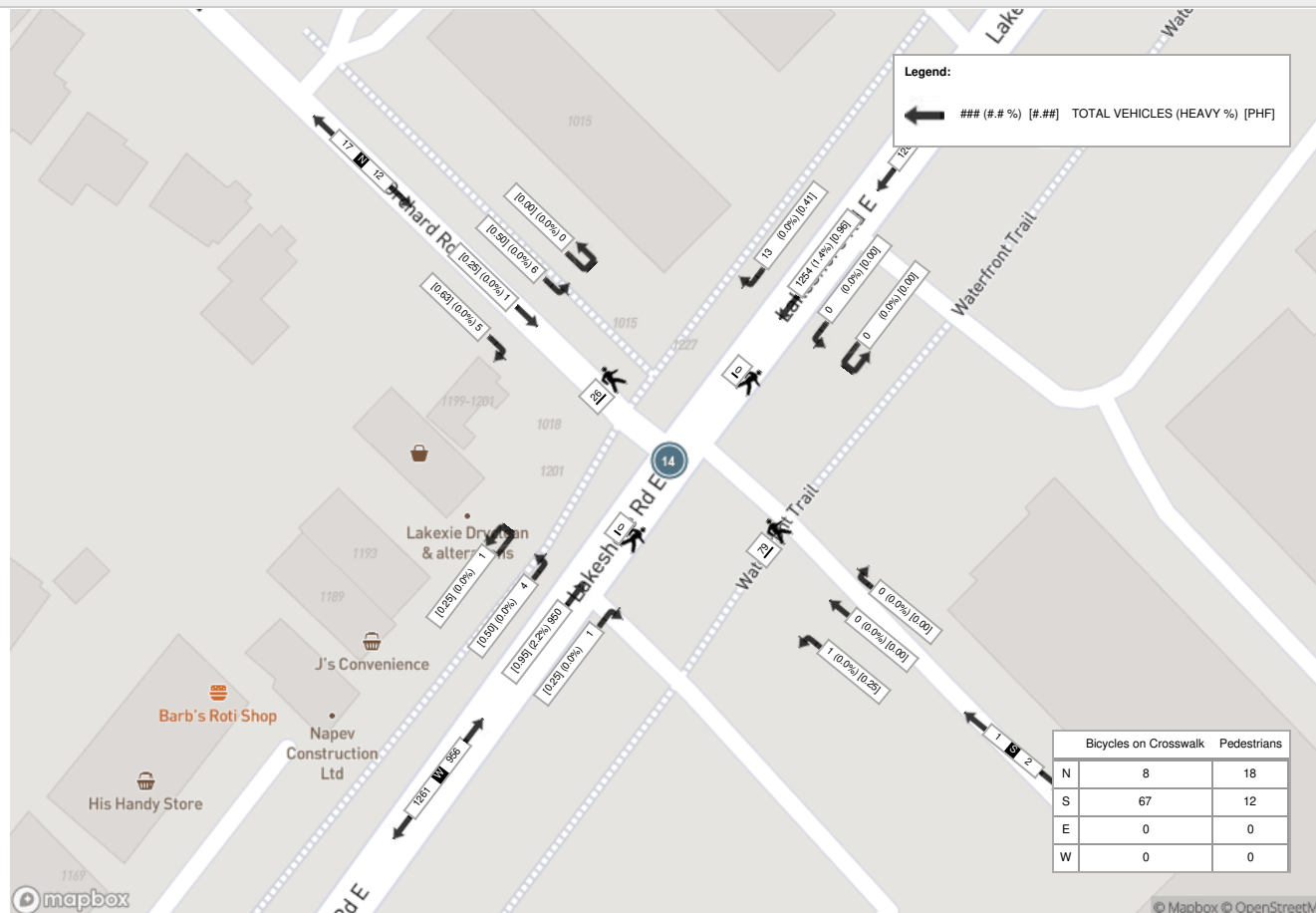




Turning Movement Count
Location Name: LAKESHORE RD E & ORCHARD RD
Date: Wed, Apr 10, 2024 Deployment Lead: David Chu

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (11 . LAKESHORE RD E & STRATHY AVE)

Start Time	N Approach STRATHY AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:30:00	1	0	2	0	4	3	0	144	0	0	0	144	1	0	0	0	4	1	0	218	0	0	0	218	366		
07:45:00	0	0	2	0	4	2	0	164	0	0	0	164	0	0	0	0	2	0	0	240	1	0	0	241	407		
08:00:00	1	0	6	0	2	7	5	205	0	0	2	210	0	0	0	0	6	0	0	224	1	0	0	225	442		
08:15:00	1	0	3	0	4	4	6	228	0	0	0	234	0	0	0	0	4	0	1	242	2	0	0	245	483	1698	
08:30:00	5	0	4	0	11	9	2	206	0	0	0	208	0	0	0	0	1	0	0	232	2	0	0	234	451	1783	
08:45:00	1	0	1	0	3	2	1	195	0	0	0	196	0	0	0	0	3	0	0	239	1	0	0	240	438	1814	
09:00:00	1	0	0	0	2	1	0	149	1	0	0	150	0	0	0	0	1	0	0	187	0	1	0	188	339	1711	
09:15:00	1	0	2	0	1	3	1	129	0	0	0	130	1	0	0	0	1	1	0	124	1	0	0	125	259	1487	
BREAK																											
16:00:00	1	0	0	0	4	1	0	291	0	0	0	291	1	0	0	0	8	1	0	248	0	1	0	249	542		
16:15:00	1	0	0	0	8	1	1	271	0	0	1	272	1	0	0	0	7	1	0	200	2	1	2	203	477		
16:30:00	3	0	2	0	11	5	6	281	0	1	1	288	1	0	0	0	9	1	0	193	3	0	4	196	490		
16:45:00	2	0	1	0	7	3	4	289	0	0	0	293	0	0	0	0	6	0	0	204	2	0	0	206	502	2011	
17:00:00	2	0	1	0	6	3	5	311	0	0	0	316	0	0	0	0	6	0	0	239	1	1	1	241	560	2029	
17:15:00	3	0	2	0	3	5	5	321	0	0	0	326	0	0	0	0	8	0	0	234	1	0	0	235	566	2118	
17:30:00	2	0	2	0	6	4	1	267	0	0	0	268	0	0	0	0	6	0	0	210	1	0	0	211	483	2111	
17:45:00	2	0	3	0	5	5	4	242	0	0	0	246	1	0	0	0	5	1	1	235	3	1	0	240	492	2101	
Grand Total	27	0	31	0	81	58	41	3693	1	1	4	3736	6	0	0	0	77	6	2	3469	21	5	7	3497	7297	-	
Approach%	46.6%	0%	53.4%	0%	-	-	1.1%	98.8%	0%	0%	-	-	100%	0%	0%	0%	-	-	0.1%	99.2%	0.6%	0.1%	-	-	-	-	
Totals %	0.4%	0%	0.4%	0%	-	0.8%	0.6%	50.6%	0%	0%	-	51.2%	0.1%	0%	0%	0%	-	0.1%	0%	47.5%	0.3%	0.1%	-	47.9%	-	-	
Heavy	0	0	0	0	-	-	0	149	0	0	-	-	1	0	0	0	-	-	0	136	0	0	-	-	-	-	
Heavy %	0%	0%	0%	0%	-	-	0%	4%	0%	0%	-	-	16.7%	0%	0%	0%	-	-	0%	3.9%	0%	0%	-	-	-	-	
Bicycles	1	0	0	0	-	-	1	14	0	0	-	-	0	0	0	0	-	-	0	7	1	0	-	-	-	-	
Bicycle %	3.7%	0%	0%	0%	-	-	2.4%	0.4%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.2%	4.8%	0%	-	-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

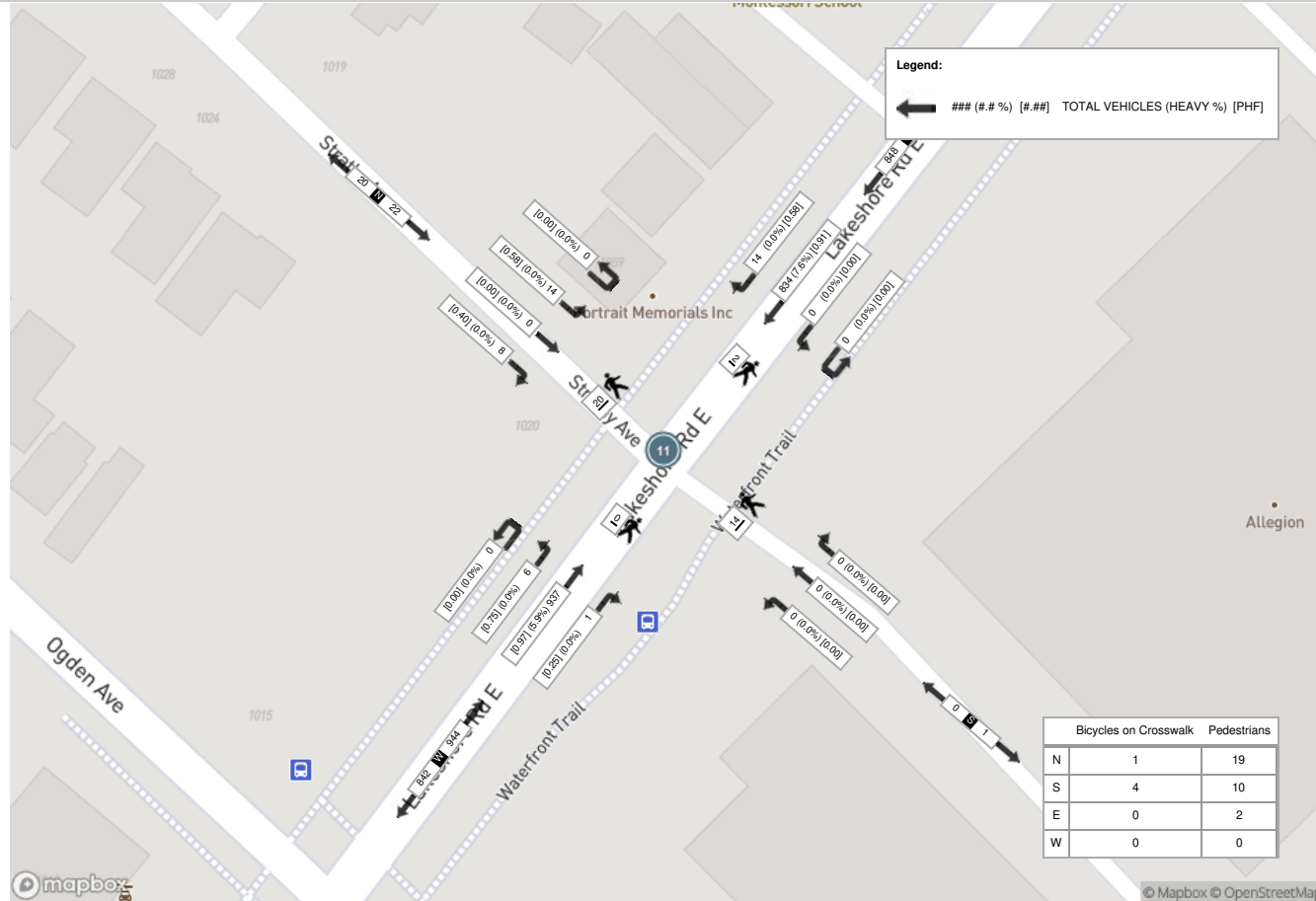
Start Time	N Approach STRATHY AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	1	0	6	0	2	7	5	205	0	0	2	210	0	0	0	0	6	0	0	224	1	0	0	225	442
08:15:00	1	0	3	0	4	4	6	228	0	0	0	234	0	0	0	0	4	0	1	242	2	0	0	245	483
08:30:00	5	0	4	0	11	9	2	206	0	0	0	208	0	0	0	0	1	0	0	232	2	0	0	234	451
08:45:00	1	0	1	0	3	2	1	195	0	0	0	196	0	0	0	0	3	0	0	239	1	0	0	240	438
Grand Total	8	0	14	0	20	22	14	834	0	0	2	848	0	0	0	0	14	0	1	937	6	0	0	944	1814
Approach%	36.4%	0%	63.6%	0%		-	1.7%	98.3%	0%	0%		-	0%	0%	0%	0%		-	0.1%	99.3%	0.6%	0%		-	-
Totals %	0.4%	0%	0.8%	0%		1.2%	0.8%	46%	0%	0%		46.7%	0%	0%	0%	0%		0%	0.1%	51.7%	0.3%	0%		52%	-
PHF	0.4	0	0.58	0		0.61	0.58	0.91	0	0		0.91	0	0	0	0		0	0.25	0.97	0.75	0		0.96	-
Heavy	0	0	0	0		0	0	63	0	0		63	0	0	0	0		0	0	55	0	0		55	-
Heavy %	0%	0%	0%	0%		0%	0%	7.6%	0%	0%		7.4%	0%	0%	0%	0%		0%	0%	5.9%	0%	0%		5.8%	-
Lights	8	0	14	0		22	14	771	0	0		785	0	0	0	0		0	1	882	6	0		889	-
Lights %	100%	0%	100%	0%		100%	100%	92.4%	0%	0%		92.6%	0%	0%	0%	0%		0%	100%	94.1%	100%	0%		94.2%	-
Single-Unit Trucks	0	0	0	0		0	0	40	0	0		40	0	0	0	0		0	0	40	0	0		40	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	4.8%	0%	0%		4.7%	0%	0%	0%	0%		0%	0%	4.3%	0%	0%		4.2%	-
Buses	0	0	0	0		0	0	18	0	0		18	0	0	0	0		0	0	11	0	0		11	-
Buses %	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	-
Articulated Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	4	0	0		4	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	52.8%	-	-	-	-	-	5.6%	-	-	-	-	-	27.8%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	2.8%	-	-	-	-	-	0%	-	-	-	-	-	11.1%	-	-	-	-	-	0%	-	-



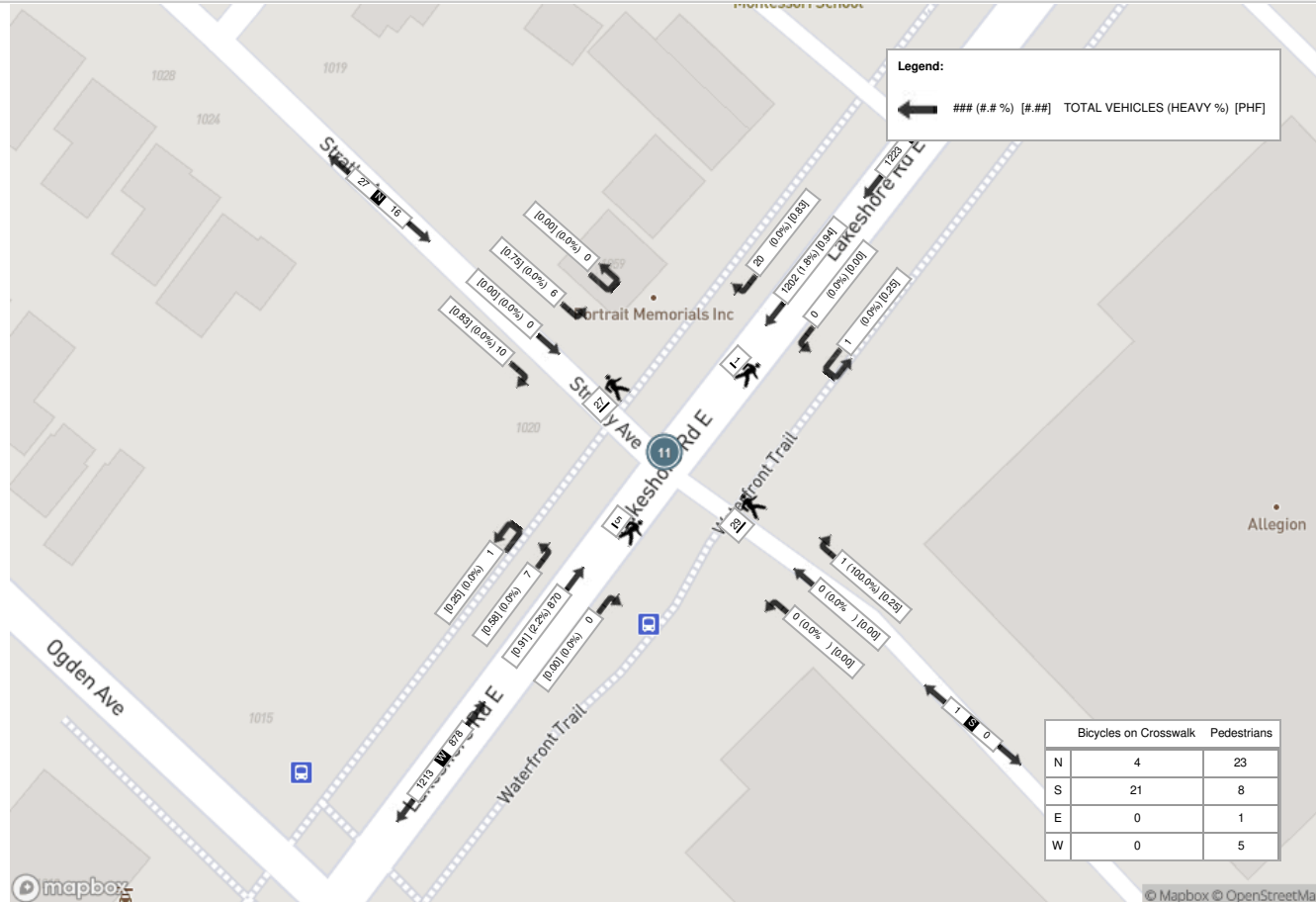
Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach STRATHY AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	3	0	2	0	11	5	6	281	0	1	1	288	1	0	0	0	9	1	0	193	3	0	4	196	490
16:45:00	2	0	1	0	7	3	4	289	0	0	0	293	0	0	0	0	6	0	0	204	2	0	0	206	502
17:00:00	2	0	1	0	6	3	5	311	0	0	0	316	0	0	0	0	6	0	0	239	1	1	1	241	560
17:15:00	3	0	2	0	3	5	5	321	0	0	0	326	0	0	0	0	8	0	0	234	1	0	0	235	566
Grand Total	10	0	6	0	27	16	20	1202	0	1	1	1223	1	0	0	0	29	1	0	870	7	1	5	878	2118
Approach%	62.5%	0%	37.5%	0%		-	1.6%	98.3%	0%	0.1%		-	100%	0%	0%	0%		-	0%	99.1%	0.8%	0.1%		-	-
Totals %	0.5%	0%	0.3%	0%		0.8%	0.9%	56.8%	0%	0%		57.7%	0%	0%	0%	0%		0%	0%	41.1%	0.3%	0%		41.5%	-
PHF	0.83	0	0.75	0		0.8	0.83	0.94	0	0.25		0.94	0.25	0	0	0		0.25	0	0.91	0.58	0.25		0.91	-
Heavy	0	0	0	0		0	0	22	0	0		22	1	0	0	0		1	0	19	0	0		19	-
Heavy %	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.8%	100%	0%	0%	0%		100%	0%	2.2%	0%	0%		2.2%	-
Lights	10	0	6	0		16	20	1180	0	1		1201	0	0	0	0		0	0	851	7	1		859	-
Lights %	100%	0%	100%	0%		100%	100%	98.2%	0%	100%		98.2%	0%	0%	0%	0%		0%	0%	97.8%	100%	100%		97.8%	-
Single-Unit Trucks	0	0	0	0		0	0	13	0	0		13	1	0	0	0		1	0	13	0	0		13	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1.1%	100%	0%	0%	0%		100%	0%	1.5%	0%	0%		1.5%	-
Buses	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	6	0	0		6	-
Buses %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	-
Articulated Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	23		-	-	-	-	1		-	-	-	-	8		-	-	-	-	5		-
Pedestrians%	-	-	-	-	37.1%		-	-	-	-	1.6%		-	-	-	-	12.9%		-	-	-	-	8.1%		-
Bicycles on Road	0	0	0	0	0	-	0	5	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	21	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	6.5%		-	-	-	-	0%		-	-	-	-	33.9%		-	-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (2 . LAKESHORE RD E & WEST AVE)

Start Time	N Approach WEST AVE						E Approach LAKESHORE RD E						S Approach MONTBECK CRES						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:30:00	0	0	1	0	3	1	4	117	3	0	0	124	5	2	2	0	0	9	0	239	2	0	0	241	375		
07:45:00	0	0	3	0	1	3	2	146	4	0	0	152	7	2	1	0	1	10	3	259	1	1	0	264	429		
08:00:00	0	0	1	0	3	1	4	182	4	0	0	190	9	1	2	0	0	12	2	249	2	0	0	253	456		
08:15:00	0	0	0	0	6	0	7	195	7	0	0	209	8	3	5	0	1	16	4	250	4	0	0	258	483	1743	
08:30:00	1	0	1	0	5	2	7	194	8	0	0	209	12	0	0	0	1	12	4	261	8	0	0	273	496	1864	
08:45:00	0	0	1	0	6	1	14	194	4	0	0	212	3	1	4	0	0	8	7	260	13	0	0	280	501	1936	
09:00:00	0	1	1	0	4	2	5	146	2	0	0	153	4	0	3	0	1	7	6	215	2	0	1	223	385	1865	
09:15:00	1	0	2	0	0	3	0	141	7	0	0	148	4	2	0	0	2	6	4	143	3	1	0	151	308	1690	
BREAK																											
16:00:00	3	0	0	0	14	3	13	256	16	0	0	285	7	2	2	0	3	11	3	260	6	0	0	269	568		
16:15:00	3	0	1	0	4	4	15	249	8	0	0	272	6	0	1	0	1	7	1	229	5	0	0	235	518		
16:30:00	3	0	3	0	11	6	13	251	13	0	0	277	6	1	0	0	5	7	6	203	5	1	2	215	505		
16:45:00	6	0	1	0	7	7	9	243	9	0	0	261	8	0	1	0	1	9	11	231	7	0	0	249	526	2117	
17:00:00	1	0	0	0	10	1	9	249	13	0	0	271	7	0	2	0	2	9	6	231	8	0	0	245	526	2075	
17:15:00	0	0	0	0	11	0	12	248	11	0	1	271	6	0	0	0	8	6	8	252	3	0	0	263	540	2097	
17:30:00	3	0	0	0	17	3	9	238	11	0	0	258	9	0	2	0	7	11	10	240	9	0	0	259	531	2123	
17:45:00	3	0	1	0	11	4	7	224	9	0	0	240	9	2	2	0	3	13	5	249	7	0	0	261	518	2115	
Grand Total	24	1	16	0	113	41	130	3273	129	0	1	3532	110	16	27	0	36	153	80	3771	85	3	3	3939	7665	-	
Approach%	58.5%	2.4%	39%	0%		-	3.7%	92.7%	3.7%	0%		-	71.9%	10.5%	17.6%	0%		-	2%	95.7%	2.2%	0.1%		-	-	-	
Totals %	0.3%	0%	0.2%	0%		0.5%	1.7%	42.7%	1.7%	0%		46.1%	1.4%	0.2%	0.4%	0%		2%	1%	49.2%	1.1%	0%		51.4%	-	-	
Heavy	0	0	0	0		-	2	132	2	0		-	3	1	0	0		-	2	127	1	0		-	-	-	
Heavy %	0%	0%	0%	0%		-	1.5%	4%	1.6%	0%		-	2.7%	6.3%	0%	0%		-	2.5%	3.4%	1.2%	0%		-	-	-	
Bicycles	0	0	0	0		-	0	4	5	0		-	0	0	0	0		-	0	6	0	0		-	-	-	
Bicycle %	0%	0%	0%	0%		-	0%	0.1%	3.9%	0%		-	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

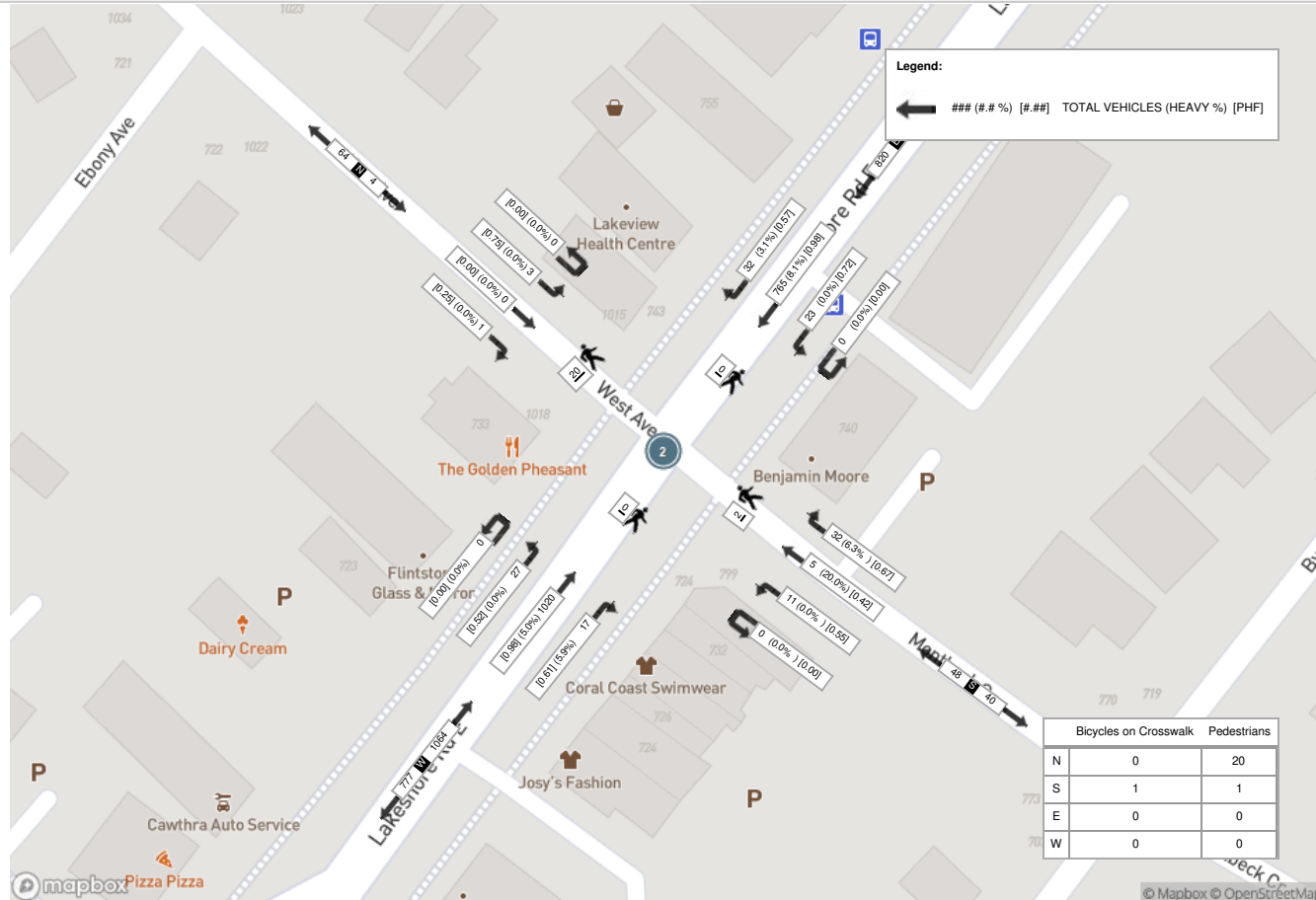
Start Time	N Approach WEST AVE						E Approach LAKESHORE RD E						S Approach MONTBECK CRES						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	0	0	1	0	3	1	4	182	4	0	0	190	9	1	2	0	0	12	2	249	2	0	0	253	456
08:15:00	0	0	0	0	6	0	7	195	7	0	0	209	8	3	5	0	1	16	4	250	4	0	0	258	483
08:30:00	1	0	1	0	5	2	7	194	8	0	0	209	12	0	0	0	1	12	4	261	8	0	0	273	496
08:45:00	0	0	1	0	6	1	14	194	4	0	0	212	3	1	4	0	0	8	7	260	13	0	0	280	501
Grand Total	1	0	3	0	20	4	32	765	23	0	0	820	32	5	11	0	2	48	17	1020	27	0	0	1064	1936
Approach%	25%	0%	75%	0%		-	3.9%	93.3%	2.8%	0%		-	66.7%	10.4%	22.9%	0%		-	1.6%	95.9%	2.5%	0%		-	-
Totals %	0.1%	0%	0.2%	0%		0.2%	1.7%	39.5%	1.2%	0%		42.4%	1.7%	0.3%	0.6%	0%		2.5%	0.9%	52.7%	1.4%	0%		55%	-
PHF	0.25	0	0.75	0		0.5	0.57	0.98	0.72	0		0.97	0.67	0.42	0.55	0		0.75	0.61	0.98	0.52	0		0.95	-
Heavy	0	0	0	0		0	1	62	0	0		63	2	1	0	0		3	1	51	0	0		52	-
Heavy %	0%	0%	0%	0%		0%	3.1%	8.1%	0%	0%		7.7%	6.3%	20%	0%	0%		6.3%	5.9%	5%	0%	0%		4.9%	-
Lights	1	0	3	0		4	31	703	23	0		757	30	4	11	0		45	16	969	27	0		1012	-
Lights %	100%	0%	100%	0%		100%	96.9%	91.9%	100%	0%		92.3%	93.8%	80%	100%	0%		93.8%	94.1%	95%	100%	0%		95.1%	-
Single-Unit Trucks	0	0	0	0		0	1	39	0	0		40	0	0	0	0		0	1	39	0	0		40	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	3.1%	5.1%	0%	0%		4.9%	0%	0%	0%	0%		0%	5.9%	3.8%	0%	0%		3.8%	-
Buses	0	0	0	0		0	0	17	0	0		17	2	1	0	0		3	0	5	0	0		5	-
Buses %	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		2.1%	6.3%	20%	0%	0%		6.3%	0%	0.5%	0%	0%		0.5%	-
Articulated Trucks	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	0	7	0	0		7	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	-
Pedestrians	-	-	-	-	20		-	-	-	0		-	-	-	-	1		-	-	-	-	0		-	-
Pedestrians%	-	-	-	-	90.9%		-	-	-	0%		-	-	-	-	4.5%		-	-	-	-	0%		-	-
Bicycles on Road	0	0	0	0	0	-	0	1	1	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0		-	-	-	-	1		-	-	-	-	0		-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	0%		-	-	-	-	4.5%		-	-	-	-	0%		-	-



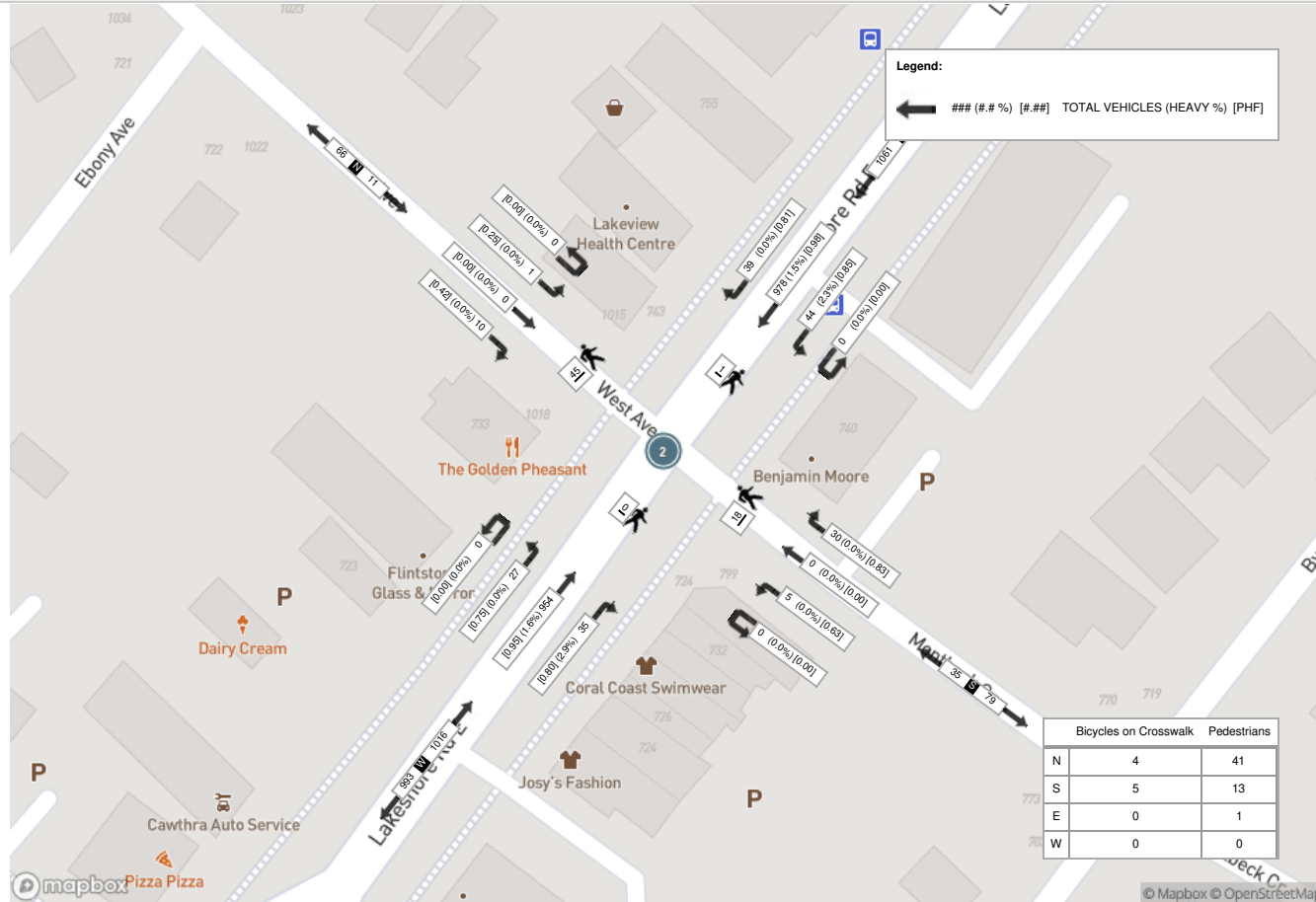
Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach WEST AVE						E Approach LAKESHORE RD E						S Approach MONTBECK CRES						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	6	0	1	0	7	7	9	243	9	0	0	261	8	0	1	0	1	9	11	231	7	0	0	249	526
17:00:00	1	0	0	0	10	1	9	249	13	0	0	271	7	0	2	0	2	9	6	231	8	0	0	245	526
17:15:00	0	0	0	0	11	0	12	248	11	0	1	271	6	0	0	0	8	6	8	252	3	0	0	263	540
17:30:00	3	0	0	0	17	3	9	238	11	0	0	258	9	0	2	0	7	11	10	240	9	0	0	259	531
Grand Total	10	0	1	0	45	11	39	978	44	0	1	1061	30	0	5	0	18	35	35	954	27	0	0	1016	2123
Approach%	90.9%	0%	9.1%	0%		-	3.7%	92.2%	4.1%	0%		-	85.7%	0%	14.3%	0%		-	3.4%	93.9%	2.7%	0%		-	-
Totals %	0.5%	0%	0%	0%	0%	0.5%	1.8%	46.1%	2.1%	0%	50%	50%	1.4%	0%	0.2%	0%	1.6%	1.6%	44.9%	1.3%	0%		47.9%	-	-
PHF	0.42	0	0.25	0		0.39	0.81	0.98	0.85	0	0.98	0.98	0.83	0	0.63	0	0.8	0.8	0.95	0.75	0		0.97	-	-
Heavy	0	0	0	0		0	0	15	1	0	16	16	0	0	0	0	0	0	1	15	0	0		16	-
Heavy %	0%	0%	0%	0%		0%	0%	1.5%	2.3%	0%	1.5%	1.5%	0%	0%	0%	0%	0%	0%	2.9%	1.6%	0%	0%		1.6%	-
Lights	10	0	1	0		11	39	963	43	0	1045	1045	30	0	5	0	35	35	34	939	27	0		1000	-
Lights %	100%	0%	100%	0%	100%	100%	100%	98.5%	97.7%	0%	98.5%	98.5%	100%	0%	100%	0%	100%	100%	97.1%	98.4%	100%	0%		98.4%	-
Single-Unit Trucks	0	0	0	0		0	0	9	1	0	10	10	0	0	0	0	0	0	1	12	0	0		13	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.9%	2.3%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	2.9%	1.3%	0%	0%		1.3%	-
Buses	0	0	0	0		0	0	2	0	0	2	2	0	0	0	0	0	0	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%	0.2%	0.2%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%		0.2%	-
Articulated Trucks	0	0	0	0		0	0	4	0	0	4	4	0	0	0	0	0	0	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%	0.4%	0.4%	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%		0.1%	-
Pedestrians	-	-	-	-	41	-	-	-	-	1	-	-	-	-	-	13	-	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	-	64.1%	-	-	-	-	1.6%	-	-	-	-	-	20.3%	-	-	-	-	-	0%	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	-	6.3%	-	-	-	-	0%	-	-	-	-	-	7.8%	-	-	-	-	-	0%	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (5 . LAKESHORE RD E & WESTMOUNT AVE)

Start Time	N Approach WESTMOUNT AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:30:00	2	0	2	0	2	4	0	122	0	0	0	122	0	0	1	0	0	1	1	223	0	0	0	224	351	
07:45:00	2	0	4	0	2	6	1	158	1	0	0	160	0	0	0	0	2	0	0	258	0	0	2	258	424	
08:00:00	1	0	2	0	1	3	2	190	1	0	0	193	4	0	0	0	0	4	0	248	1	0	0	249	449	
08:15:00	1	0	2	0	1	3	0	218	4	0	0	222	2	0	0	0	1	2	0	255	4	0	0	259	486	1710
08:30:00	1	0	0	0	5	1	0	206	1	0	0	207	0	0	0	0	1	0	1	271	0	0	0	272	480	1839
08:45:00	2	0	1	0	1	3	0	207	2	0	0	209	2	0	0	0	3	2	1	232	1	0	0	234	448	1863
09:00:00	0	0	1	0	3	1	1	147	0	0	0	148	0	0	0	0	1	0	1	207	3	0	1	211	360	1774
09:15:00	1	0	0	0	1	1	1	135	1	0	0	137	0	0	0	0	1	0	3	132	1	0	0	136	274	1562
BREAK																										
16:00:00	1	0	1	0	4	2	10	302	0	0	0	312	4	0	0	0	4	4	0	275	1	0	2	276	594	
16:15:00	1	0	0	0	4	1	7	260	1	0	0	268	0	0	1	0	2	1	0	200	2	0	0	202	472	
16:30:00	1	0	2	0	4	3	6	297	1	0	0	304	0	0	2	0	7	2	0	200	1	0	0	201	510	
16:45:00	2	0	2	0	7	4	5	276	0	0	0	281	2	0	0	0	4	2	1	219	0	0	0	220	507	2083
17:00:00	0	0	1	0	8	1	5	286	0	0	1	291	0	0	0	0	4	0	2	232	3	0	1	237	529	2018
17:15:00	3	0	2	0	4	5	4	326	2	0	0	332	1	0	1	0	9	2	1	224	1	0	0	226	565	2111
17:30:00	0	0	1	0	10	1	10	262	1	0	0	273	0	0	0	0	5	0	0	233	2	0	0	235	509	2110
17:45:00	0	0	0	0	10	0	2	229	0	0	0	231	0	0	0	0	3	0	0	243	1	0	0	244	475	2078
Grand Total	18	0	21	0	67	39	54	3621	15	0	1	3690	15	0	5	0	47	20	11	3652	21	0	6	3684	7433	-
Approach%	46.2%	0%	53.8%	0%		-	1.5%	98.1%	0.4%	0%		-	75%	0%	25%	0%		-	0.3%	99.1%	0.6%	0%		-	-	-
Totals %	0.2%	0%	0.3%	0%		0.5%	0.7%	48.7%	0.2%	0%		49.6%	0.2%	0%	0.1%	0%		0.3%	0.1%	49.1%	0.3%	0%		49.6%	-	-
Heavy	2	0	0	0		-	0	131	1	0		-	1	0	0	0		-	1	124	0	0		-	-	-
Heavy %	11.1%	0%	0%	0%		-	0%	3.6%	6.7%	0%		-	6.7%	0%	0%	0%		-	9.1%	3.4%	0%	0%		-	-	-
Bicycles	0	0	0	0		-	1	9	0	0		-	0	0	0	0		-	0	7	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	1.9%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)

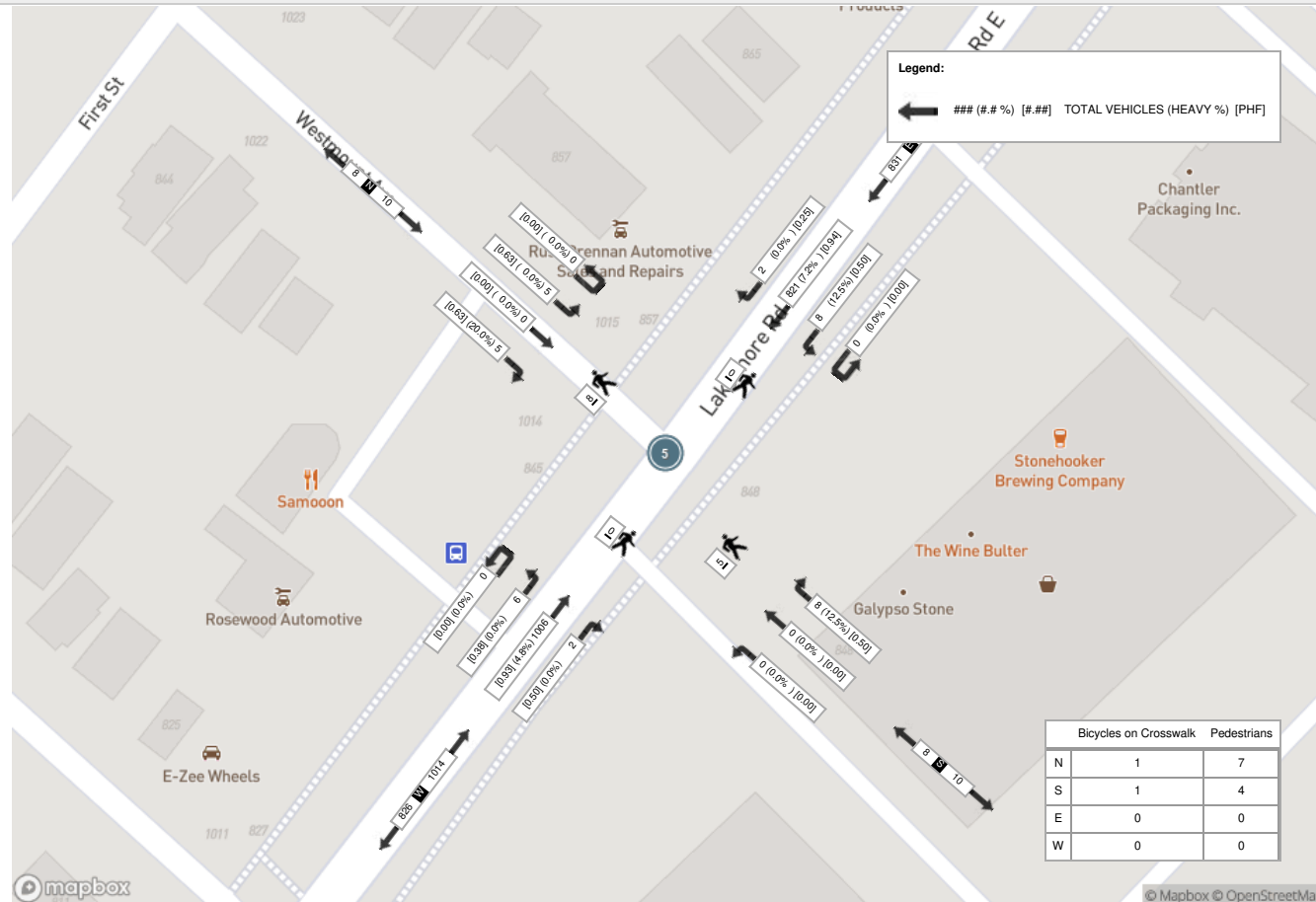
Start Time	N Approach WESTMOUNT AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	1	0	2	0	1	3	2	190	1	0	0	193	4	0	0	0	0	4	0	248	1	0	0	249	449
08:15:00	1	0	2	0	1	3	0	218	4	0	0	222	2	0	0	0	1	2	0	255	4	0	0	259	486
08:30:00	1	0	0	0	5	1	0	206	1	0	0	207	0	0	0	0	1	0	1	271	0	0	0	272	480
08:45:00	2	0	1	0	1	3	0	207	2	0	0	209	2	0	0	0	3	2	1	232	1	0	0	234	448
Grand Total	5	0	5	0	8	10	2	821	8	0	0	831	8	0	0	0	5	8	2	1006	6	0	0	1014	1863
Approach%	50%	0%	50%	0%		-	0.2%	98.8%	1%	0%		-	100%	0%	0%	0%		-	0.2%	99.2%	0.6%	0%		-	-
Totals %	0.3%	0%	0.3%	0%		0.5%	0.1%	44.1%	0.4%	0%		44.6%	0.4%	0%	0%	0%		0.4%	0.1%	54%	0.3%	0%		54.4%	-
PHF	0.63	0	0.63	0		0.83	0.25	0.94	0.5	0		0.94	0.5	0	0	0		0.5	0.5	0.93	0.38	0		0.93	-
Heavy	1	0	0	0		1	0	59	1	0		60	1	0	0	0		1	0	48	0	0		48	-
Heavy %	20%	0%	0%	0%		10%	0%	7.2%	12.5%	0%		7.2%	12.5%	0%	0%	0%		12.5%	0%	4.8%	0%	0%		4.7%	-
Lights	4	0	5	0		9	2	762	7	0		771	7	0	0	0		7	2	958	6	0		966	-
Lights %	80%	0%	100%	0%		90%	100%	92.8%	87.5%	0%		92.8%	87.5%	0%	0%	0%		87.5%	100%	95.2%	100%	0%		95.3%	-
Single-Unit Trucks	0	0	0	0		0	0	40	1	0		41	1	0	0	0		1	0	36	0	0		36	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	4.9%	12.5%	0%		4.9%	12.5%	0%	0%	0%		12.5%	0%	3.6%	0%	0%		3.6%	-
Buses	1	0	0	0		1	0	14	0	0		14	0	0	0	0		0	0	5	0	0		5	-
Buses %	20%	0%	0%	0%		10%	0%	1.7%	0%	0%		1.7%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	-
Articulated Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	7	0	0		7	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	-
Pedestrians	-	-	-	-	7	-	-	-	-	0		-	-	-	-	4		-	-	-	-	0		-	-
Pedestrians%	-	-	-	-	53.8%	-	-	-	-	0%		-	-	-	-	30.8%		-	-	-	-	0%		-	-
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0		-	-	-	-	1		-	-	-	-	0		-	-
Bicycles on Crosswalk%	-	-	-	-	7.7%	-	-	-	-	0%		-	-	-	-	7.7%		-	-	-	-	0%		-	-



Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach WESTMOUNT AVE						E Approach LAKESHORE RD E						S Approach SOUTH DRIVEWAY						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	1	0	2	0	4	3	6	297	1	0	0	304	0	0	2	0	7	2	0	200	1	0	0	201	510
16:45:00	2	0	2	0	7	4	5	276	0	0	0	281	2	0	0	0	4	2	1	219	0	0	0	220	507
17:00:00	0	0	1	0	8	1	5	286	0	0	1	291	0	0	0	0	4	0	2	232	3	0	1	237	529
17:15:00	3	0	2	0	4	5	4	326	2	0	0	332	1	0	1	0	9	2	1	224	1	0	0	226	565
Grand Total	6	0	7	0	23	13	20	1185	3	0	1	1208	3	0	3	0	24	6	4	875	5	0	1	884	2111
Approach%	46.2%	0%	53.8%	0%	-	-	1.7%	98.1%	0.2%	0%	-	-	50%	0%	50%	0%	-	0.5%	99%	0.6%	0%	-	-	-	
Totals %	0.3%	0%	0.3%	0%	0.6%	0.6%	0.9%	56.1%	0.1%	0%	57.2%	0.1%	0%	0.1%	0%	0.3%	0.2%	41.4%	0.2%	0%	41.9%	-	-	-	
PHF	0.5	0	0.88	0	0.65	0.65	0.83	0.91	0.38	0	0.91	0.38	0	0.38	0	0.75	0.5	0.94	0.42	0	0.93	-	-	-	
Heavy	0	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	0	0	0	17	0	0	17	-	
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.5%	0%	0%	1.5%	0%	0%	0%	0%	0%	0%	1.9%	0%	0%	1.9%	-	-	-	
Lights	6	0	7	0	13	13	20	1167	3	0	1190	3	0	3	0	6	4	858	5	0	867	-	-	-	
Lights %	100%	0%	100%	0%	100%	100%	100%	98.5%	100%	0%	98.5%	100%	0%	100%	0%	100%	100%	98.1%	100%	0%	98.1%	-	-	-	
Single-Unit Trucks	0	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	13	0	0	13	-	-	-	
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	1.5%	0%	0%	1.5%	-	-	-	
Buses	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	-	-	-	
Buses %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.2%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	-	-	-	
Pedestrians	-	-	-	-	18	-	-	-	-	1	-	-	-	-	-	16	-	-	-	-	1	-	-	-	
Pedestrians%	-	-	-	-	36.7%	-	-	-	-	2%	-	-	-	-	-	32.7%	-	-	-	-	2%	-	-	-	
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	0	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	10.2%	-	-	-	-	0%	-	-	-	-	-	16.3%	-	-	-	-	0%	-	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (10.65 °C)





Turning Movement Count (17 . RANGEVIEW RD & EAST AVE)

Start Time	N Approach EAST AVE					E Approach RANGEVIEW RD					S Approach EAST AVE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:30:00	1	16	0	1	17	1	0	0	0	1	0	1	0	0	1	19	
07:45:00	3	21	0	0	24	1	0	0	0	1	0	2	0	0	2	27	
08:00:00	1	10	0	0	11	4	1	0	0	5	0	4	0	0	4	20	
08:15:00	7	10	0	0	17	2	0	0	0	2	0	0	0	0	0	19	85
08:30:00	2	9	0	1	11	4	0	0	0	4	0	3	0	0	3	18	84
08:45:00	4	6	0	1	10	5	1	0	0	6	0	1	0	0	1	17	74
09:00:00	3	15	0	0	18	3	0	0	0	3	1	0	0	0	1	22	76
09:15:00	4	10	0	1	14	6	0	1	0	7	0	1	0	0	1	22	79
BREAK																	
16:00:00	1	5	0	0	6	28	0	0	0	28	0	1	0	4	1	35	
16:15:00	0	4	0	1	4	5	0	0	0	5	0	3	0	0	3	12	
16:30:00	1	7	0	0	8	13	0	0	0	13	0	0	0	0	0	21	
16:45:00	2	8	0	2	10	4	0	0	0	4	0	4	0	0	4	18	86
17:00:00	0	5	0	0	5	9	0	0	0	9	0	5	0	0	5	19	70
17:15:00	1	4	0	0	5	4	0	1	0	5	0	0	0	0	0	10	68
17:30:00	0	7	0	0	7	9	0	0	0	9	0	1	0	0	1	17	64
17:45:00	0	4	0	0	4	3	0	0	0	3	0	0	0	0	0	7	53
Grand Total	30	141	0	7	171	101	2	2	0	105	1	26	0	4	27	303	-
Approach%	17.5%	82.5%	0%		-	96.2%	1.9%	1.9%		-	3.7%	96.3%	0%		-	-	-
Totals %	9.9%	46.5%	0%		56.4%	33.3%	0.7%	0.7%		34.7%	0.3%	8.6%	0%		8.9%	-	-
Heavy	1	5	0		-	5	0	1		-	0	0	0		-	-	-
Heavy %	3.3%	3.5%	0%		-	5%	0%	50%		-	0%	0%	0%		-	-	-
Bicycles	0	2	0		-	3	0	2		-	1	0	0		-	-	-
Bicycle %	0%	1.4%	0%		-	3%	0%	100%		-	100%	0%	0%		-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (10.65 °C)

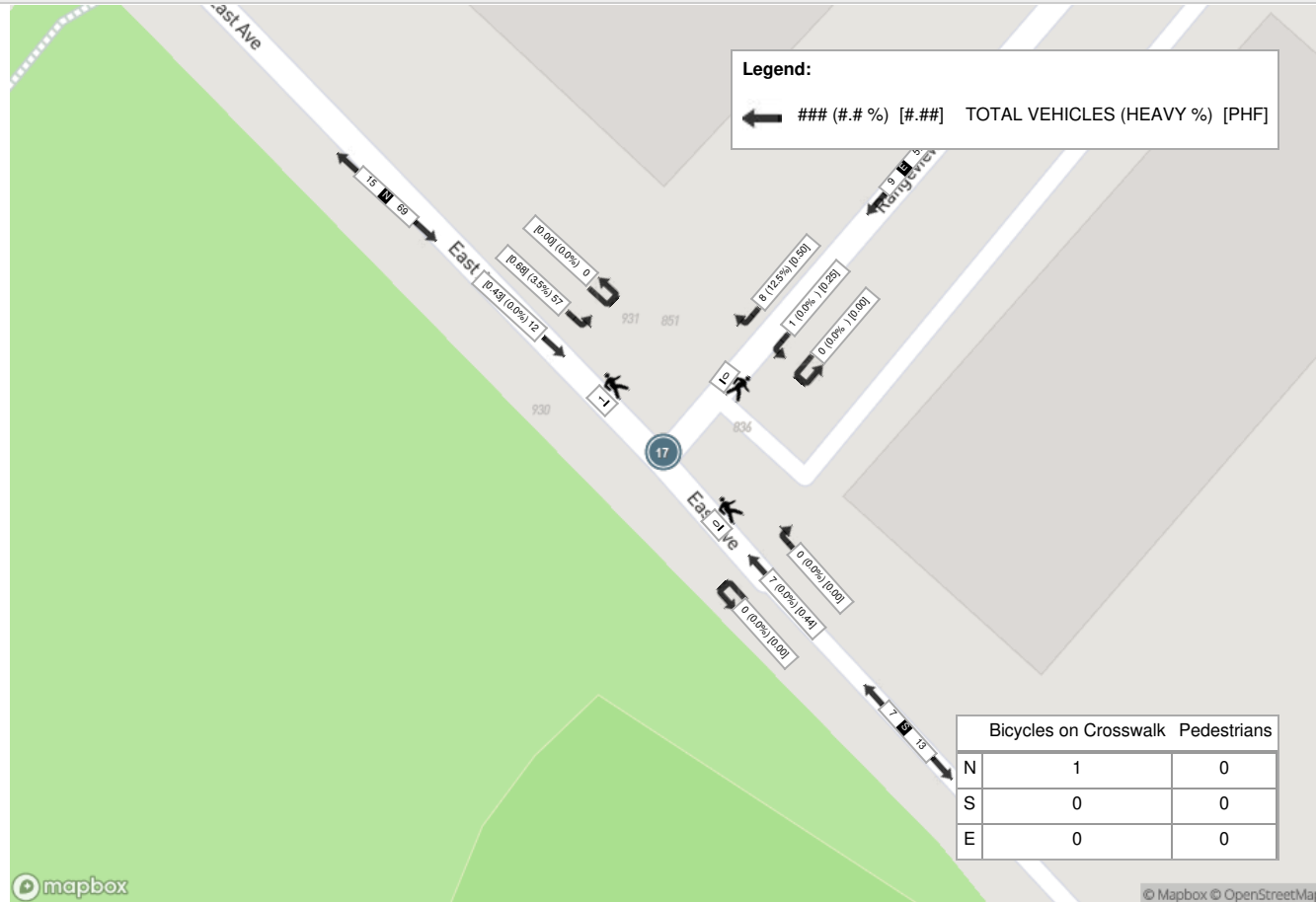
Start Time	N Approach EAST AVE					E Approach RANGEVIEW RD					S Approach EAST AVE					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:30:00	1	16	0	1	17	1	0	0	0	1	0	1	0	0	1	19
07:45:00	3	21	0	0	24	1	0	0	0	1	0	2	0	0	2	27
08:00:00	1	10	0	0	11	4	1	0	0	5	0	4	0	0	4	20
08:15:00	7	10	0	0	17	2	0	0	0	2	0	0	0	0	0	19
Grand Total	12	57	0	1	69	8	1	0	0	9	0	7	0	0	7	85
Approach%	17.4%	82.6%	0%		-	88.9%	11.1%	0%		-	0%	100%	0%		-	-
Totals %	14.1%	67.1%	0%		81.2%	9.4%	1.2%	0%		10.6%	0%	8.2%	0%		8.2%	-
PHF	0.43	0.68	0		0.72	0.5	0.25	0		0.45	0	0.44	0		0.44	-
Heavy	0	2	0		2	1	0	0		1	0	0	0		0	-
Heavy %	0%	3.5%	0%		2.9%	12.5%	0%	0%		11.1%	0%	0%	0%		0%	-
Lights	12	55	0		67	7	1	0		8	0	7	0		7	-
Lights %	100%	96.5%	0%		97.1%	87.5%	100%	0%		88.9%	0%	100%	0%		100%	-
Single-Unit Trucks	0	2	0		2	1	0	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	3.5%	0%		2.9%	12.5%	0%	0%		11.1%	0%	0%	0%		0%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	1	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	100%		-	-	-	0%		-	-	-	0%		-



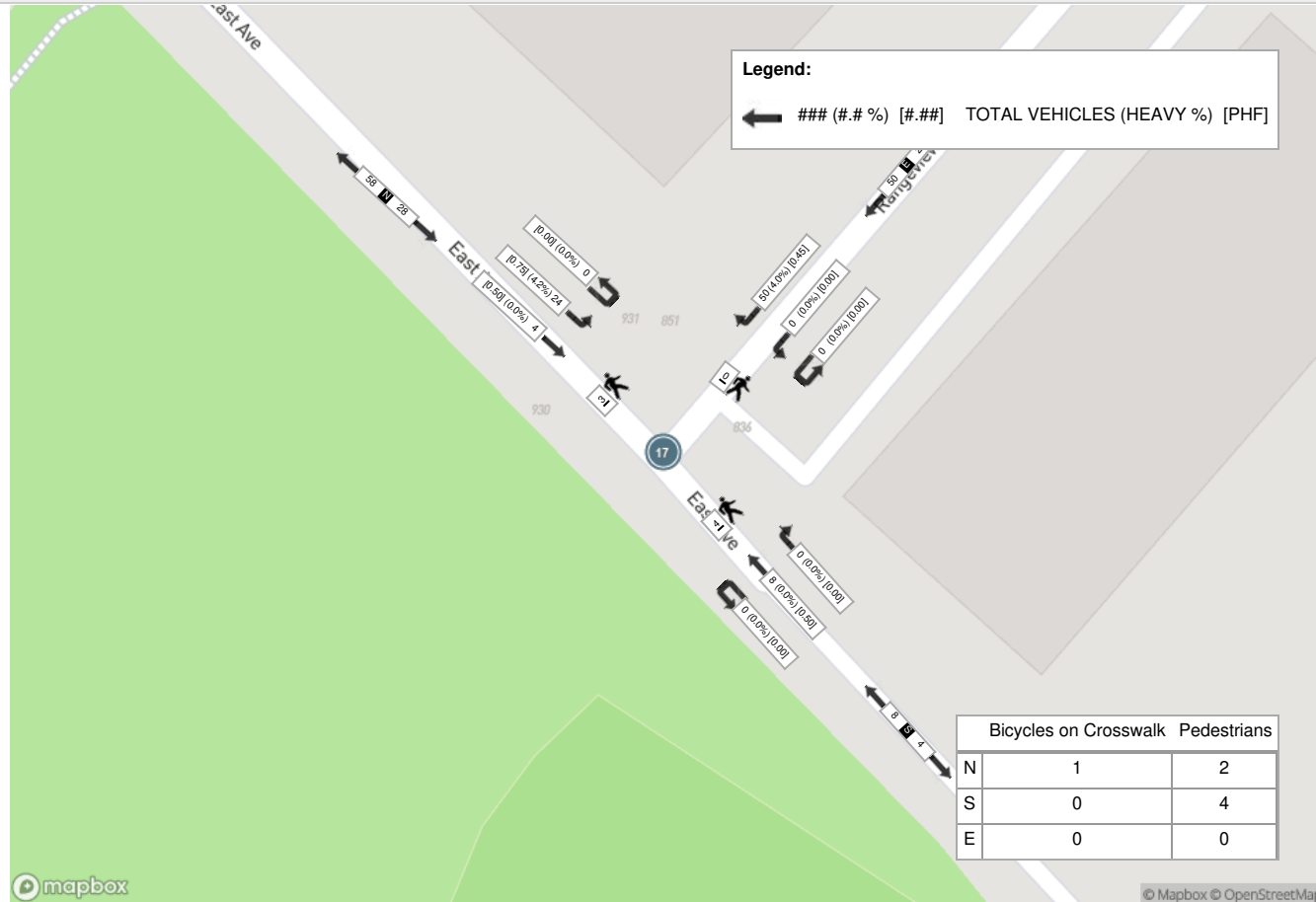
Peak Hour: 04:00 PM - 05:00 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach EAST AVE					E Approach RANGEVIEW RD					S Approach EAST AVE					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:00:00	1	5	0	0	6	28	0	0	0	28	0	1	0	4	1	35
16:15:00	0	4	0	1	4	5	0	0	0	5	0	3	0	0	3	12
16:30:00	1	7	0	0	8	13	0	0	0	13	0	0	0	0	0	21
16:45:00	2	8	0	2	10	4	0	0	0	4	0	4	0	0	4	18
Grand Total	4	24	0	3	28	50	0	0	0	50	0	8	0	4	8	86
Approach%	14.3%	85.7%	0%		-	100%	0%	0%		-	0%	100%	0%		-	-
Totals %	4.7%	27.9%	0%		32.6%	58.1%	0%	0%		58.1%	0%	9.3%	0%		9.3%	-
PHF	0.5	0.75	0		0.7	0.45	0	0		0.45	0	0.5	0		0.5	-
Heavy	0	1	0		1	2	0	0		2	0	0	0		0	-
Heavy %	0%	4.2%	0%		3.6%	4%	0%	0%		4%	0%	0%	0%		0%	-
Lights	4	23	0		27	48	0	0		48	0	8	0		8	-
Lights %	100%	95.8%	0%		96.4%	96%	0%	0%		96%	0%	100%	0%		100%	-
Single-Unit Trucks	0	1	0		1	2	0	0		2	0	0	0		0	-
Single-Unit Trucks %	0%	4.2%	0%		3.6%	4%	0%	0%		4%	0%	0%	0%		0%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	4	-	-
Pedestrians%	-	-	-	28.6%		-	-	-	0%		-	-	-	57.1%		-
Bicycles on Road	0	0	0	0	-	1	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	14.3%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Broken Clouds (18.45 °C)





Turning Movement Count (19 . RANGEVIEW RD & HYDRO RD)

Start Time	N Approach HYDRO RD					S Approach HYDRO RD					W Approach RANGEVIEW RD					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:30:00	13	5	0	0	18	5	0	0	0	5	0	3	0	0	3	26	
07:45:00	17	8	0	0	25	7	2	0	0	9	2	5	0	0	7	41	
08:00:00	8	7	0	0	15	5	6	0	0	11	0	6	0	1	6	32	
08:15:00	10	7	0	0	17	4	0	0	0	4	2	7	0	1	9	30	129
08:30:00	5	7	0	1	12	3	3	0	0	6	1	2	0	2	3	21	124
08:45:00	8	4	0	0	12	8	1	0	1	9	1	6	0	1	7	28	111
09:00:00	9	6	0	0	15	4	0	0	0	4	1	6	0	0	7	26	105
09:15:00	5	2	0	0	7	4	0	1	0	5	0	7	0	0	7	19	94
BREAK																	
16:00:00	7	3	0	0	10	5	0	0	1	5	1	17	1	0	19	34	
16:15:00	3	3	0	0	6	9	0	0	0	9	1	11	0	0	12	27	
16:30:00	3	4	0	1	7	13	1	0	0	14	1	10	0	1	11	32	
16:45:00	3	3	0	3	6	9	3	0	0	12	1	10	0	0	11	29	122
17:00:00	6	2	0	3	8	6	1	0	0	7	0	10	0	1	10	25	113
17:15:00	3	1	0	0	4	14	2	0	0	16	0	8	0	1	8	28	114
17:30:00	2	1	0	0	3	8	2	0	0	10	1	8	0	1	9	22	104
17:45:00	4	1	0	0	5	3	0	0	0	3	0	2	0	0	2	10	85
Grand Total	106	64	0	8	170	107	21	1	2	129	12	118	1	9	131	430	-
Approach%	62.4%	37.6%	0%		-	82.9%	16.3%	0.8%		-	9.2%	90.1%	0.8%		-	-	-
Totals %	24.7%	14.9%	0%		39.5%	24.9%	4.9%	0.2%		30%	2.8%	27.4%	0.2%		30.5%	-	-
Heavy	13	36	0		-	42	1	0		-	1	13	1		-	-	-
Heavy %	12.3%	56.3%	0%		-	39.3%	4.8%	0%		-	8.3%	11%	100%		-	-	-
Bicycles	36	2	0		-	0	12	0		-	3	40	0		-	-	-
Bicycle %	34%	3.1%	0%		-	0%	57.1%	0%		-	25%	33.9%	0%		-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (10.65 °C)

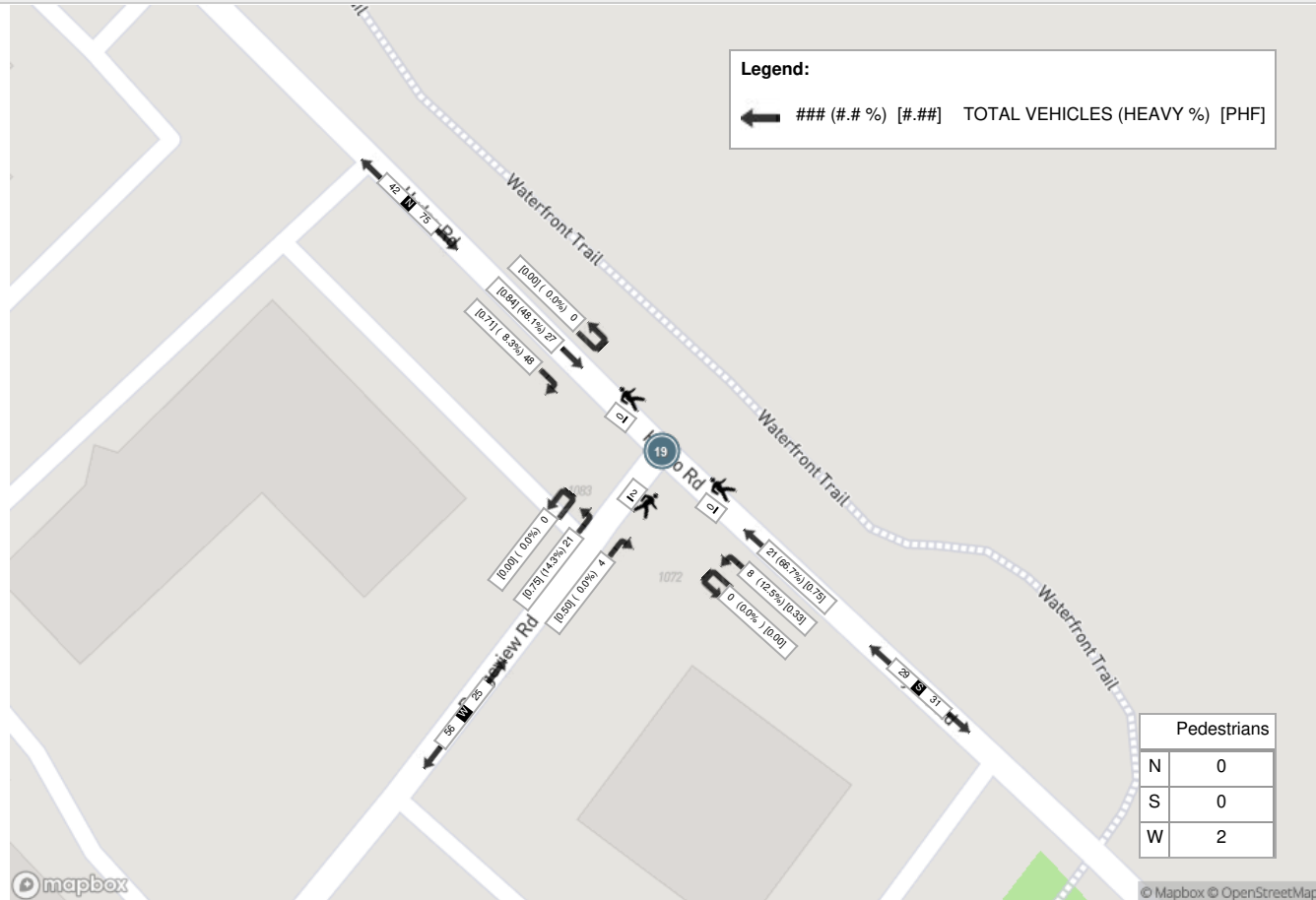
Start Time	N Approach HYDRO RD					S Approach HYDRO RD					W Approach RANGEVIEW RD					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
07:30:00	13	5	0	0	18	5	0	0	0	5	0	3	0	0	3	26
07:45:00	17	8	0	0	25	7	2	0	0	9	2	5	0	0	7	41
08:00:00	8	7	0	0	15	5	6	0	0	11	0	6	0	1	6	32
08:15:00	10	7	0	0	17	4	0	0	0	4	2	7	0	1	9	30
Grand Total	48	27	0	0	75	21	8	0	0	29	4	21	0	2	25	129
Approach%	64%	36%	0%		-	72.4%	27.6%	0%		-	16%	84%	0%		-	-
Totals %	37.2%	20.9%	0%		58.1%	16.3%	6.2%	0%		22.5%	3.1%	16.3%	0%		19.4%	-
PHF	0.71	0.84	0		0.75	0.75	0.33	0		0.66	0.5	0.75	0		0.69	-
Heavy	4	13	0		17	14	1	0		15	0	3	0		3	-
Heavy %	8.3%	48.1%	0%		22.7%	66.7%	12.5%	0%		51.7%	0%	14.3%	0%		12%	-
Lights	44	14	0		58	7	7	0		14	4	18	0		22	-
Lights %	91.7%	51.9%	0%		77.3%	33.3%	87.5%	0%		48.3%	100%	85.7%	0%		88%	-
Single-Unit Trucks	3	12	0		15	13	1	0		14	0	3	0		3	-
Single-Unit Trucks %	6.3%	44.4%	0%		20%	61.9%	12.5%	0%		48.3%	0%	14.3%	0%		12%	-
Articulated Trucks	1	1	0		2	1	0	0		1	0	0	0		0	-
Articulated Trucks %	2.1%	3.7%	0%		2.7%	4.8%	0%	0%		3.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		-
Bicycles on Road	6	0	0	0	-	0	0	0	0	-	0	2	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-



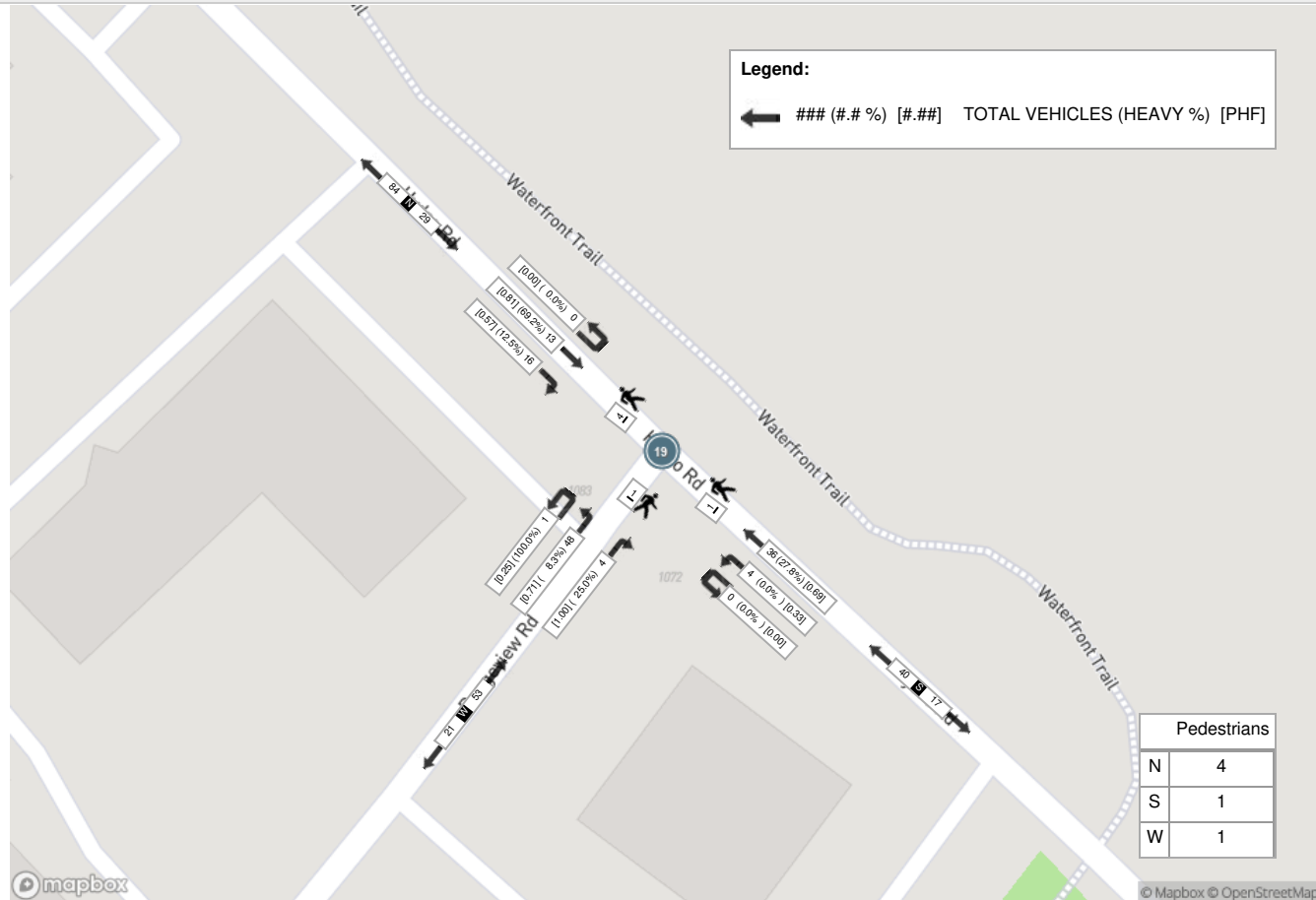
Peak Hour: 04:00 PM - 05:00 PM Weather: Broken Clouds (18.45 °C)

Start Time	N Approach HYDRO RD					S Approach HYDRO RD					W Approach RANGEVIEW RD					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:00:00	7	3	0	0	10	5	0	0	1	5	1	17	1	0	19	34
16:15:00	3	3	0	0	6	9	0	0	0	9	1	11	0	0	12	27
16:30:00	3	4	0	1	7	13	1	0	0	14	1	10	0	1	11	32
16:45:00	3	3	0	3	6	9	3	0	0	12	1	10	0	0	11	29
Grand Total	16	13	0	4	29	36	4	0	1	40	4	48	1	1	53	122
Approach%	55.2%	44.8%	0%		-	90%	10%	0%		-	7.5%	90.6%	1.9%		-	-
Totals %	13.1%	10.7%	0%		23.8%	29.5%	3.3%	0%		32.8%	3.3%	39.3%	0.8%		43.4%	-
PHF	0.57	0.81	0		0.73	0.69	0.33	0		0.71	1	0.71	0.25		0.7	-
Heavy	2	9	0		11	10	0	0		10	1	4	1		6	-
Heavy %	12.5%	69.2%	0%		37.9%	27.8%	0%	0%		25%	25%	8.3%	100%		11.3%	-
Lights	14	4	0		18	26	4	0		30	3	44	0		47	-
Lights %	87.5%	30.8%	0%		62.1%	72.2%	100%	0%		75%	75%	91.7%	0%		88.7%	-
Single-Unit Trucks	2	9	0		11	10	0	0		10	1	3	0		4	-
Single-Unit Trucks %	12.5%	69.2%	0%		37.9%	27.8%	0%	0%		25%	25%	6.3%	0%		7.5%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	1		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	2.1%	100%		3.8%	-
Pedestrians	-	-	-	4	-	-	-	-	1	-	-	-	-	1	-	-
Pedestrians%	-	-	-	66.7%	-	-	-	-	16.7%	-	-	-	-	16.7%	-	-
Bicycles on Road	10	2	0	0	-	0	5	0	0	-	1	14	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (10.65 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Broken Clouds (18.45 °C)



Appendix H: Corridor Growth Rates



From: [Tyler Xuereb](#)
To: [Deanna Green](#)
Cc: [Diego Mendoza](#); [Jason Skidmore](#)
Subject: RE: Growth Rates for Rangeview Estates Traffic Impact Study
Date: May 1, 2024 11:45:07 AM
Attachments: [image001.png](#)
[image002.png](#)

Hi Deanna,

Thank you for your patience.

Using the City's Travel Demand Model and supporting traffic count data, the City's Transportation Planning section has determined the projected growth along Lakeshore Road. Please note that these rates are compounded annually from existing to 2041.

In addition, these rates do not capture the Lakeview/Rangeview sites and as such, you will need to capture these as background developments.

Below are the recommended growth rates to be used for your study.

	Compounded Annual Growth from Existing to 2041	
	EB	WB
AM Peak	0.0%	1.0%
PM Peak	1.5%	0.5%

Regards,



Tyler Xuereb

Transportation Planning Analyst

T 905-615-3200 ext.4783

Tyler.xuereb@mississauga.ca

[City of Mississauga](#) | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Deanna Green <Deanna.Green@bagroup.com>

Sent: Tuesday, April 30, 2024 11:29 AM

To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>

Cc: Diego Mendoza <Diego.Mendoza@bagroup.com>; Jason Skidmore

<jason.skidmore@bagroup.com>

Subject: [EXTERNAL] RE: Growth Rates for Rangeview Estates Traffic Impact Study

[CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

Tyler,

Thanks very much. We need to submit the report to the client tomorrow but will likely be updating the report in the future to include 2024 traffic volumes and the growth rates that you provide.

Regards,

Deanna

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>

Sent: Tuesday, April 30, 2024 11:07 AM

To: Deanna Green <Deanna.Green@bagroup.com>

Subject: RE: Growth Rates for Rangeview Estates Traffic Impact Study

Hi Deanna,

Thank you for your patience.

We have been busy over the last couple of weeks, but I am working on the rates now and should have them to you in the next couple of days.

Regards,



Tyler Xuereb

Transportation Planning Analyst

T 905-615-3200 ext.4783

Tyler.xuereb@mississauga.ca

[City of Mississauga](#) | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Deanna Green <Deanna.Green@bagroup.com>

Sent: Friday, April 12, 2024 7:06 AM

To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>

Cc: Diego Mendoza <Diego.Mendoza@bagroup.com>; Jason Skidmore
<jason.skidmore@bagroup.com>

Subject: [EXTERNAL] RE: Growth Rates for Rangeview Estates Traffic Impact Study

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Thank you Tyler.

Deanna

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Thursday, April 11, 2024 3:25 PM
To: Deanna Green <Deanna.Green@bagroup.com>
Cc: Diego Mendoza <Diego.Mendoza@bagroup.com>; Jason Skidmore <jason.skidmore@bagroup.com>
Subject: RE: Growth Rates for Rangeview Estates Traffic Impact Study

Hi Deanna,

The rates that you are referencing from the TYLin report were provided back in 2018. Our travel demand model has changed over the years and as such, I will have to generate new rates for you.

I will get these rates to you as soon as I can.

Regards,



Tyler Xuereb

Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

[City of Mississauga](#) | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Deanna Green <Deanna.Green@bagroup.com>
Sent: Wednesday, April 10, 2024 10:54 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Diego Mendoza <Diego.Mendoza@bagroup.com>; Jason Skidmore <jason.skidmore@bagroup.com>
Subject: [EXTERNAL] RE: Growth Rates for Rangeview Estates Traffic Impact Study

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Tyler,

As the background development for the Rangeview analysis is significant (Lakeview = 16,000 units), we have not included additional background development beyond Lakeview and Serson.

To align with TYLin's approach for Lakeview, we have included the following layers in our analysis for Rangeview:

- 1- Existing
- 2- Corridor Growth
- 3- Existing Removals
- 4- Serson
- 5- Lakeview
- 6- Rangeview

Thanks,

Deanna

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Wednesday, April 10, 2024 10:32 AM
To: Deanna Green <Deanna.Green@bagroup.com>
Subject: RE: Growth Rates for Rangeview Estates Traffic Impact Study

Thank you!

Can you also provide me with a list of background developments that you are including in your analysis, I do not think I seen that in the checklist.

Thanks,



Tyler Xuereb

Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

[City of Mississauga](#) | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Deanna Green <Deanna.Green@bagroup.com>
Sent: Wednesday, April 10, 2024 10:17 AM

To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Jason Skidmore <jason.skidmore@bagroup.com>; Diego Mendoza <Diego.Mendoza@bagroup.com>
Subject: [EXTERNAL] RE: Growth Rates for Rangeview Estates Traffic Impact Study

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Tyler,

Our horizon to assess full build-out (Lakeview with 16,000 units and Rangeview with 5300 units) is 2041.

Thanks,

Deanna

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Wednesday, April 10, 2024 10:11 AM
To: Deanna Green <Deanna.Green@bagroup.com>
Subject: RE: Growth Rates for Rangeview Estates Traffic Impact Study

You don't often get email from tyler.xuereb@mississauga.ca. [Learn why this is important](#)

Hi Deanna,

Could you please provide me with your horizon years please?

Thanks,



Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

[City of Mississauga](#) | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Deanna Green <Deanna.Green@bagroup.com>
Sent: Monday, April 8, 2024 11:58 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Diego Mendoza <Diego.Mendoza@bagroup.com>
Subject: [EXTERNAL] Growth Rates for Rangeview Estates Traffic Impact Study

[CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

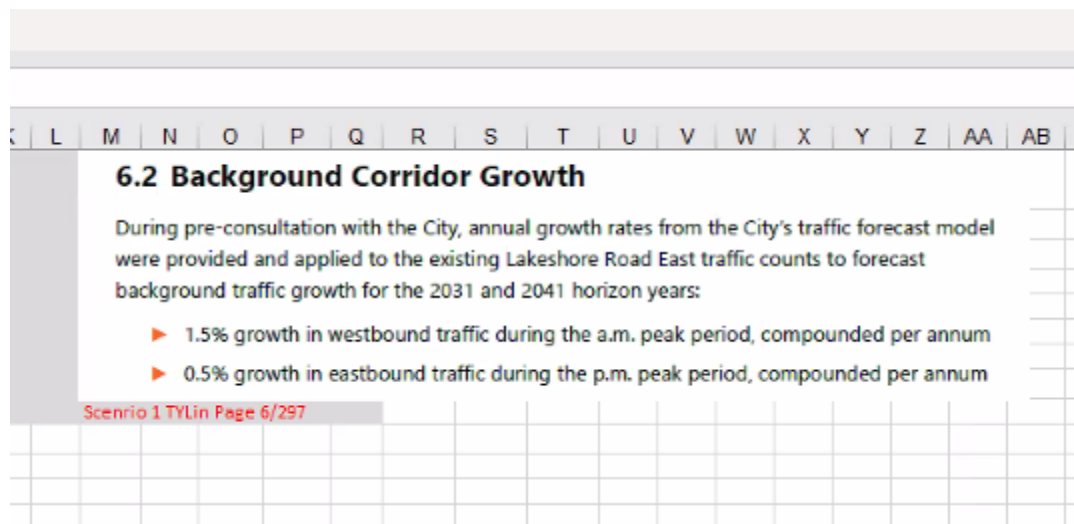
Tyler,

BA Group has been retained to complete the TIS for Rangeview Estates. Attached please find the City's recent comments on our scope of work (Appendix B).

We are currently aligning with the growth rates used in the TYLin report as per the snip below. Can you please confirm if these growth rates are acceptable for BA's TIS?

Thank you very much.

Deanna



Deanna Green, MSc.P.Eng.
Senior Associate

BA Consulting Group Ltd.

95 St. Clair Avenue West, Suite 1000 | Toronto
416 961 7110 x149 | Deanna.Green@bagroup.com

[BA Consulting Group Ltd](#)



Appendix I: Excerpts from April 2021 Report for Lakeview Village



LAKEVIEW VILLAGE

TRAFFIC CONSIDERATIONS REPORT ADDENDUM

FINAL ▪ APRIL 2021

REPORT PREPARED FOR



LAKEVIEW
COMMUNITY
PARTNERS LIMITED
4595 PALLADIUM WAY
BURLINGTON, ON L7M 0W9

REPORT PREPARED BY



THE MUNICIPAL
INFRASTRUCTURE
GROUP LTD., A T.Y.
LIN INTERNATIONAL
COMPANY
8800 DUFFERIN STREET, SUITE
200, VAUGHAN, ON L4K 0C5
(905) 738-5700

TMIG PROJECT NUMBER 17201

Trip Generation Summary – Lakeview Village

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise) (LUC 220) 355 units	Fitted Curve Equation	$\ln(T) = 0.95 \ln(X) - 0.51$			$\ln(T) = 0.89 \ln(X) - 0.02$		
	Distribution	23%	77%	-	63%	37%	-
	Gross Vehicle Site Trips	38	129	167	120	71	191
	Vehicle to Person Trip Conversion Rate	-	-	1.13	-	-	1.21
	Gross Person Trips	43	146	189	146	85	231
	Internal Reduction	1	2	3	13	9	22
	Total External Person Trips	42	144	186	133	76	209
	Mode Split Reduction	17	58	75	51	30	81
	Total Auto Driver Trips	25	86	111	82	46	128
Multifamily Housing (Mid-Rise) (LUC 221) 5287 units	Average Rate	0.2			0.18		
	Distribution	12%	88%	-	72%	28%	-
	Gross Vehicle Site Trips	127	930	1057	685	267	952
	Vehicle to Person Trip Conversion Rate	-	-	1.9	-	-	2
	Gross Person Trips	241	1768	2009	1370	533	1903
	Internal Reduction	5	31	36	119	59	178
	Total External Person Trips	236	1737	1973	1251	474	1725
	Mode Split Reduction	95	702	797	487	184	671
	Total Auto Driver Trips	141	1035	1176	764	290	1054
Multifamily Housing (High-Rise) (LUC 222) 2389 units	Average Rate or Fitted Curve Equation	$\ln(T) = 0.84 \ln(X) - 0.65$			2.17		
	Distribution	12%	88%		70%	30%	
	Gross Vehicle Site Trips	43	316	359	318	136	454
	Vehicle to Person Trip Conversion Rate	-	-	2.81	-	-	2.17
	Gross Person Trips	121	889	1010	690	295	985
	Internal Reduction	2	16	18	60	32	92
	Total External Person Trips	119	873	992	630	263	893
	Mode Split Reduction	48	353	401	245	102	347
	Total Auto Driver Trips	71	520	591	385	161	546
Hotel (LUC 310) 191 rooms	Fitted Curve Equation	$T = 0.50(X) - 5.34$			$T = 0.75(X) - 26.02$		
	Distribution	59%	41%		51%	49%	
	Gross Vehicle Site Trips	53	37	90	60	57	117
	Vehicle to Person Trip Conversion Rate	-	-	1.00	-	-	1.00

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
	Gross Person Trips	53	37	90	60	57	117
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	53	37	90	60	57	117
	Mode Split Reduction	21	15	36	23	22	45
	Total Auto Driver Trips	32	22	54	37	35	72
Recreational Community Center (LUC 495)	Fitted Curve Equation	$\ln(T) = 0.54 \ln(X) + 2.73$			$\ln(T) = 0.76 \ln(X) + 2.00$		
	Distribution	66%	34%		47%	53%	
	Gross Vehicle Site Trips	269	139	408	352	397	749
	Vehicle to Person Trip Conversion Rate	-	-	1.86	-	-	1.82
	Gross Person Trips	501	258	759	641	722	1363
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	501	258	759	641	722	1363
	Mode Split Reduction	202	104	306	249	281	530
	Total Auto Driver Trips	299	154	453	392	441	833
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%		17%	83%	
	Gross Vehicle Site Trips	480	78	558	107	520	627
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	706	115	821	156	759	915
	Internal Reduction	49	32	81	51	65	116
	Total External Person Trips	657	83	740	105	694	799
	Mode Split Reduction	266	34	300	41	270	311
	Total Auto Driver Trips	391	49	440	64	424	488
Research and Development Center (LUC 760)	Average Rate	0.42			0.49		
	Distribution	75%	25%		15%	85%	
	Gross Vehicle Site Trips	235	78	313	55	310	365
	Vehicle to Person Trip Conversion Rate	-	-	1.36	-	-	1.45
	Gross Person Trips	320	106	426	80	450	530
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	320	106	426	80	450	530
	Mode Split Reduction	129	43	172	31	175	206
	Total Auto Driver Trips	191	63	254	49	275	324
Shopping Center	Fitted Curve Equation	$T = 0.50(X) + 151.78$			$\ln(T) = 0.74 \ln(X) + 2.89$		
	Distribution	62%	38%		48%	52%	

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
(LUC 820)	Gross Vehicle Site Trips	157	96	253	440	477	917
	Vehicle to Person Trip Conversion Rate	-	-	1.31	-	-	1.43
	Gross Person Trips	206	126	332	629	682	1311
	Internal Reduction	60	36	96	113	191	304
	Total External Person Trips	146	90	236	516	491	1007
	Mode Split Reduction	59	36	95	201	191	392
	Total Auto Driver Trips	87	54	141	315	300	615
Elementary School (LUC 520) 850 student capacity	Average Rate	0.67			0.17		
	Distribution	54%	46%	-	48%	52%	-
	Gross Vehicle Site Trips	308	262	570	69	76	145
	Internal Reduction (50%)	154	131	285	34	38	72
	Total Auto Driver Trips	154	131	285	35	38	73
Day Care Center (LUC 565) 39 Student Capacity	Fitted Curve Equation	$T = 0.66(X) + 8.42$			$\ln(T) = 0.87 \ln(X) + 0.29$		
	Distribution	53%	47%	-	47%	53%	-
	Gross Vehicle Site Trips	18	16	34	15	17	32
	Internal Reduction	9	8	17	7	9	16
	Total Auto Driver Trips	9	8	17	8	8	16

Trip Generation Summary – Rangeview Estates

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) (LUC 221) 2981 units	Average Rate	0.2			0.18		
	Distribution	12%	88%	-	72%	28%	-
	Gross Vehicle Site Trips	72	524	596	386	151	537
	Vehicle to Person Trip Conversion Rate	-	-	1.9	-	-	2
	Gross Person Trips	136	997	1133	773	300	1073
	Internal Reduction	3	12	15	61	28	89
	Total External Person Trips	133	985	1118	712	272	984
	Mode Split Reduction	54	398	452	277	106	383
	Total Auto Driver Trips	79	587	666	435	166	601
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%	-	17%	83%	-
	Gross Vehicle Site Trips	48	8	56	8	39	47
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	71	11	82	12	57	69
	Internal Reduction	5	3	8	11	12	23
	Total External Person Trips	66	8	74	1	45	46
	Mode Split Reduction	27	3	30	0	18	18
	Total Auto Driver Trips	39	5	44	1	27	28
Shopping Center (LUC 820)	Fitted Curve Equation	$T = 0.50(X) + 151.78$			$\ln(T) = 0.74\ln(X) + 2.89$		
	Distribution	62%	38%	-	48%	52%	-
	Gross Vehicle Site Trips	109	66	175	150	162	312
	Vehicle to Person Trip Conversion Rate	-	-	1.31	-	-	1.43
	Gross Person Trips	143	87	230	214	231	445
	Internal Reduction	13	6	19	32	64	96
	Total External Person Trips	130	81	211	182	167	349
	Mode Split Reduction	53	33	86	71	65	136
	Total Auto Driver Trips	77	48	125	111	102	213

Trip Generation Summary – Serson North

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%	-	17%	83%	-
	Gross Vehicle Site Trips	158	25	183	33	161	194
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	231	38	269	48	236	284
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	231	38	269	48	236	284
	Mode Split Reduction	115	19	134	24	118	142
	Total Auto Driver Trips	116	19	135	24	118	142
Research and Development Center (LUC 760)	Average Rate	0.42			0.49		
	Distribution	75%	25%	-	15%	85%	-
	Gross Vehicle Site Trips	71	23	94	16	94	110
	Vehicle to Person Trip Conversion Rate	-	-	1.36	-	-	1.45
	Gross Person Trips	96	32	128	24	135	159
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	96	32	128	24	135	159
	Mode Split Reduction	48	16	64	12	67	79
	Total Auto Driver Trips	48	16	64	12	68	80

Trip Generation Summary – 2041 50% Mode Split Sensitivity – Lakeview Village

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise) (LUC 220) 355 units	Fitted Curve Equation	$\ln(T) = 0.95 \ln(X) - 0.51$			$\ln(T) = 0.89 \ln(X) - 0.02$		
	Distribution	23%	77%	-	63%	37%	-
	Gross Vehicle Site Trips	38	129	167	120	71	191
	Vehicle to Person Trip Conversion Rate	-	-	1.13	-	-	1.21
	Gross Person Trips	43	146	189	146	85	231
	Internal Reduction	1	2	3	13	9	22
	Total External Person Trips	42	144	186	133	76	209
	Mode Split Reduction	20	73	93	66	39	105
	Total Auto Driver Trips	22	71	93	67	37	104
Multifamily Housing (Mid-Rise) (LUC 221) 5287 units	Average Rate	0.2			0.18		
	Distribution	12%	88%	-	72%	28%	-
	Gross Vehicle Site Trips	127	930	1057	685	267	952
	Vehicle to Person Trip Conversion Rate	-	-	1.9	-	-	2
	Gross Person Trips	241	1768	2009	1370	533	1903
	Internal Reduction	5	31	36	119	59	178
	Total External Person Trips	236	1737	1973	1251	474	1725
	Mode Split Reduction	118	868	986	626	236	862
	Total Auto Driver Trips	118	869	987	625	238	863
Multifamily Housing (High-Rise) (LUC 222) 2389 units	Average Rate or Fitted Curve Equation	$\ln(T) = 0.84 \ln(X) - 0.65$			2.17		
	Distribution	12%	88%		70%	30%	
	Gross Vehicle Site Trips	43	316	359	318	136	454
	Vehicle to Person Trip Conversion Rate	-	-	2.81	-	-	2.17
	Gross Person Trips	121	889	1010	690	295	985
	Internal Reduction	2	16	18	60	32	92
	Total External Person Trips	119	873	992	630	263	893
	Mode Split Reduction	60	436	496	315	131	446
	Total Auto Driver Trips	59	437	496	315	132	447
Hotel (LUC 310) 191 rooms	Fitted Curve Equation	$T = 0.50(X) - 5.34$			$T = 0.75(X) - 26.02$		
	Distribution	59%	41%		51%	49%	
	Gross Vehicle Site Trips	53	37	90	60	57	117
	Vehicle to Person Trip Conversion Rate	-	-	1.00	-	-	1.00

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
	Gross Person Trips	53	37	90	60	57	117
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	53	37	90	60	57	117
	Mode Split Reduction	26	18	44	30	28	58
	Total Auto Driver Trips	27	19	46	30	29	59
Recreational Community Center (LUC 495)	Fitted Curve Equation	$\ln(T) = 0.54 \ln(X) + 2.73$			$\ln(T) = 0.76 \ln(X) + 2.00$		
	Distribution	66%	34%		47%	53%	
	Gross Vehicle Site Trips	269	139	408	352	397	749
	Vehicle to Person Trip Conversion Rate	-	-	1.86	-	-	1.82
	Gross Person Trips	501	258	759	641	722	1363
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	501	258	759	641	722	1363
	Mode Split Reduction	250	129	379	320	361	681
	Total Auto Driver Trips	251	129	380	321	361	682
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%		17%	83%	
	Gross Vehicle Site Trips	480	78	558	107	520	627
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	706	115	821	156	759	915
	Internal Reduction	49	32	81	51	65	116
	Total External Person Trips	657	83	740	105	694	799
	Mode Split Reduction	266	34	300	41	270	311
	Total Auto Driver Trips	391	49	440	64	424	488
Research and Development Center (LUC 760)	Average Rate	0.42			0.49		
	Distribution	75%	25%		15%	85%	
	Gross Vehicle Site Trips	235	78	313	55	310	365
	Vehicle to Person Trip Conversion Rate	-	-	1.36	-	-	1.45
	Gross Person Trips	320	106	426	80	450	530
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	657	83	740	105	694	799
	Mode Split Reduction	328	41	369	52	347	399
	Total Auto Driver Trips	329	42	371	53	347	400
Shopping Center	Fitted Curve Equation	$T = 0.50(X) + 151.78$			$\ln(T) = 0.74 \ln(X) + 2.89$		
	Distribution	62%	38%		48%	52%	

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
(LUC 820)	Gross Vehicle Site Trips	157	96	253	440	477	917
	Vehicle to Person Trip Conversion Rate	-	-	1.31	-	-	1.43
	Gross Person Trips	206	126	332	629	682	1311
	Internal Reduction	60	36	96	113	191	304
	Total External Person Trips	146	90	236	516	491	1007
	Mode Split Reduction	73	45	118	258	245	503
	Total Auto Driver Trips	73	45	118	258	246	504
Elementary School (LUC 520) 850 student capacity	Average Rate	0.67			0.17		
	Distribution	54%	46%	-	48%	52%	-
	Gross Vehicle Site Trips	308	262	570	69	76	145
	Internal Reduction (50%)	154	131	285	34	38	72
	Total Auto Driver Trips	154	131	285	35	38	73
Day Care Center (LUC 565) 39 Student Capacity	Fitted Curve Equation	$T = 0.66(X) + 8.42$			$\ln(T) = 0.87 \ln(X) + 0.29$		
	Distribution	53%	47%	-	47%	53%	-
	Gross Vehicle Site Trips	18	16	34	15	17	32
	Internal Reduction	9	8	17	7	9	16
	Total Auto Driver Trips	9	8	17	8	8	16

Trip Generation Summary – 2041 50% Mode Split Sensitivity – Rangeview Estates

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) (LUC 221) 2981 units	Average Rate	0.2			0.18		
	Distribution	12%	88%	-	72%	28%	-
	Gross Vehicle Site Trips	72	524	596	386	151	537
	Vehicle to Person Trip Conversion Rate	-	-	1.9	-	-	2
	Gross Person Trips	136	997	1133	773	300	1073
	Internal Reduction	3	12	15	61	28	89
	Total External Person Trips	133	985	1118	712	272	984
	Mode Split Reduction	66	492	558	356	136	492
	Total Auto Driver Trips	67	493	560	356	136	492
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%	-	17%	83%	-
	Gross Vehicle Site Trips	48	8	56	8	39	47
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	71	11	82	12	57	69
	Internal Reduction	5	3	8	11	12	23
	Total External Person Trips	66	8	74	1	45	46
	Mode Split Reduction	33	4	37	0	22	22
	Total Auto Driver Trips	33	4	37	1	23	24
Shopping Center (LUC 820)	Fitted Curve Equation	$T = 0.50(X) + 151.78$			$\ln(T) = 0.74\ln(X) + 2.89$		
	Distribution	62%	38%	-	48%	52%	-
	Gross Vehicle Site Trips	109	66	175	150	162	312
	Vehicle to Person Trip Conversion Rate	-	-	1.31	-	-	1.43
	Gross Person Trips	143	87	230	214	231	445
	Internal Reduction	13	6	19	32	64	96
	Total External Person Trips	130	81	211	182	167	349
	Mode Split Reduction	65	40	105	91	83	174
	Total Auto Driver Trips	65	41	106	91	84	175

Trip Generation Summary – 2041 50% Mode Split Sensitivity – Serson North

Land Use	Parameters	Peak Hour of Trip Generator					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
General Office Building (LUC 710)	Fitted Curve Equation	$T = 0.72(X) + 21.64$			$T = 0.83(X) + 7.99$		
	Distribution	86%	14%	-	17%	83%	-
	Gross Vehicle Site Trips	158	25	183	33	161	194
	Vehicle to Person Trip Conversion Rate	-	-	1.47	-	-	1.46
	Gross Person Trips	231	38	269	48	236	284
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	231	38	269	48	236	284
	Mode Split Reduction	115	19	134	24	118	142
	Total Auto Driver Trips	116	19	135	24	118	142
Research and Development Center (LUC 760)	Average Rate	0.42			0.49		
	Distribution	75%	25%	-	15%	85%	-
	Gross Vehicle Site Trips	71	23	94	16	94	110
	Vehicle to Person Trip Conversion Rate	-	-	1.36	-	-	1.45
	Gross Person Trips	96	32	128	24	135	159
	Internal Reduction	-	-	-	-	-	-
	Total External Person Trips	96	32	128	24	135	159
	Mode Split Reduction	48	16	64	12	67	79
	Total Auto Driver Trips	48	16	64	12	68	80

Appendix J:

Synchro Detailed Capacity Analysis Results



Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99	1.00		0.99	0.99			0.99				0.96
Frt				0.968				0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	1733	3510	0	1785	3231	0	0	1748	0	1585	1627	1521
Flt Permitted	0.140			0.324						0.950	0.729	
Satd. Flow (perm)	254	3510	0	605	3231	0	0	1771	0	1585	1245	1459
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					27			101				51
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩↩	↩	↩	↩	↩↩	↩
Traffic Volume (vph)	462	777	1	608	1	0	284	3	507
Future Volume (vph)	462	777	1	608	1	0	284	3	507
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8		2	1	6	7
Permitted Phases	4		8		2				6
Detector Phase	7	4	8	8	2	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	45.0	92.0	47.0	47.0	11.0	11.0	27.0	38.0	45.0
Total Split (%)	34.6%	70.8%	36.2%	36.2%	8.5%	8.5%	20.8%	29.2%	34.6%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0		5.0	5.0	5.0	2.0
Lead/Lag	Lead		Lag	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	90.0	87.0	48.6	48.6		6.0	30.8	30.8	72.4
Actuated g/C Ratio	0.69	0.67	0.37	0.37		0.05	0.24	0.24	0.56
v/c Ratio	0.88	0.37	0.00	0.71		0.01	0.42	0.42	0.67
Control Delay	44.3	10.0	30.0	38.7		0.0	47.5	47.4	21.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	44.3	10.0	30.0	38.7		0.0	47.5	47.4	21.0
LOS	D	B	C	D		A	D	D	C
Approach Delay		22.8		38.7				30.5	
Approach LOS		C		D				C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 29.3

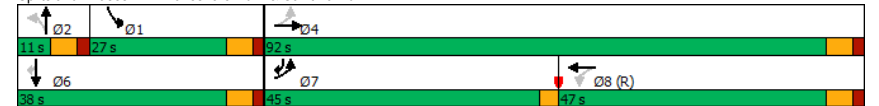
Intersection LOS: C

Intersection Capacity Utilization 84.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Existing Conditions
Morning Peak Hour

	↖	→	↙	←	↑	↘	↓	↗
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	519	875	1	866	2	159	163	570
v/c Ratio	0.88	0.37	0.00	0.71	0.01	0.42	0.42	0.67
Control Delay	44.3	10.0	30.0	38.7	0.0	47.5	47.4	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	10.0	30.0	38.7	0.0	47.5	47.4	21.0
Queue Length 50th (m)	99.4	50.4	0.2	103.4	0.0	37.6	38.5	86.8
Queue Length 95th (m)	139.3	61.0	1.7	134.4	0.0	67.1	68.5	111.3
Internal Link Dist (m)		297.4		113.2	71.8		931.9	
Turn Bay Length (m)	35.0		60.0			115.0		
Base Capacity (vph)	665	2349	226	1225	178	375	385	927
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	0.78	0.37	0.00	0.71	0.01	0.42	0.42	0.61
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Existing Conditions
Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	462	777	2	1	608	163	1	0	1	284	3	507
Future Volume (vph)	462	777	2	1	608	163	1	0	1	284	3	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		5.0	5.0			5.0		5.0	5.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00			0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1732	3509		1775	3232			1728		1585	1628	1489
Flt Permitted	0.14	1.00		0.32	1.00			1.00		0.95	0.73	1.00
Satd. Flow (perm)	255	3509		606	3232			1771		1585	1246	1489
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	519	873	2	1	683	183	1	0	1	319	3	570
RTOR Reduction (vph)	0	0	0	0	18	0	0	2	0	0	0	22
Lane Group Flow (vph)	519	875	0	1	848	0	0	0	0	159	163	548
Confl. Peds. (#/hr)	27		9	9		27	24					24
Heavy Vehicles (%)	3%	4%	0%	0%	6%	17%	0%	0%	0%	7%	0%	5%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8			2		1	6	7
Permitted Phases	4			8			2					6
Actuated Green, G (s)	81.2	81.2		42.8	42.8			1.0		29.8	36.8	72.2
Effective Green, g (s)	82.2	82.2		43.8	43.8			2.0		30.8	37.8	74.2
Actuated g/C Ratio	0.63	0.63		0.34	0.34			0.02		0.24	0.29	0.57
Clearance Time (s)	3.0	6.0		6.0	6.0			6.0		6.0	6.0	3.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	574	2218		204	1088			27		375	452	849
v/s Ratio Prot	c0.25	0.25			c0.26					0.10	0.09	c0.18
v/s Ratio Perm	0.32			0.00				0.00			0.02	0.19
v/c Ratio	0.90	0.39		0.00	0.78			0.00		0.42	0.36	0.65
Uniform Delay, d1	32.0	11.7		28.6	38.8			63.0		42.1	36.5	19.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	17.6	0.5		0.0	5.5			0.0		0.8	0.5	1.7
Delay (s)	49.7	12.2		28.7	44.3			63.0		42.9	37.0	20.7
Level of Service	D	B		C	D			E		D	D	C
Approach Delay (s)		26.2			44.3			63.0			27.6	
Approach LOS		C			D			E			C	
Intersection Summary												
HCM 2000 Control Delay			31.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			84.9%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.98	1.00		0.95		0.98		1.00	0.97	
Frt			0.850			0.850		0.959			0.850	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1069	3476	1536	1785	3380	1597	0	1712	0	1608	1588	0
Flt Permitted	0.332			0.262				0.789		0.738		
Satd. Flow (perm)	371	3476	1499	492	3380	1510	0	1383	0	1245	1588	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)			62			62		55			267	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Existing Conditions
Morning Peak Hour

Synchro 11 Report
Page 5

Timings
2: East Avenue & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	1003	49	12	817	9	20	0	9	0		
Future Volume (vph)	3	1003	49	12	817	9	20	0	9	0		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0		
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	31.0	31.0	31.0	31.0		
Total Split (s)	13.0	93.0	93.0	13.0	93.0	93.0	34.0	34.0	34.0	34.0		
Total Split (%)	9.3%	66.4%	66.4%	9.3%	66.4%	66.4%	24.3%	24.3%	24.3%	24.3%		
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0	3.0	3.0		
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0		
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0	5.0		6.0	6.0	6.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag		Lead	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None		
Act Effect Green (s)	126.6	124.0	124.0	127.3	125.9	125.9		9.1	9.1	9.1		
Actuated g/C Ratio	0.90	0.89	0.89	0.91	0.90	0.90		0.06	0.06	0.06		
v/c Ratio	0.01	0.34	0.04	0.02	0.28	0.01		0.21	0.11	0.01		
Control Delay	1.3	2.9	0.6	2.1	3.2	0.1		7.7	64.8	0.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		
Total Delay	1.3	2.9	0.6	2.1	3.2	0.1		7.7	64.8	0.0		
LOS	A	A	A	A	A	A		A	E	A		
Approach Delay		2.8			3.2			7.7		44.8		
Approach LOS		A			A			A		D		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 3.3

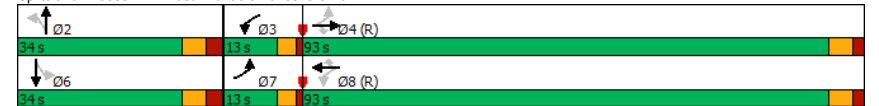
Intersection LOS: A

Intersection Capacity Utilization 47.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Existing Conditions
Morning Peak Hour

Synchro 11 Report
Page 6

Queues
2: East Avenue & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	↖	→	↘	↙	←	↖	↑	↘	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	3	1034	51	12	842	9	30	9	4
v/c Ratio	0.01	0.34	0.04	0.02	0.28	0.01	0.21	0.11	0.01
Control Delay	1.3	2.9	0.6	2.1	3.2	0.1	7.7	64.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.3	2.9	0.6	2.1	3.2	0.1	7.7	64.8	0.0
Queue Length 50th (m)	0.1	24.1	0.0	0.3	17.9	0.0	0.0	2.5	0.0
Queue Length 95th (m)	0.4	50.7	2.1	2.4	57.0	m0.2	3.6	8.8	0.0
Internal Link Dist (m)		89.2			78.4		108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0		45.0	
Base Capacity (vph)	388	3077	1334	541	3040	1364	320	249	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.34	0.04	0.02	0.28	0.01	0.09	0.04	0.01
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	3	1003	49	12	817	9	20	0	9	9	0	4
Future Volume (vph)	3	1003	49	12	817	9	20	0	9	9	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0		6.0		6.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.95		1.00		1.00	0.97	
Flbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.96		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)	1065	3476	1499	1785	3380	1510		1694		1603	1588	
Flt Permitted	0.33	1.00	1.00	0.26	1.00	1.00		0.79		0.74	1.00	
Satd. Flow (perm)	373	3476	1499	493	3380	1510		1384		1244	1588	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	3	1034	51	12	842	9	21	0	9	9	0	4
RTOR Reduction (vph)	0	0	8	0	0	1	0	29	0	0	4	0
Lane Group Flow (vph)	3	1034	43	12	842	8	0	1	0	9	0	0
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9
Heavy Vehicles (%)	67%	5%	4%	0%	8%	0%	5%	0%	0%	11%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	116.9	115.8	115.8	119.3	117.0	117.0		4.9		4.9	4.9	
Effective Green, g (s)	118.9	116.8	116.8	121.3	118.0	118.0		5.9		5.9	5.9	
Actuated g/C Ratio	0.85	0.83	0.83	0.87	0.84	0.84		0.04		0.04	0.04	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	327	2899	1250	457	2848	1272		58		52	66	
v/s Ratio Prot	0.00	c0.30		c0.00	0.25						0.00	
v/s Ratio Perm	0.01		0.03	0.02		0.01		0.00		c0.01		
v/c Ratio	0.01	0.36	0.03	0.03	0.30	0.01		0.02		0.17	0.00	
Uniform Delay, d1	1.6	2.7	2.0	1.4	2.3	1.7		64.3		64.7	64.2	
Progression Factor	1.00	1.00	1.00	1.67	1.53	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.0	0.3	0.0		0.2		1.6	0.0	
Delay (s)	1.6	3.1	2.0	2.4	3.8	1.7		64.4		66.3	64.2	
Level of Service	A	A	A	A	A	A		E		E	E	
Approach Delay (s)		3.0			3.7			64.4			65.7	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM 2000 Control Delay			4.7		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					14.0		
Intersection Capacity Utilization			47.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		0.0	0.0
Storage Lanes		1	1		1	0
Taper Length (m)			7.5		0.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.93			0.99	
Frt		0.850			0.953	
Flt Protected			0.950		0.968	
Satd. Flow (prot)	3476	1479	1623	3411	1491	0
Flt Permitted			0.260		0.968	
Satd. Flow (perm)	3476	1382	444	3411	1484	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32			17	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↖
Traffic Volume (vph)	940	60	31	839	30	
Future Volume (vph)	940	60	31	839	30	
Turn Type	NA	Perm	pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	
Detector Phase	4	4	3	8	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0	11.0	24.0	34.0	
Total Split (s)	89.0	89.0	13.0	102.0	38.0	
Total Split (%)	63.6%	63.6%	9.3%	72.9%	27.1%	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	3.0	5.0	6.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	
Act Effct Green (s)	116.7	116.7	123.8	122.8	9.7	
Actuated g/C Ratio	0.83	0.83	0.88	0.88	0.07	
v/c Ratio	0.35	0.06	0.07	0.30	0.41	
Control Delay	3.6	2.1	1.9	2.3	53.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.6	2.1	1.9	2.3	53.6	
LOS	A	A	A	A	D	
Approach Delay	3.5			2.3	53.6	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 4.1

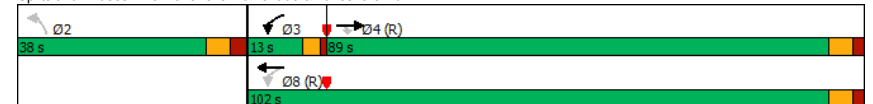
Intersection LOS: A

Intersection Capacity Utilization 40.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	→	↘	↙	←	↖
Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	1011	65	33	902	49
v/c Ratio	0.35	0.06	0.07	0.30	0.41
Control Delay	3.6	2.1	1.9	2.3	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	2.1	1.9	2.3	53.6
Queue Length 50th (m)	29.1	1.3	1.0	20.8	9.1
Queue Length 95th (m)	37.0	4.0	2.9	32.8	22.3
Internal Link Dist (m)	41.1			37.2	106.4
Turn Bay Length (m)		25.0	35.0		
Base Capacity (vph)	2897	1157	476	2991	352
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	0.35	0.06	0.07	0.30	0.14
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	940	60	31	839	30	16
Future Volume (vph)	940	60	31	839	30	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	3.0	5.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	0.93	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	3476	1382	1620	3411	1485	
Flt Permitted	1.00	1.00	0.26	1.00	0.97	
Satd. Flow (perm)	3476	1382	444	3411	1485	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1011	65	33	902	32	17
RTOR Reduction (vph)	0	6	0	0	16	0
Lane Group Flow (vph)	1011	59	33	902	33	0
Confl. Peds. (#/hr)		12	12		5	2
Heavy Vehicles (%)	5%	8%	10%	7%	17%	13%
Turn Type	NA	Perm	pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	
Actuated Green, G (s)	111.7	111.7	119.4	119.4	7.6	
Effective Green, g (s)	112.7	112.7	120.4	120.4	8.6	
Actuated g/C Ratio	0.81	0.81	0.86	0.86	0.06	
Clearance Time (s)	6.0	6.0	4.0	6.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2798	1112	421	2933	91	
v/s Ratio Prot	c0.29		0.00	c0.26		
v/s Ratio Perm		0.04	0.06		c0.02	
v/c Ratio	0.36	0.05	0.08	0.31	0.36	
Uniform Delay, d1	3.8	2.8	1.7	1.9	63.1	
Progression Factor	0.81	0.91	1.03	1.00	1.00	
Incremental Delay, d2	0.4	0.1	0.1	0.3	2.5	
Delay (s)	3.4	2.6	1.9	2.1	65.5	
Level of Service	A	A	A	A	E	
Approach Delay (s)	3.3			2.1	65.5	
Approach LOS	A			A	E	
Intersection Summary						
HCM 2000 Control Delay		4.3		HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio		0.36				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)	15.0	
Intersection Capacity Utilization		40.5%		ICU Level of Service	A	
Analysis Period (min)		15				
c Critical Lane Group						

Lanes and Geometrics

4: Ogden Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩			↩↩		↩	↩	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	0.99			0.99		0.97	0.97	
Frt					0.987						0.850	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1733	3443	0	1785	3325	0	0	1825	0	1638	1575	0
Flt Permitted	0.297			0.311						0.871		
Satd. Flow (perm)	542	3443	0	579	3325	0	0	1897	0	1459	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					10						283	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.9			86.8			140.9			246.5	
Travel Time (s)		7.2			6.2			10.1			17.7	

Intersection Summary

Area Type: Other

Timings

4: Ogden Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↩	↩↩	↩	↩↩		↩↩	↩	↩
Traffic Volume (vph)	86	881	4	765	1	0	70	0
Future Volume (vph)	86	881	4	765	1	0	70	0
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	34.0	11.0	34.0
Total Split (s)	15.0	80.0	11.0	76.0	11.0	36.0	13.0	38.0
Total Split (%)	10.7%	57.1%	7.9%	54.3%	7.9%	25.7%	9.3%	27.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	3.0	5.0		6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
Act Effect Green (s)	121.3	117.5	117.4	108.9		6.8	12.6	9.6
Actuated g/C Ratio	0.87	0.84	0.84	0.78		0.05	0.09	0.07
v/c Ratio	0.17	0.32	0.01	0.33		0.01	0.50	0.23
Control Delay	2.7	4.9	2.2	5.5		63.0	71.7	1.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	2.7	4.9	2.2	5.5		63.0	71.7	1.5
LOS	A	A	A	A		E	E	A
Approach Delay		4.7		5.5		63.0		33.4
Approach LOS		A		A		E		C

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 7.3

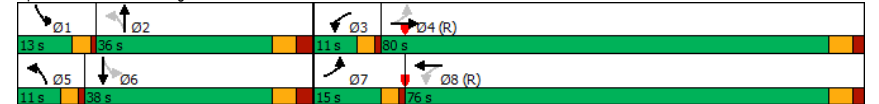
Intersection LOS: A

Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	↖	→	↙	←	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	89	911	4	862	1	72	86
v/c Ratio	0.17	0.32	0.01	0.33	0.01	0.50	0.23
Control Delay	2.7	4.9	2.2	5.5	63.0	71.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	4.9	2.2	5.5	63.0	71.7	1.5
Queue Length 50th (m)	4.2	57.7	0.1	29.8	0.3	20.8	0.0
Queue Length 95th (m)	9.5	95.9	1.0	61.7	2.3	34.4	0.0
Internal Link Dist (m)		75.9		62.8	116.9		222.5
Turn Bay Length (m)	28.0		25.0				
Base Capacity (vph)	572	2889	560	2587	406	145	578
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.32	0.01	0.33	0.00	0.50	0.15
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	↖	→	↙	←	↗	↘	↑	↘	↓	↖		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↖		↖	↗↖			↗↖		↖	↗	
Traffic Volume (vph)	86	881	3	4	765	71	1	0	0	70	0	83
Future Volume (vph)	86	881	3	4	765	71	1	0	0	70	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0		3.0	5.0			6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			0.99		0.98	1.00	
Frt	1.00	1.00		1.00	0.99			1.00		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1723	3442		1778	3326			1802		1600	1575	
Flt Permitted	0.30	1.00		0.31	1.00			1.00		0.87	1.00	
Satd. Flow (perm)	539	3442		582	3326			1897		1467	1575	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	89	908	3	4	789	73	1	0	0	72	0	86
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	77	0
Lane Group Flow (vph)	89	911	0	4	859	0	0	1	0	72	9	0
Confl. Peds. (#/hr)	26		14	14		26	9		18	18		9
Heavy Vehicles (%)	3%	6%	0%	0%	7%	10%	0%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	113.4	108.3		103.9	102.8			2.4		13.6	13.6	
Effective Green, g (s)	114.4	109.3		105.9	103.8			3.4		14.6	14.6	
Actuated g/C Ratio	0.82	0.78		0.76	0.74			0.02		0.10	0.10	
Clearance Time (s)	4.0	6.0		4.0	6.0			7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	504	2687		458	2465			46		160	164	
v/s Ratio Prot	c0.01	c0.26		0.00	c0.26					c0.03	0.01	
v/s Ratio Perm	0.13			0.01				0.00		c0.02		
v/c Ratio	0.18	0.34		0.01	0.35			0.02		0.45	0.05	
Uniform Delay, d1	2.9	4.6		4.2	6.3			66.7		58.8	56.5	
Progression Factor	1.16	1.39		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	0.4			0.2		2.0	0.1	
Delay (s)	3.5	6.7		4.2	6.7			66.9		60.8	56.6	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		6.4			6.7			66.9			58.5	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM 2000 Control Delay		10.6			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.36										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		53.6%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996						0.911			0.961	
Frt Protected				0.950				0.983			0.966	
Satd. Flow (prot)	1879	3447	0	1487	3412	0	0	1428	0	0	1783	0
Frt Permitted				0.950				0.983			0.966	
Satd. Flow (perm)	1879	3447	0	1487	3412	0	0	1428	0	0	1783	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	914	27	50	830	2	13	0	26	5	0	2
Future Volume (Veh/h)	0	914	27	50	830	2	13	0	26	5	0	2
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	962	28	53	874	2	14	0	27	5	0	2
Pedestrians					1			13			16	
Lane Width (m)					3.6			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			1			1	
Right turn flare (veh)												
Median type	TWLT			TWLT								
Median storage (veh)	2			2								
Upstream signal (m)	225			195								
pX, platoon unblocked	0.93			0.93			0.96	0.96	0.93	0.96	0.96	0.93
Hourly flow rate (vph)	892			1003			1534	1987	509	1506	2000	454
vC1, stage 1 conf vol							989	989		997	997	
vC2, stage 2 conf vol							545	998		509	1003	
vCu, unblocked vol	745			852			1172	1643	321	1143	1657	277
tC, single (s)	4.1			4.5			8.1	6.5	7.2	7.5	6.5	6.9
tC, 2 stage (s)							7.1	5.5		6.5	5.5	
tF (s)	2.2			2.4			3.8	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			91			94	100	95	98	100	100
cM capacity (veh/h)	804			623			229	245	586	254	227	670
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	641	349	53	583	293	41	7				
Volume Left	0	0	0	53	0	0	14	5				
Volume Right	0	0	28	0	0	2	27	2				
cSH	1700	1700	1700	623	1700	1700	382	309				
Volume to Capacity	0.00	0.38	0.21	0.09	0.34	0.17	0.11	0.02				
Queue Length 95th (m)	0.0	0.0	0.0	2.2	0.0	0.0	2.9	0.6				
Control Delay (s)	0.0	0.0	0.0	11.3	0.0	0.0	15.5	16.9				
Lane LOS				B			C	C				
Approach Delay (s)	0.0			0.6			15.5	16.9				
Approach LOS							C	C				
Intersection Summary												
Average Delay				0.7								
Intersection Capacity Utilization				43.2%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↕	↕		↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				0.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor			1.00		0.99	
Frt			0.991		0.951	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1785	3444	3340	0	1629	0
Flt Permitted	0.272				0.969	
Satd. Flow (perm)	511	3444	3340	0	1618	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			8		21	
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.3	122.1		883.5	
Travel Time (s)		14.1	8.8		63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	SBL
Lane Group	EBL	EBT	WBT	SBL
Lane Configurations	↩	↕	↕	↕
Traffic Volume (vph)	17	932	862	44
Future Volume (vph)	17	932	862	44
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	7	4	8	
Permitted Phases	4			6
Detector Phase	7	4	8	6
Switch Phase				
Minimum Initial (s)	5.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	34.0
Total Split (s)	12.0	90.0	78.0	38.0
Total Split (%)	9.4%	70.3%	60.9%	29.7%
Yellow Time (s)	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	5.0	6.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	110.8	109.8	105.8	11.2
Actuated g/C Ratio	0.87	0.86	0.83	0.09
v/c Ratio	0.04	0.33	0.35	0.45
Control Delay	2.1	2.9	4.5	48.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.1	2.9	4.5	48.5
LOS	A	A	A	D
Approach Delay		2.8	4.5	48.5
Approach LOS		A	A	D

Intersection Summary

Cycle Length: 128

Actuated Cycle Length: 128

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 5.2

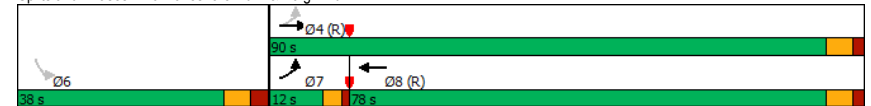
Intersection LOS: A

Intersection Capacity Utilization 42.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	SBL
Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	18	981	965	72
v/c Ratio	0.04	0.33	0.35	0.45
Control Delay	2.1	2.9	4.5	48.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.1	2.9	4.5	48.5
Queue Length 50th (m)	0.6	24.9	24.3	13.1
Queue Length 95th (m)	2.1	39.5	58.5	28.1
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	531	2954	2762	420
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.33	0.35	0.17
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	17	932	862	55	44	25
Future Volume (vph)	17	932	862	55	44	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	3.0	5.0	5.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Frt	1.00	1.00	0.99		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1782	3444	3340		1619	
Flt Permitted	0.27	1.00	1.00		0.97	
Satd. Flow (perm)	511	3444	3340		1619	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	981	907	58	46	26
RTOR Reduction (vph)	0	0	2	0	19	0
Lane Group Flow (vph)	18	981	963	0	53	0
Confl. Peds. (#/hr)	10			10	7	2
Heavy Vehicles (%)	0%	6%	8%	7%	9%	0%
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	7	4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	106.4	106.4	100.0		8.6	
Effective Green, g (s)	107.4	107.4	101.0		9.6	
Actuated g/C Ratio	0.84	0.84	0.79		0.07	
Clearance Time (s)	4.0	6.0	6.0		7.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	462	2889	2635		121	
v/s Ratio Prot	0.00	c0.28	c0.29			
v/s Ratio Perm	0.03				c0.03	
v/c Ratio	0.04	0.34	0.37		0.43	
Uniform Delay, d1	2.0	2.3	4.0		56.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3	0.4		2.5	
Delay (s)	2.0	2.6	4.4		59.1	
Level of Service	A	A	A		E	
Approach Delay (s)		2.6	4.4		59.1	
Approach LOS		A	A		E	
Intersection Summary						
HCM 2000 Control Delay			5.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			128.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			42.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↘	↩	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	0.98			1.00		1.00	0.99	
Frt		0.998			0.962						0.851	
Flt Protected	0.950			0.950			0.950		0.950			
Satd. Flow (prot)	1700	3405	0	1785	3235	0	0	1825	0	1767	1464	0
Flt Permitted	0.260			0.385			0.206		0.757			
Satd. Flow (perm)	465	3405	0	716	3235	0	0	395	0	1406	1464	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			42					255		
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		131.5			399.1			93.6		292.8		
Travel Time (s)		9.5			28.7			6.7		21.1		

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↩	↗	↩	↗	↩	↗	↩	↗
Traffic Volume (vph)	292	661	1	650	1	0	141	1
Future Volume (vph)	292	661	1	650	1	0	141	1
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	12.0	12.0	34.0	34.0
Total Split (s)	37.0	91.0	11.0	65.0	38.0	38.0	38.0	38.0
Total Split (%)	26.4%	65.0%	7.9%	46.4%	27.1%	27.1%	27.1%	27.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	3.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	110.1	106.2	98.6	90.0		20.9	20.9	20.9
Actuated g/C Ratio	0.79	0.76	0.70	0.64		0.15	0.15	0.15
v/c Ratio	0.61	0.27	0.00	0.43		0.02	0.70	0.59
Control Delay	10.0	6.3	6.0	14.1		47.0	73.5	11.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	10.0	6.3	6.0	14.1		47.0	73.5	11.5
LOS	A	A	A	B		D	E	B
Approach Delay		7.4		14.1		47.0		34.1
Approach LOS		A		B		D		C

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 14.7

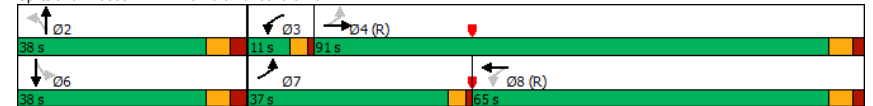
Intersection LOS: B

Intersection Capacity Utilization 69.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	304	700	1	908	1	147	256
v/c Ratio	0.61	0.27	0.00	0.43	0.02	0.70	0.59
Control Delay	10.0	6.3	6.0	14.1	47.0	73.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	6.3	6.0	14.1	47.0	73.5	11.5
Queue Length 50th (m)	19.7	26.6	0.1	58.6	0.3	41.3	0.3
Queue Length 95th (m)	37.2	55.2	0.6	105.9	1.9	62.1	24.8
Internal Link Dist (m)		107.5		375.1		69.6	268.8
Turn Bay Length (m)	44.0		25.0				
Base Capacity (vph)	665	2582	572	2095	90	321	531
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.27	0.00	0.43	0.01	0.46	0.48
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	292	661	11	1	650	222	1	0	0	141	1	245
Future Volume (vph)	292	661	11	1	650	222	1	0	0	141	1	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0		3.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			1.00		1.00	0.99	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			1.00		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1697	3404		1778	3234			1822		1765	1464	
Flt Permitted	0.26	1.00		0.39	1.00			0.21		0.76	1.00	
Satd. Flow (perm)	464	3404		722	3234			394		1406	1464	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	304	689	11	1	677	231	1	0	0	147	1	255
RTOR Reduction (vph)	0	1	0	0	15	0	0	0	0	0	217	0
Lane Group Flow (vph)	304	699	0	1	893	0	0	1	0	147	39	0
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	5%	7%	0%	0%	8%	3%	0%	0%	0%	1%	0%	10%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	107.1	102.0		90.1	89.0			19.9		19.9	19.9	
Effective Green, g (s)	108.1	103.0		92.1	90.0			20.9		20.9	20.9	
Actuated g/C Ratio	0.77	0.74		0.66	0.64			0.15		0.15	0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	491	2504		490	2079			58		209	218	
v/s Ratio Prot	c0.07	0.21		0.00	0.28						0.03	
v/s Ratio Perm	c0.41			0.00				0.00		c0.10		
v/c Ratio	0.62	0.28		0.00	0.43			0.02		0.70	0.18	
Uniform Delay, d1	6.4	6.2		8.2	12.3			50.8		56.6	52.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.3		0.0	0.7			0.1		10.2	0.4	
Delay (s)	8.8	6.4		8.2	13.0			50.9		66.8	52.4	
Level of Service	A	A		A	B			D		E	D	
Approach Delay (s)		7.1			13.0			50.9			57.7	
Approach LOS		A			B			D			E	
Intersection Summary												
HCM 2000 Control Delay				18.2				HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio				0.65								
Actuated Cycle Length (s)				140.0				Sum of lost time (s)		14.0		
Intersection Capacity Utilization				69.9%				ICU Level of Service		C		
Analysis Period (min)				15								
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱			↱↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1785	3477	0	1580	3412	0	1879	1445	0	0	1589	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1785	3477	0	1580	3412	0	1879	1445	0	0	1589	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↰↱		↰	↰↱		↰	↰↱			↱↰	
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱			↱↰	
Traffic Volume (veh/h)	6	1006	2	8	821	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1006	2	8	821	2	0	0	8	5	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	6	1048	2	8	855	2	0	0	8	5	0	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWTLT			TWTLT								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.97			0.89			0.90	0.90	0.89	0.90	0.90	0.97
vC, conflicting volume	865			1055			1514	1947	530	1424	1947	436
vC1, stage 1 conf vol							1066	1066		880	880	
vC2, stage 2 conf vol							448	881		544	1067	
vCu, unblocked vol	789			809			1188	1666	218	1088	1666	345
tC, single (s)	4.1			4.4			7.5	6.5	7.2	7.5	6.5	7.3
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.5
p0 queue free %	99			99			100	100	99	98	100	99
cM capacity (veh/h)	805			659			276	260	666	306	258	577
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	699	351	8	570	287	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	805	1700	1700	659	1700	1700	1700	666	400			
Volume to Capacity	0.01	0.41	0.21	0.01	0.34	0.17	0.00	0.01	0.03			
Queue Length 95th (m)	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.6			
Control Delay (s)	9.5	0.0	0.0	10.5	0.0	0.0	0.0	10.5	14.2			
Lane LOS	A			B			A	B	B			
Approach Delay (s)	0.1			0.1			10.5		14.2			
Approach LOS							B		B			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				39.6%			ICU Level of Service		A			
Analysis Period (min)				15								

Lanes and Geometrics

22: Lakeshore Rd E & Greaves Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1566	3400	3330	0	1597	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1566	3400	3330	0	1597	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

22: Lakeshore Rd E & Greaves Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	7	1038	822	14	7	7
Future Volume (Veh/h)	7	1038	822	14	7	7
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	1081	856	15	7	7
Pedestrians		2	6		12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.95				0.92	0.95
vC, conflicting volume	883				1436	450
vC1, stage 1 conf vol					876	
vC2, stage 2 conf vol					560	
vCu, unblocked vol	775				1067	319
tC, single (s)	4.4				6.8	7.2
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.4
p0 queue free %	99				98	99
cM capacity (veh/h)	719				367	604
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	540	540	571	300	14
Volume Left	7	0	0	0	0	7
Volume Right	0	0	0	0	15	7
cSH	719	1700	1700	1700	1700	457
Volume to Capacity	0.01	0.32	0.32	0.34	0.18	0.03
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	13.1
Lane LOS	B					B
Approach Delay (s)	0.1			0.0		13.1
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			39.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

23: Lakeshore Rd E & Westmount Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt					0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1785	3400	3337	0	1554	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1785	3400	3337	0	1554	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

23: Lakeshore Rd E & Westmount Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	6	1006	821	2	5	5
Future Volume (Veh/h)	6	1006	821	2	5	5
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	6	1048	855	2	5	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	102		269			
pX, platoon unblocked	1.00				0.93	1.00
vC, conflicting volume	865				1400	436
vC1, stage 1 conf vol					864	
vC2, stage 2 conf vol					536	
vCu, unblocked vol	855				1260	424
tC, single (s)	4.1				6.8	7.3
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.5
p0 queue free %	99				99	99
cM capacity (veh/h)	785				341	525
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	6	524	524	570	287	10
Volume Left	6	0	0	0	0	5
Volume Right	0	0	0	0	2	5
cSH	785	1700	1700	1700	1700	413
Volume to Capacity	0.01	0.31	0.31	0.34	0.17	0.02
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.6
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	13.9
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		13.9
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987			0.995			0.910			0.923	
Flt Protected	0.950			0.950				0.987			0.985	
Satd. Flow (prot)	1733	3443	0	1733	3368	0	0	1703	0	0	1633	0
Flt Permitted	0.950			0.950				0.987			0.985	
Satd. Flow (perm)	1733	3443	0	1733	3368	0	0	1703	0	0	1633	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Existing Conditions

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	37	901	88	64	769	29	40	9	99	17	8	34
Future Volume (Veh/h)	37	901	88	64	769	29	40	9	99	17	8	34
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	39	939	92	67	801	30	42	9	103	18	8	35
Pedestrians		1			2			9			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type	TWLT			TWLT								
Median storage (veh)	2			2								
Upstream signal (m)	306			65								
pX, platoon unblocked	0.96			0.95			0.97	0.97	0.95	0.97	0.97	0.96
vC, conflicting volume	843			1040			1646	2049	526	1619	2080	428
vC1, stage 1 conf vol							1072	1072		962	962	
vC2, stage 2 conf vol							574	977		657	1118	
vCu, unblocked vol	742			934			1399	1814	393	1371	1845	308
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)							6.5	5.5		6.7	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.4
p0 queue free %	95			90			81	96	82	91	96	95
cM capacity (veh/h)	808			680			217	207	570	191	184	639
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	39	626	405	67	534	297	154	61				
Volume Left	39	0	0	67	0	0	42	18				
Volume Right	0	0	92	0	0	30	103	35				
cSH	808	1700	1700	680	1700	1700	368	317				
Volume to Capacity	0.05	0.37	0.24	0.10	0.31	0.17	0.42	0.19				
Queue Length 95th (m)	1.2	0.0	0.0	2.6	0.0	0.0	16.0	5.6				
Control Delay (s)	9.7	0.0	0.0	10.9	0.0	0.0	21.6	19.1				
Lane LOS	A			B			C	C				
Approach Delay (s)	0.4			0.8			21.6	19.1				
Approach LOS							C	C				
Intersection Summary												
Average Delay				2.6								
Intersection Capacity Utilization				53.0%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3400	3335	0	0	1625
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	3400	3335	0	0	1625
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Traffic Volume (veh/h)	11	955	859	7	18	6
Future Volume (Veh/h)	11	955	859	7	18	6
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1005	904	7	19	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		209			
pX, platoon unblocked	0.93				0.96	0.93
vC, conflicting volume	922				1447	468
vC1, stage 1 conf vol					918	
vC2, stage 2 conf vol					528	
vCu, unblocked vol	756				1031	267
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.6	3.3
p0 queue free %	98				95	99
cM capacity (veh/h)	793				355	676
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	12	502	502	603	308	25
Volume Left	12	0	0	0	0	19
Volume Right	0	0	0	0	7	6
cSH	793	1700	1700	1700	1700	400
Volume to Capacity	0.02	0.30	0.30	0.35	0.18	0.06
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	1.6
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	14.6
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		14.6
Approach LOS						B
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			Err%		ICU Level of Service	H
Analysis Period (min)			15			

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt					0.925	
Frt Protected	0.950				0.978	
Satd. Flow (prot)	1785	3400	3337	0	1700	0
Frt Permitted	0.950				0.978	
Satd. Flow (perm)	1785	3400	3337	0	1700	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	99.9		77.2	
Travel Time (s)		7.9	7.2		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Existing Conditions

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	9	951	843	1	4	5
Future Volume (Veh/h)	9	951	843	1	4	5
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	991	878	1	4	5
Pedestrians	3	3	3	3	15	15
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Walking Speed (m/s)	1.2	1.2	1.2	1.2	1.2	1.2
Percent Blockage	0	0	0	0	1	1
Right turn flare (veh)						
Median type	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT
Median storage (veh)	2	2	2	2	2	2
Upstream signal (m)	170	100	100	100	100	100
pX, platoon unblocked	0.92				0.95	0.92
vC, conflicting volume	894				1410	458
vC1, stage 1 conf vol					894	
vC2, stage 2 conf vol					516	
vCu, unblocked vol	704				982	228
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	818				384	706
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	9	496	496	585	294	9
Volume Left	9	0	0	0	0	4
Volume Right	0	0	0	0	1	5
cSH	818	1700	1700	1700	1700	515
Volume to Capacity	0.01	0.29	0.29	0.34	0.17	0.02
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	9.4	0.0	0.0	0.0	0.0	12.1
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		12.1
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			36.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1785	3368	3303	0	1730	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1785	3368	3303	0	1730	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		86.8	138.1		79.4	
Travel Time (s)		6.2	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	6	937	834	14	14	8
Future Volume (Veh/h)	6	937	834	14	14	8
Sign Control	Free	Free	Free		Stop	
Grade	0%	0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	997	887	15	15	9
Pedestrians	4	4			20	
Lane Width (m)	3.5	3.5			3.5	
Walking Speed (m/s)	1.2	1.2			1.2	
Percent Blockage	0	0			2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	87		333			
pX, platoon unblocked	0.96				0.94	0.96
vC, conflicting volume	922				1429	475
vC1, stage 1 conf vol					914	
vC2, stage 2 conf vol					514	
vCu, unblocked vol	834				1139	368
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	98
cM capacity (veh/h)	762				345	597
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	6	498	498	591	311	24
Volume Left	6	0	0	0	0	15
Volume Right	0	0	0	0	15	9
cSH	762	1700	1700	1700	1700	410
Volume to Capacity	0.01	0.29	0.29	0.35	0.18	0.06
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	1.5
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	14.3
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		14.3
Approach LOS						B
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1785	3368	3304	0	1675	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1785	3368	3304	0	1675	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Existing Conditions
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	7	973	892	8	6	14
Future Volume (Veh/h)	7	973	892	8	6	14
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	1035	949	9	6	15
Pedestrians	5	5	5	5	30	30
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Walking Speed (m/s)	1.2	1.2	1.2	1.2	1.2	1.2
Percent Blockage	0	0	0	0	2	2
Right turn flare (veh)						
Median type	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT
Median storage (veh)	2	2	2	2	2	2
Upstream signal (m)	122					
pX, platoon unblocked					0.94	
vC, conflicting volume	988				1520	514
vC1, stage 1 conf vol					984	
vC2, stage 2 conf vol					536	
vCu, unblocked vol	988				1422	514
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	97
cM capacity (veh/h)	690				292	496
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	518	518	633	325	21
Volume Left	7	0	0	0	0	6
Volume Right	0	0	0	0	9	15
cSH	690	1700	1700	1700	1700	413
Volume to Capacity	0.01	0.30	0.30	0.37	0.19	0.05
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	1.3
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	14.2
Lane LOS	B					B
Approach Delay (s)	0.1			0.0		14.2
Approach LOS						B
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			37.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔			↔↔			↔↔		↔		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.998			0.930			0.865	
Flt Protected	0.950				0.998			0.976		0.950		
Satd. Flow (prot)	1700	3418	0	0	3332	0	0	1672	0	1785	0	0
Flt Permitted	0.950				0.998			0.976		0.950		
Satd. Flow (perm)	1700	3418	0	0	3332	0	0	1672	0	1785	0	0
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		369.2			131.5			86.4		119.4		
Travel Time (s)		26.6			9.5			6.2		8.6		

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔			↔↔			↔↔		↔		
Traffic Volume (veh/h)	21	915	36	39	850	10	26	0	28	17	0	38
Future Volume (Veh/h)	21	915	36	39	850	10	26	0	28	17	0	38
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.94	0.94	1.00	1.00	0.94	0.94	1.00	1.00	1.00	0.94	1.00	0.94
Hourly flow rate (vph)	22	973	36	39	904	11	26	0	28	18	0	40
Pedestrians		6			6						15	
Lane Width (m)		3.5			3.5						3.5	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type	TWLT	TL		TWLT	TL							
Median storage (veh)	2			2								
Upstream signal (m)				131								
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	930			1009			1611	2043	510	1567	2056	478
vC1, stage 1 conf vol							1035	1035		1002	1002	
vC2, stage 2 conf vol							576	1008		564	1053	
vCu, unblocked vol	679			1009			1443	1927	510	1394	1941	173
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	7.2
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	97			94			88	100	94	93	100	94
cM capacity (veh/h)	783			683			221	218	506	249	204	707
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	22	649	360	491	463	54	58					
Volume Left	22	0	0	39	0	26	18					
Volume Right	0	0	36	0	11	28	40					
cSH	783	1700	1700	683	1700	312	450					
Volume to Capacity	0.03	0.38	0.21	0.06	0.27	0.17	0.13					
Queue Length 95th (m)	0.7	0.0	0.0	1.5	0.0	4.9	3.5					
Control Delay (s)	9.7	0.0	0.0	1.6	0.0	19.0	14.2					
Lane LOS	A			A		C	B					
Approach Delay (s)	0.2			0.8		19.0	14.2					
Approach LOS						C	B					
Intersection Summary												
Average Delay				1.4								
Intersection Capacity Utilization			Err%		ICU Level of Service				H			
Analysis Period (min)			15									

Lanes and Geometrics
101: East Avenue & Street L

Existing Conditions
Morning Peak Hour

	←	↖	↑	↗	→	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880					
Flt Protected	0.994					0.960
Satd. Flow (prot)	1611	0	1842	0	0	1768
Flt Permitted	0.994					0.960
Satd. Flow (perm)	1611	0	1842	0	0	1768
Link Speed (k/h)	50		50			50
Link Distance (m)	85.8		91.1			132.2
Travel Time (s)	6.2		6.6			9.5

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Existing Conditions
Morning Peak Hour

	←	↖	↑	↗	→	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	1	8	7	0	57	12
Future Volume (vph)	1	8	7	0	57	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	7	0	57	12
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	9	7	69			
Volume Left (vph)	1	0	57			
Volume Right (vph)	8	0	0			
Hadj (s)	-0.48	0.03	0.20			
Departure Headway (s)	3.6	4.0	4.1			
Degree Utilization, x	0.01	0.01	0.08			
Capacity (veh/h)	976	878	866			
Control Delay (s)	6.6	7.0	7.5			
Approach Delay (s)	6.6	7.0	7.5			
Approach LOS	A	A	A			
Intersection Summary						
Delay		7.4				
Level of Service		A				
Intersection Capacity Utilization		20.5%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics
102: Lakefront Promenade & Street L

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.944			0.946			0.992			0.965	
Flt Protected		0.991			0.992			0.996			0.986	
Satd. Flow (prot)	0	1723	0	0	1729	0	0	1820	0	0	1753	0
Flt Permitted		0.991			0.992			0.996			0.986	
Satd. Flow (perm)	0	1723	0	0	1729	0	0	1820	0	0	1753	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Existing Conditions
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	12	12	5	13	12	4	42	3	21	34	19
Future Volume (vph)	5	12	12	5	13	12	4	42	3	21	34	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	12	12	5	13	12	4	42	3	21	34	19
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	29	30	49	74								
Volume Left (vph)	5	5	4	21								
Volume Right (vph)	12	12	3	19								
Hadj (s)	-0.18	-0.17	0.01	-0.06								
Departure Headway (s)	4.0	4.0	4.1	4.0								
Degree Utilization, x	0.03	0.03	0.06	0.08								
Capacity (veh/h)	865	864	850	879								
Control Delay (s)	7.1	7.2	7.4	7.4								
Approach Delay (s)	7.1	7.2	7.4	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.3									
Level of Service			A									
Intersection Capacity Utilization			19.5%					ICU Level of Service			A	
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Existing Conditions
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	0.0	0.0	0.0			0.0
Storage Lanes	1	0	0			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.978				0.914	
Flt Protected	0.960			0.986		
Satd. Flow (prot)	1729	0	0	1816	1684	0
Flt Permitted	0.960			0.986		
Satd. Flow (perm)	1729	0	0	1816	1684	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Existing Conditions
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	21	4	8	21	27	48
Future Volume (vph)	21	4	8	21	27	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	4	8	21	27	48
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	25	29	75			
Volume Left (vph)	21	8	0			
Volume Right (vph)	4	0	48			
Hadj (s)	0.11	0.09	-0.35			
Departure Headway (s)	4.2	4.1	3.6			
Degree Utilization, x	0.03	0.03	0.08			
Capacity (veh/h)	829	856	977			
Control Delay (s)	7.3	7.2	6.9			
Approach Delay (s)	7.3	7.2	6.9			
Approach LOS	A	A	A			
Intersection Summary						
Delay		7.1				
Level of Service		A				
Intersection Capacity Utilization		18.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩			↩↩		↩	↩↩	↩
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00		0.98	0.98			0.99		1.00	1.00	0.95
Frt					0.971			0.966				0.850
Flt Protected	0.950			0.950				0.988		0.950	0.950	
Satd. Flow (prot)	1750	3578	0	1785	3436	0	0	1824	0	1679	1717	1597
Flt Permitted	0.111			0.357				0.610		0.950	0.750	
Satd. Flow (perm)	204	3578	0	659	3436	0	0	1117	0	1672	1352	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					25			3				35
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩↩		↩↩	↩	↩↩	↩
Traffic Volume (vph)	406	777	1	806	3	6	274	0	536
Future Volume (vph)	406	777	1	806	3	6	274	0	536
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8		2	1	6	7
Permitted Phases	4		8		2				6
Detector Phase	7	4	8	8	2	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	42.0	92.0	50.0	50.0	14.0	14.0	24.0	38.0	42.0
Total Split (%)	32.3%	70.8%	38.5%	38.5%	10.8%	10.8%	18.5%	29.2%	32.3%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	3.0	3.0		5.0	5.0	5.0	3.0
Lead/Lag	Lead		Lag	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	89.0	87.0	55.3	55.3		7.5	27.5	27.5	65.7
Actuated g/C Ratio	0.68	0.67	0.43	0.43		0.06	0.21	0.21	0.51
v/c Ratio	0.80	0.32	0.00	0.68		0.18	0.39	0.38	0.67
Control Delay	40.0	9.5	26.0	33.5		54.8	50.1	49.8	24.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	40.0	9.5	26.0	33.5		54.8	50.1	49.8	24.5
LOS	D	A	C	C		D	D	D	C
Approach Delay		20.0		33.5		54.8		33.1	
Approach LOS		B		C		D		C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 28.1

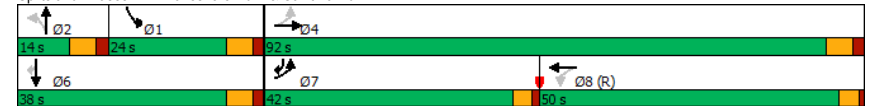
Intersection LOS: C

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	778	1	998	12	137	137	536
v/c Ratio	0.80	0.32	0.00	0.68	0.18	0.39	0.38	0.67
Control Delay	40.0	9.5	26.0	33.5	54.8	50.1	49.8	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	9.5	26.0	33.5	54.8	50.1	49.8	24.5
Queue Length 50th (m)	74.7	43.1	0.2	111.4	2.4	31.7	31.6	90.5
Queue Length 95th (m)	108.2	53.4	1.6	150.8	9.3	60.2	60.1	111.2
Internal Link Dist (m)		297.4		113.2	71.8		931.9	
Turn Bay Length (m)	35.0		60.0			115.0		
Base Capacity (vph)	603	2394	280	1475	80	355	363	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	0.67	0.32	0.00	0.68	0.15	0.39	0.38	0.60
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	406	777	1	1	806	192	3	6	3	274	0	536
Future Volume (vph)	406	777	1	1	806	192	3	6	3	274	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0		3.0	3.0			5.0		5.0	5.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.97
Frbp, ped/bikes	1.00	1.00		0.98	1.00			0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1750	3578		1753	3437			1804		1679	1714	1549
Flt Permitted	0.11	1.00		0.36	1.00			0.61		0.95	0.75	1.00
Satd. Flow (perm)	205	3578		659	3437			1114		1679	1352	1549
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	777	1	1	806	192	3	6	3	274	0	536
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	17
Lane Group Flow (vph)	406	778	0	1	983	0	0	9	0	137	137	519
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	0%	0%	1%	4%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8			2		1	6	7
Permitted Phases	4			8			2					6
Actuated Green, G (s)	82.4	82.4		50.7	50.7			3.1		26.5	35.6	65.3
Effective Green, g (s)	83.4	83.4		51.7	51.7			4.1		27.5	36.6	67.3
Actuated g/C Ratio	0.64	0.64		0.40	0.40			0.03		0.21	0.28	0.52
Clearance Time (s)	4.0	6.0		4.0	4.0			6.0		6.0	6.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	496	2295		262	1366			35		355	457	801
v/s Ratio Prot	c0.19	0.22			0.29					0.08	0.06	c0.15
v/s Ratio Perm	c0.33			0.00				0.01			0.02	0.18
v/c Ratio	0.82	0.34		0.00	0.72			0.26		0.39	0.30	0.65
Uniform Delay, d1	32.4	10.7		23.6	33.0			61.5		44.0	36.6	22.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	10.1	0.4		0.0	3.3			3.9		0.7	0.4	1.8
Delay (s)	42.6	11.1		23.6	36.3			65.4		44.7	37.0	24.6
Level of Service	D	B		C	D			E		D	D	C
Approach Delay (s)		21.9			36.3			65.4			30.1	
Approach LOS		C			D			E			C	
Intersection Summary												
HCM 2000 Control Delay				29.1								
HCM 2000 Volume to Capacity ratio				0.80								
Actuated Cycle Length (s)				130.0						16.0		
Intersection Capacity Utilization				85.5%								
Analysis Period (min)				15								
c Critical Lane Group												

Lanes and Geometrics

2: East Avenue & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.90	0.99		0.87		0.99			0.97	
Frt			0.850			0.850		0.968			0.871	
Flt Protected	0.950			0.950				0.978		0.950		
Satd. Flow (prot)	1785	3614	1439	1785	3579	1597	0	1776	0	1785	1627	0
Flt Permitted	0.227			0.291				0.850		0.832		
Satd. Flow (perm)	427	3614	1295	539	3579	1395	0	1529	0	1563	1627	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			62			62		10			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings

2: East Avenue & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	16	899	28	1	1080	86	20	13	9	1		
Future Volume (vph)	16	899	28	1	1080	86	20	13	9	1		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	NA	NA
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (s)	12.0	95.0	95.0	11.0	94.0	94.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	8.6%	67.9%	67.9%	7.9%	67.1%	67.1%	24.3%	24.3%	24.3%	24.3%	24.3%	24.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0	5.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effect Green (s)	123.1	120.7	120.7	122.2	118.6	118.6	10.4	10.4	10.4	10.4	10.4	10.4
Actuated g/C Ratio	0.88	0.86	0.86	0.87	0.85	0.85		0.07	0.07	0.07		
v/c Ratio	0.04	0.31	0.03	0.00	0.38	0.08		0.37	0.09	0.06		
Control Delay	1.8	3.0	0.1	3.0	5.9	3.4		58.6	60.9	36.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		
Total Delay	1.8	3.0	0.1	3.0	5.9	3.4		58.6	60.9	36.0		
LOS	A	A	A	A	A	A		E	E	D		
Approach Delay		2.9			5.7			58.6		50.6		
Approach LOS		A			A			E		D		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 5.9

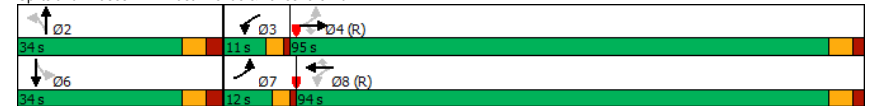
Intersection LOS: A

Intersection Capacity Utilization 50.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	17	956	30	1	1149	91	46	10	7
v/c Ratio	0.04	0.31	0.03	0.00	0.38	0.08	0.37	0.09	0.06
Control Delay	1.8	3.0	0.1	3.0	5.9	3.4	58.6	60.9	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	3.0	0.1	3.0	5.9	3.4	58.6	60.9	36.0
Queue Length 50th (m)	0.5	22.3	0.0	0.1	46.4	3.0	10.2	2.8	0.3
Queue Length 95th (m)	1.7	51.3	0.4	m0.2	87.1	10.8	23.6	8.8	5.4
Internal Link Dist (m)		89.2			78.4		108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0		45.0	
Base Capacity (vph)	463	3114	1124	543	3032	1191	313	312	330
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.03	0.00	0.38	0.08	0.15	0.03	0.02
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↰	↱	↱
Traffic Volume (vph)	16	899	28	1	1080	86	20	13	10	9	1	6
Future Volume (vph)	16	899	28	1	1080	86	20	13	10	9	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.87		1.00		1.00	0.97	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1780	3614	1295	1776	3579	1395		1758		1785	1627	
Flt Permitted	0.23	1.00	1.00	0.29	1.00	1.00		0.85		0.83	1.00	
Satd. Flow (perm)	424	3614	1295	543	3579	1395		1529		1563	1627	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	956	30	1	1149	91	21	14	11	10	1	6
RTOR Reduction (vph)	0	0	5	0	0	12	0	9	0	0	6	0
Lane Group Flow (vph)	17	956	25	1	1149	79	0	37	0	10	1	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	0%	1%	11%	0%	2%	0%	0%	0%	10%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	116.5	114.1	114.1	113.9	112.8	112.8		7.8		7.8	7.8	
Effective Green, g (s)	118.5	115.1	115.1	115.9	113.8	113.8		8.8		8.8	8.8	
Actuated g/C Ratio	0.85	0.82	0.82	0.83	0.81	0.81		0.06		0.06	0.06	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	391	2971	1064	468	2909	1133		96		98	102	
v/s Ratio Prot	c0.00	0.26		0.00	c0.32						0.00	
v/s Ratio Perm	0.04		0.02	0.00		0.06		c0.02		0.01		
v/c Ratio	0.04	0.32	0.02	0.00	0.39	0.07		0.38		0.10	0.01	
Uniform Delay, d1	2.0	3.0	2.3	2.1	3.6	2.6		63.0		61.9	61.5	
Progression Factor	1.00	1.00	1.00	1.88	1.53	2.22		1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3	0.0	0.0	0.4	0.1		2.5		0.5	0.1	
Delay (s)	2.1	3.3	2.3	4.0	5.9	5.9		65.5		62.3	61.6	
Level of Service	A	A	A	A	A	A		E		E	E	
Approach Delay (s)		3.2			5.9			65.5			62.0	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM 2000 Control Delay			6.3							A		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			140.0							14.0		
Intersection Capacity Utilization			50.1%							A		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		0.0	0.0
Storage Lanes		1	1		1	0
Taper Length (m)			7.5		0.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.84			0.97	
Frt		0.850			0.965	
Flt Protected			0.950		0.964	
Satd. Flow (prot)	3579	1536	1785	3614	1690	0
Flt Permitted			0.286		0.964	
Satd. Flow (perm)	3579	1294	537	3614	1652	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		46			13	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↖
Traffic Volume (vph)	814	84	46	1137	124	
Future Volume (vph)	814	84	46	1137	124	
Turn Type	NA	Perm	pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	
Detector Phase	4	4	3	8	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0	11.0	24.0	34.0	
Total Split (s)	82.0	82.0	13.0	95.0	45.0	
Total Split (%)	58.6%	58.6%	9.3%	67.9%	32.1%	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	3.0	5.0	6.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	
Act Effct Green (s)	99.9	99.9	110.3	108.3	20.7	
Actuated g/C Ratio	0.71	0.71	0.79	0.77	0.15	
v/c Ratio	0.34	0.10	0.10	0.44	0.71	
Control Delay	7.0	3.6	4.5	6.5	67.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.0	3.6	4.5	6.5	67.0	
LOS	A	A	A	A	E	
Approach Delay	6.7			6.5	67.0	
Approach LOS	A			A	E	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.1

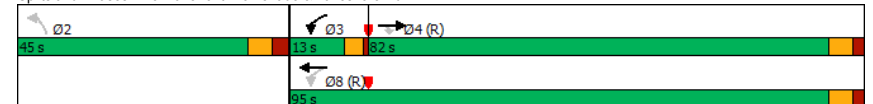
Intersection LOS: B

Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	→	↘	↙	←	↖
Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	875	90	49	1223	180
v/c Ratio	0.34	0.10	0.10	0.44	0.71
Control Delay	7.0	3.6	4.5	6.5	67.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	3.6	4.5	6.5	67.0
Queue Length 50th (m)	28.3	2.0	2.7	55.7	47.0
Queue Length 95th (m)	39.7	6.3	6.8	87.8	69.8
Internal Link Dist (m)	41.1			37.2	106.4
Turn Bay Length (m)		25.0	35.0		
Base Capacity (vph)	2552	936	512	2796	469
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	0.34	0.10	0.10	0.44	0.38
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

3: Lakefront Promenade & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	814	84	46	1137	124	44
Future Volume (vph)	814	84	46	1137	124	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	3.0	5.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	0.84	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	0.99	1.00	0.98	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3579	1294	1773	3614	1652	
Flt Permitted	1.00	1.00	0.29	1.00	0.96	
Satd. Flow (perm)	3579	1294	534	3614	1652	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	875	90	49	1223	133	47
RTOR Reduction (vph)	0	13	0	0	11	0
Lane Group Flow (vph)	875	77	49	1223	169	0
Confl. Peds. (#/hr)		36	36		20	7
Heavy Vehicles (%)	2%	4%	0%	1%	2%	5%
Turn Type	NA	Perm	pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	
Actuated Green, G (s)	98.0	98.0	107.3	107.3	19.7	
Effective Green, g (s)	99.0	99.0	108.3	108.3	20.7	
Actuated g/C Ratio	0.71	0.71	0.77	0.77	0.15	
Clearance Time (s)	6.0	6.0	4.0	6.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2530	915	468	2795	244	
v/s Ratio Prot	0.24		0.00	c0.34		
v/s Ratio Perm		0.06	0.08		c0.10	
v/c Ratio	0.35	0.08	0.10	0.44	0.69	
Uniform Delay, d1	7.9	6.4	4.3	5.4	56.6	
Progression Factor	0.77	0.76	1.00	1.02	1.00	
Incremental Delay, d2	0.4	0.2	0.1	0.5	8.2	
Delay (s)	6.5	5.0	4.4	6.0	64.8	
Level of Service	A	A	A	A	E	
Approach Delay (s)	6.4			5.9	64.8	
Approach LOS	A			A	E	
Intersection Summary						
HCM 2000 Control Delay		10.5		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.49				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		15.0
Intersection Capacity Utilization		53.0%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

Lanes and Geometrics

4: Ogden Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.97	0.99			0.98		0.98	0.98	
Frt					0.992			0.932			0.854	
Flt Protected	0.950			0.950				0.982		0.950		
Satd. Flow (prot)	1750	3577	0	1785	3548	0	0	1726	0	1594	1514	0
Flt Permitted	0.172			0.319						0.746		
Satd. Flow (perm)	317	3577	0	582	3548	0	0	1750	0	1221	1514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7			4			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.9			86.8			140.9			246.5	
Travel Time (s)		7.2			6.2			10.1			17.7	

Intersection Summary

Area Type: Other

Timings

4: Ogden Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	47	817	1	1163	3	1	42	1
Future Volume (vph)	47	817	1	1163	3	1	42	1
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	34.0	11.0	34.0
Total Split (s)	11.0	84.0	11.0	84.0	11.0	34.0	11.0	34.0
Total Split (%)	7.9%	60.0%	7.9%	60.0%	7.9%	24.3%	7.9%	24.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	3.0	5.0		6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
Act Effect Green (s)	123.8	121.2	121.2	115.0		7.1	11.8	9.4
Actuated g/C Ratio	0.88	0.87	0.87	0.82		0.05	0.08	0.07
v/c Ratio	0.14	0.28	0.00	0.45		0.09	0.36	0.27
Control Delay	2.4	5.2	2.0	5.7		49.7	66.0	22.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	2.4	5.2	2.0	5.7		49.7	66.0	22.8
LOS	A	A	A	A		D	E	C
Approach Delay		5.0		5.7		49.7		46.8
Approach LOS		A		A		D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 7.0

Intersection LOS: A

Intersection Capacity Utilization 60.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E

↔ 01	↔ 02	↔ 03	↔ 04 (R)
11 s	24 s	11 s	24 s
↔ 05	↔ 06	↔ 07	↔ 08 (R)
11 s	24 s	11 s	24 s

Queues
4: Ogden Ave & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	51	880	1	1320	8	45	36
v/c Ratio	0.14	0.28	0.00	0.45	0.09	0.36	0.27
Control Delay	2.4	5.2	2.0	5.7	49.7	66.0	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	5.2	2.0	5.7	49.7	66.0	22.8
Queue Length 50th (m)	3.3	60.5	0.0	52.3	1.1	12.8	0.3
Queue Length 95th (m)	2.5	95.6	0.4	102.2	7.1	24.0	11.0
Internal Link Dist (m)		75.9		62.8	116.9		222.5
Turn Bay Length (m)	28.0		25.0				
Base Capacity (vph)	362	3097	577	2914	353	129	330
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.28	0.00	0.45	0.02	0.35	0.11
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	817	2	1	1163	64	3	1	4	42	1	33
Future Volume (vph)	47	817	2	1	1163	64	3	1	4	42	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0		3.0	5.0			6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.99			0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1750	3576		1760	3548			1719		1567	1514	
Flt Permitted	0.17	1.00		0.32	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	317	3576		591	3548			1751		1231	1514	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	51	878	2	1	1251	69	3	1	4	45	1	35
RTOR Reduction (vph)	0	0	0	0	2	0	0	4	0	0	32	0
Lane Group Flow (vph)	51	880	0	1	1318	0	0	4	0	45	4	0
Confl. Peds. (#/hr)	29		45	45		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	0%	0%	1%	8%	0%	0%	0%	12%	0%	6%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	114.6	109.6		106.8	105.7			1.5		12.3	12.3	
Effective Green, g (s)	115.7	110.6		108.8	106.7			2.5		13.3	13.3	
Actuated g/C Ratio	0.83	0.79		0.78	0.76			0.02		0.10	0.10	
Clearance Time (s)	4.0	6.0		4.0	6.0			7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	323	2825		476	2704			31		135	143	
v/s Ratio Prot	c0.01	0.25		0.00	c0.37					c0.02	0.00	
v/s Ratio Perm	0.12			0.00				0.00		c0.01		
v/c Ratio	0.16	0.31		0.00	0.49			0.13		0.33	0.03	
Uniform Delay, d1	3.6	4.1		3.5	6.3			67.7		59.0	57.5	
Progression Factor	0.91	1.70		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	0.6			1.9		1.5	0.1	
Delay (s)	3.5	7.2		3.5	6.9			69.6		60.5	57.6	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		7.0			6.9			69.6			59.2	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM 2000 Control Delay		9.0			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.47										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		60.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.894					
Frt Protected	0.950			0.950			0.989			0.950		
Satd. Flow (prot)	1785	3579	0	1500	3579	0	0	1606	0	0	1825	0
Frt Permitted	0.950			0.950			0.989			0.950		
Satd. Flow (perm)	1785	3579	0	1500	3579	0	0	1606	0	0	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	1	881	3	16	1209	3	20	0	71	1	0	0
Future Volume (Veh/h)	1	881	3	16	1209	3	20	0	71	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	937	3	17	1286	3	21	0	76	1	0	0
Pedestrians					1			31			29	
Lane Width (m)					3.6			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			3			2	
Right turn flare (veh)												
Median type	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT	TWTLT
Median storage (veh)	2	2	2	2	2	2	2	2	2	2	2	2
Upstream signal (m)	225	195	195	195	195	195	195	195	195	195	195	195
pX, platoon unblocked	0.88			0.94			0.91	0.91	0.94	0.91	0.91	0.88
vC, conflicting volume	1318			971			1648	2324	502	1898	2324	674
vC1, stage 1 conf vol							972	972		1350	1350	
vC2, stage 2 conf vol							677	1352		548	973	
vCu, unblocked vol	1083			834			1200	1943	333	1475	1943	349
tC, single (s)	4.1			4.5			7.6	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)							6.6	5.5		6.5	5.5	
tF (s)	2.2			2.4			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			92	100	87	99	100	100
cM capacity (veh/h)	558			634			267	197	593	174	195	559
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	1	625	315	17	857	432	97	1				
Volume Left	1	0	0	17	0	0	21	1				
Volume Right	0	0	3	0	0	3	76	0				
cSH	558	1700	1700	634	1700	1700	469	174				
Volume to Capacity	0.00	0.37	0.19	0.03	0.50	0.25	0.21	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.7	0.0	0.0	6.2	0.1				
Control Delay (s)	11.5	0.0	0.0	10.8	0.0	0.0	14.7	25.8				
Lane LOS	B			B			B	D				
Approach Delay (s)	0.0			0.1			14.7	25.8				
Approach LOS							B	D				
Intersection Summary												
Average Delay				0.7								
Intersection Capacity Utilization				45.6%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				0.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor			0.99		0.99	
Frt			0.990		0.945	
Flt Protected	0.950				0.971	
Satd. Flow (prot)	1785	3579	3521	0	1694	0
Flt Permitted	0.181				0.971	
Satd. Flow (perm)	340	3579	3521	0	1684	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			10		22	
Link Speed (k/h)		50	50		50	
Link Distance (m)	195.3	122.1			883.5	
Travel Time (s)	14.1	8.8			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	SBL
Lane Group	EBL	EBT	WBT	SBL
Lane Configurations	↩	↕	↕	↕
Traffic Volume (vph)	25	919	1168	31
Future Volume (vph)	25	919	1168	31
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	7	4	8	
Permitted Phases	4			6
Detector Phase	7	4	8	6
Switch Phase				
Minimum Initial (s)	5.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	34.0
Total Split (s)	11.0	92.0	81.0	36.0
Total Split (%)	8.6%	71.9%	63.3%	28.1%
Yellow Time (s)	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	5.0	6.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	112.0	111.0	105.0	10.0
Actuated g/C Ratio	0.88	0.87	0.82	0.08
v/c Ratio	0.07	0.31	0.45	0.36
Control Delay	2.0	2.4	5.3	42.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.0	2.4	5.3	42.9
LOS	A	A	A	D
Approach Delay		2.4	5.3	42.9
Approach LOS		A	A	D

Intersection Summary

Cycle Length: 128

Actuated Cycle Length: 128

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 4.9

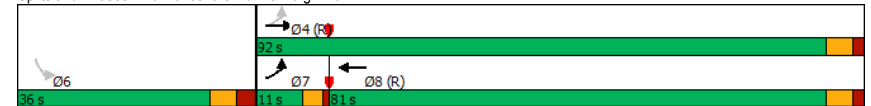
Intersection LOS: A

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	SBL
Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	26	957	1306	54
v/c Ratio	0.07	0.31	0.45	0.36
Control Delay	2.0	2.4	5.3	42.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.0	2.4	5.3	42.9
Queue Length 50th (m)	0.7	21.4	57.0	8.2
Queue Length 95th (m)	2.3	33.1	80.7	21.5
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	387	3103	2890	411
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.07	0.31	0.45	0.13
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	25	919	1168	85	31	21
Future Volume (vph)	25	919	1168	85	31	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	3.0	5.0	5.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frbp, ped/bikes	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		0.99	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1783	3579	3520		1684	
Flt Permitted	0.18	1.00	1.00		0.97	
Satd. Flow (perm)	340	3579	3520		1684	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	957	1217	89	32	22
RTOR Reduction (vph)	0	0	2	0	21	0
Lane Group Flow (vph)	26	957	1304	0	33	0
Confl. Peds. (#/hr)	26			26	7	
Heavy Vehicles (%)	0%	2%	2%	0%	3%	0%
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	7	4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	107.6	107.6	100.0		7.4	
Effective Green, g (s)	108.6	108.6	101.0		8.4	
Actuated g/C Ratio	0.85	0.85	0.79		0.07	
Clearance Time (s)	4.0	6.0	6.0		7.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	340	3036	2777		110	
v/s Ratio Prot	0.00	c0.27	c0.37			
v/s Ratio Perm	0.06				c0.02	
v/c Ratio	0.08	0.32	0.47		0.30	
Uniform Delay, d1	2.4	2.0	4.5		57.0	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.3	0.6		1.6	
Delay (s)	2.5	2.3	5.1		58.6	
Level of Service	A	A	A		E	
Approach Delay (s)		2.3	5.1		58.6	
Approach LOS		A	A		E	
Intersection Summary						
HCM 2000 Control Delay			5.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			128.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			51.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↔	↕	↕	↔	↕	↕	↔	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.98	0.98			0.99			0.96	
Frt		0.998			0.968			0.951			0.851	
Flt Protected	0.950			0.950				0.982		0.950		
Satd. Flow (prot)	1750	3534	0	1785	3395	0	0	1794	0	1785	1548	0
Flt Permitted	0.134			0.379				0.832		0.750		
Satd. Flow (perm)	247	3534	0	697	3395	0	0	1512	0	1409	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	2				31			4		334		
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		131.5			399.1			93.6		292.8		
Travel Time (s)		9.5			28.7			6.7		21.1		

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	269	672	3	891	4	3	244	3
Future Volume (vph)	269	672	3	891	4	3	244	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	12.0	12.0	34.0	34.0
Total Split (s)	31.0	85.0	11.0	65.0	44.0	44.0	44.0	44.0
Total Split (%)	22.1%	60.7%	7.9%	46.4%	31.4%	31.4%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	3.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	100.0	96.1	82.8	74.2	31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.71	0.69	0.59	0.53		0.22	0.22	0.22
v/c Ratio	0.71	0.30	0.01	0.66		0.03	0.83	0.56
Control Delay	26.2	10.1	9.3	27.6		30.8	72.8	8.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	26.2	10.1	9.3	27.6		30.8	72.8	8.0
LOS	C	B	A	C		C	E	A
Approach Delay		14.6		27.6		30.8		36.1
Approach LOS		B		C		C		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 24.8

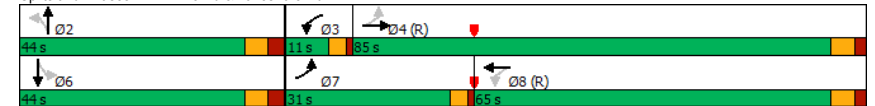
Intersection LOS: C

Intersection Capacity Utilization 82.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	283	718	3	1195	11	257	337
v/c Ratio	0.71	0.30	0.01	0.66	0.03	0.83	0.56
Control Delay	26.2	10.1	9.3	27.6	30.8	72.8	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	10.1	9.3	27.6	30.8	72.8	8.0
Queue Length 50th (m)	33.5	38.6	0.3	129.0	1.6	71.4	0.7
Queue Length 95th (m)	69.1	68.7	1.4	185.7	6.8	100.1	25.8
Internal Link Dist (m)		107.5		375.1	69.6		268.8
Turn Bay Length (m)	44.0		25.0				
Base Capacity (vph)	477	2426	481	1813	413	382	663
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.30	0.01	0.66	0.03	0.67	0.51
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	269	672	10	3	891	244	4	3	4	244	3	317
Future Volume (vph)	269	672	10	3	891	244	4	3	4	244	3	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	5.0		3.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98			1.00		1.00	0.96	
Frbp, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.95		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1750	3533		1772	3394			1786		1785	1549	
Flt Permitted	0.13	1.00		0.38	1.00			0.83		0.75	1.00	
Satd. Flow (perm)	246	3533		706	3394			1513		1410	1549	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	283	707	11	3	938	257	4	3	4	257	3	334
RTOR Reduction (vph)	0	1	0	0	15	0	0	3	0	0	260	0
Lane Group Flow (vph)	283	717	0	3	1180	0	0	8	0	257	77	0
Confl. Peds. (#/hr)	24		15	15		24	21					21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	97.0	91.8		74.3	73.1			30.0		30.0	30.0	
Effective Green, g (s)	98.0	92.8		76.3	74.1			31.0		31.0	31.0	
Actuated g/C Ratio	0.70	0.66		0.54	0.53			0.22		0.22	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	396	2341		401	1796			335		312	342	
v/s Ratio Prot	c0.11	0.20		0.00	0.35						0.05	
v/s Ratio Perm	c0.39			0.00				0.01		c0.18		
v/c Ratio	0.71	0.31		0.01	0.66			0.02		0.82	0.23	
Uniform Delay, d1	21.9	10.0		14.5	23.8			42.7		51.9	44.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	6.0	0.3		0.0	1.9			0.0		16.0	0.3	
Delay (s)	27.9	10.3		14.5	25.7			42.7		67.9	45.0	
Level of Service	C	B		B	C			D		E	D	
Approach Delay (s)		15.3			25.7			42.7			54.9	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay				28.2								
HCM 2000 Volume to Capacity ratio				0.75								
Actuated Cycle Length (s)				140.0						14.0		
Intersection Capacity Utilization				82.4%								
Analysis Period (min)				15								
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.997			0.850			0.942	
Flt Protected	0.950			0.950			0.950				0.972	
Satd. Flow (prot)	1785	3575	0	1785	3569	0	1785	1633	0	0	1759	0
Flt Permitted	0.950			0.950			0.950				0.972	
Satd. Flow (perm)	1785	3575	0	1785	3569	0	1785	1633	0	0	1759	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	5	875	4	3	1185	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	875	4	3	1185	20	3	0	3	7	0	6
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	941	4	3	1274	22	3	0	3	8	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type	TWLT			TWLT								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.92			0.91			0.95	0.95	0.91	0.95	0.95	0.92
vC, conflicting volume	1319			969			1627	2302	498	1798	2293	672
vC1, stage 1 conf vol							977	977		1314	1314	
vC2, stage 2 conf vol							650	1325		484	979	
vCu, unblocked vol	1172			764			1170	1882	245	1351	1872	468
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	100	96	100	99
cM capacity (veh/h)	544			764			286	201	677	182	205	493
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	627	318	3	849	447	3	3	14			
Volume Left	5	0	0	3	0	0	3	0	8			
Volume Right	0	0	4	0	0	22	0	3	6			
cSH	544	1700	1700	764	1700	1700	286	677	249			
Volume to Capacity	0.01	0.37	0.19	0.00	0.50	0.26	0.01	0.00	0.06			
Queue Length 95th (m)	0.2	0.0	0.0	0.1	0.0	0.0	0.3	0.1	1.4			
Control Delay (s)	11.7	0.0	0.0	9.7	0.0	0.0	17.7	10.3	20.3			
Lane LOS	B			A			C	B	C			
Approach Delay (s)	0.1			0.0			14.0		20.3			
Approach LOS							B		C			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				47.4%			ICU Level of Service		A			
Analysis Period (min)				15								

Lanes and Geometrics

22: Lakeshore Rd E & Greaves Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.994		0.875	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1785	3500	3482	0	1637	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1785	3500	3482	0	1637	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

22: Lakeshore Rd E & Greaves Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↕	↕		↕	
Traffic Volume (veh/h)	31	956	1049	47	1	13
Future Volume (Veh/h)	31	956	1049	47	1	13
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	32	976	1070	48	1	13
Pedestrians		2			30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.91				0.95	0.91
vC, conflicting volume	1148				1676	591
vC1, stage 1 conf vol					1124	
vC2, stage 2 conf vol					552	
vCu, unblocked vol	967				1238	355
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				100	98
cM capacity (veh/h)	640				287	574
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	32	488	488	713	405	14
Volume Left	32	0	0	0	0	1
Volume Right	0	0	0	0	48	13
cSH	640	1700	1700	1700	1700	536
Volume to Capacity	0.05	0.29	0.29	0.42	0.24	0.03
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	0.6
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	11.9
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		11.9
Approach LOS						B
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

23: Lakeshore Rd E & Westmount Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1785	3500	3491	0	1720	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1785	3500	3491	0	1720	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

23: Lakeshore Rd E & Westmount Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	5	875	1185	20	7	6
Future Volume (Veh/h)	5	875	1185	20	7	6
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	941	1274	22	8	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	102		269			
pX, platoon unblocked	0.89				0.92	0.89
vC, conflicting volume	1319				1790	672
vC1, stage 1 conf vol					1308	
vC2, stage 2 conf vol					482	
vCu, unblocked vol	1109				1375	382
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	556				238	542
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	5	470	470	849	447	14
Volume Left	5	0	0	0	0	8
Volume Right	0	0	0	0	22	6
cSH	556	1700	1700	1700	1700	314
Volume to Capacity	0.01	0.28	0.28	0.50	0.26	0.04
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	1.1
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	17.0
Lane LOS	B					C
Approach Delay (s)	0.1			0.0		17.0
Approach LOS						C
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			43.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩			↩↩			↩↩	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.994			0.912			0.908	
Flt Protected	0.950			0.950				0.984			0.986	
Satd. Flow (prot)	1733	3560	0	1785	3560	0	0	1724	0	0	1720	0
Flt Permitted	0.950			0.950				0.984			0.986	
Satd. Flow (perm)	1733	3560	0	1785	3560	0	0	1724	0	0	1720	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Existing Conditions

Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	841	35	41	1151	48	28	2	55	13	2	31
Future Volume (Veh/h)	32	841	35	41	1151	48	28	2	55	13	2	31
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	914	38	45	1251	52	30	2	60	14	2	34
Pedestrians	1			1			26			28		
Lane Width (m)	3.6			3.6			3.7			3.7		
Walking Speed (m/s)	1.2			1.2			1.2			1.2		
Percent Blockage	0			0			2			2		
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	306			65								
pX, platoon unblocked	0.88			0.96			0.90	0.90	0.96	0.90	0.90	0.88
vC, conflicting volume	1331			978			1780	2450	503	1984	2443	680
vC1, stage 1 conf vol							1029	1029			1395	1395
vC2, stage 2 conf vol							752	1421			589	1048
vCu, unblocked vol	1108			889			1441	2182	394	1666	2174	371
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5			6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			94			86	99	90	91	99	94
cM capacity (veh/h)	534			722			215	149	572	151	161	544
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	35	609	343	45	834	469	92	50				
Volume Left	35	0	0	45	0	0	30	14				
Volume Right	0	0	38	0	0	52	60	34				
cSH	534	1700	1700	722	1700	1700	357	299				
Volume to Capacity	0.07	0.36	0.20	0.06	0.49	0.28	0.26	0.17				
Queue Length 95th (m)	1.7	0.0	0.0	1.6	0.0	0.0	8.1	4.7				
Control Delay (s)	12.2	0.0	0.0	10.3	0.0	0.0	18.6	19.5				
Lane LOS	B			B			C	C				
Approach Delay (s)	0.4			0.3			18.6	19.5				
Approach LOS							C	C				
Intersection Summary												
Average Delay				1.4								
Intersection Capacity Utilization				47.8%	ICU Level of Service			A				
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997			0.865
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3500	3525	0	0	1625
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	3500	3525	0	0	1625
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Traffic Volume (veh/h)	8	856	1153	24	14	9
Future Volume (Veh/h)	8	856	1153	24	14	9
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	9	920	1240	26	15	10
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		209			
pX, platoon unblocked	0.86				0.91	0.86
vC, conflicting volume	1289				1756	658
vC1, stage 1 conf vol					1276	
vC2, stage 2 conf vol					480	
vCu, unblocked vol	1011				1158	277
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	98
cM capacity (veh/h)	586				263	612
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	9	460	460	827	439	25
Volume Left	9	0	0	0	0	15
Volume Right	0	0	0	0	26	10
cSH	586	1700	1700	1700	1700	341
Volume to Capacity	0.02	0.27	0.27	0.49	0.26	0.07
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	1.9
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	16.4
Lane LOS	B					C
Approach Delay (s)	0.1			0.0		16.4
Approach LOS						C
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			Err%		ICU Level of Service	H
Analysis Period (min)			15			

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.958	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1785	3535	3531	0	1741	0
Flt Permitted	0.950				0.967	
Satd. Flow (perm)	1785	3535	3531	0	1741	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	99.9		77.2	
Travel Time (s)		7.9	7.2		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Existing Conditions

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	5	874	1156	8	8	4
Future Volume (Veh/h)	5	874	1156	8	8	4
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	940	1243	9	9	4
Pedestrians	3	3			27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	170		100			
pX, platoon unblocked	0.86				0.91	0.86
vC, conflicting volume	1279				1758	656
vC1, stage 1 conf vol					1274	
vC2, stage 2 conf vol					483	
vCu, unblocked vol	996				1161	271
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	590				263	614
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	5	470	470	829	423	13
Volume Left	5	0	0	0	0	9
Volume Right	0	0	0	0	9	4
cSH	590	1700	1700	1700	1700	319
Volume to Capacity	0.01	0.28	0.28	0.49	0.25	0.04
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	16.8
Lane LOS	B					C
Approach Delay (s)	0.1			0.0		16.8
Approach LOS						C
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			42.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗	↗		↩	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.913	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1785	3500	3494	0	1686	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1785	3500	3494	0	1686	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		86.8	138.1		79.4	
Travel Time (s)		6.2	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗	↗		↩	
Traffic Volume (veh/h)	7	870	1202	20	6	10
Future Volume (Veh/h)	7	870	1202	20	6	10
Sign Control	Free	Free	Free		Stop	
Grade	0%	0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	926	1279	21	6	11
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	87		333			
pX, platoon unblocked	0.89				0.92	0.89
vC, conflicting volume	1327				1798	682
vC1, stage 1 conf vol					1316	
vC2, stage 2 conf vol					481	
vCu, unblocked vol	1114				1359	387
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	98
cM capacity (veh/h)	550				236	533
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	463	463	853	447	17
Volume Left	7	0	0	0	0	6
Volume Right	0	0	0	0	21	11
cSH	550	1700	1700	1700	1700	369
Volume to Capacity	0.01	0.27	0.27	0.50	0.26	0.05
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	1.2
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	15.2
Lane LOS	B					C
Approach Delay (s)	0.1			0.0		15.2
Approach LOS						C
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			45.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.939	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1785	3500	3528	0	1717	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1785	3500	3528	0	1717	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	4	950	1254	13	6	5
Future Volume (Veh/h)	4	950	1254	13	6	5
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	1000	1320	14	6	5
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	122					
pX, platoon unblocked					0.95	
vC, conflicting volume	1360				1866	698
vC1, stage 1 conf vol					1353	
vC2, stage 2 conf vol					513	
vCu, unblocked vol	1360				1800	698
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	501				194	378
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	500	500	880	454	11
Volume Left	4	0	0	0	0	6
Volume Right	0	0	0	0	14	5
cSH	501	1700	1700	1700	1700	249
Volume to Capacity	0.01	0.29	0.29	0.52	0.27	0.04
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	1.1
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	20.1
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		20.1
Approach LOS						C
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			45.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998			0.941			0.865	
Frt Protected	0.950							0.973		0.950		
Satd. Flow (prot)	1733	3463	0	0	3528	0	0	1612	0	1785	0	0
Frt Permitted	0.950							0.973		0.950		
Satd. Flow (perm)	1733	3463	0	0	3528	0	0	1612	0	1785	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		369.2			131.5			86.4			119.4	
Travel Time (s)		26.6			9.5			6.2			8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	37	919	3	2	1215	14	17	0	13	11	0	32
Future Volume (Veh/h)	37	919	3	2	1215	14	17	0	13	11	0	32
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	39	967	3	2	1279	15	18	0	14	12	0	34
Pedestrians		6			6			76			24	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			6			2	
Right turn flare (veh)												
Median type	TWLT	TL		TWLT	TL							
Median storage (veh)	2			2								
Upstream signal (m)					131							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	1318			1046			1806	2444	567	1896	2438	677
vC1, stage 1 conf vol							1122	1122		1314	1314	
vC2, stage 2 conf vol							684	1322		582	1124	
vCu, unblocked vol	796			1046			1436	2272	567	1554	2264	0
tC, single (s)	4.2			4.1			7.7	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)							6.7	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			89	100	97	95	100	96
cM capacity (veh/h)	610			631			170	174	441	221	184	805
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	645	325	642	654	32	46					
Volume Left	39	0	0	2	0	18	12					
Volume Right	0	0	3	0	15	14	34					
cSH	610	1700	1700	631	1700	232	477					
Volume to Capacity	0.06	0.38	0.19	0.00	0.39	0.14	0.10					
Queue Length 95th (m)	1.6	0.0	0.0	0.1	0.0	3.8	2.5					
Control Delay (s)	11.3	0.0	0.0	0.1	0.0	22.9	13.4					
Lane LOS	B			A		C	B					
Approach Delay (s)	0.4			0.0		22.9	13.4					
Approach LOS						C	B					
Intersection Summary												
Average Delay				0.8								
Intersection Capacity Utilization			Err%		ICU Level of Service		H					
Analysis Period (min)			15									

Lanes and Geometrics
101: East Avenue & Street L

Existing Conditions
Afternoon Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.959
Satd. Flow (prot)	1593	0	1842	0	0	1767
Flt Permitted						0.959
Satd. Flow (perm)	1593	0	1842	0	0	1767
Link Speed (k/h)	50		50			50
Link Distance (m)	85.8		91.1			132.2
Travel Time (s)	6.2		6.6			9.5

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Existing Conditions
Afternoon Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	50	8	0	24	4
Future Volume (vph)	0	50	8	0	24	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	8	0	24	4
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	50	8	28			
Volume Left (vph)	0	0	24			
Volume Right (vph)	50	0	0			
Hadj (s)	-0.57	0.03	0.21			
Departure Headway (s)	3.4	4.1	4.2			
Degree Utilization, x	0.05	0.01	0.03			
Capacity (veh/h)	1036	864	841			
Control Delay (s)	6.6	7.1	7.3			
Approach Delay (s)	6.6	7.1	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.9			
Level of Service			A			
Intersection Capacity Utilization			18.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.947			0.899			0.985			0.992	
Flt Protected		0.990			0.993			0.998			0.995	
Satd. Flow (prot)	0	1727	0	0	1644	0	0	1811	0	0	1818	0
Flt Permitted		0.990			0.993			0.998			0.995	
Satd. Flow (perm)	0	1727	0	0	1644	0	0	1811	0	0	1818	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Existing Conditions
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	13	13	8	6	42	7	125	16	14	109	8
Future Volume (vph)	7	13	13	8	6	42	7	125	16	14	109	8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	13	13	8	6	42	7	125	16	14	109	8
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	33	56	148	131								
Volume Left (vph)	7	8	7	14								
Volume Right (vph)	13	42	16	8								
Hadj (s)	-0.16	-0.39	-0.02	0.02								
Departure Headway (s)	4.4	4.2	4.2	4.3								
Degree Utilization, x	0.04	0.06	0.17	0.16								
Capacity (veh/h)	750	797	826	820								
Control Delay (s)	7.6	7.5	8.1	8.1								
Approach Delay (s)	7.6	7.5	8.1	8.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.9									
Level of Service			A									
Intersection Capacity Utilization			22.1%									
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Existing Conditions
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	0.0	0.0	0.0			0.0
Storage Lanes	1	0	0			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.990				0.926	
Flt Protected	0.956			0.995		
Satd. Flow (prot)	1743	0	0	1833	1706	0
Flt Permitted	0.956			0.995		
Satd. Flow (perm)	1743	0	0	1833	1706	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Existing Conditions
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	48	4	4	36	13	16
Future Volume (vph)	48	4	4	36	13	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	48	4	4	36	13	16
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	52	40	29			
Volume Left (vph)	48	4	0			
Volume Right (vph)	4	0	16			
Hadj (s)	0.17	0.05	-0.30			
Departure Headway (s)	4.2	4.1	3.8			
Degree Utilization, x	0.06	0.05	0.03			
Capacity (veh/h)	835	855	938			
Control Delay (s)	7.5	7.3	6.9			
Approach Delay (s)	7.5	7.3	6.9			
Approach LOS	A	A	A			
Intersection Summary						
Delay		7.3				
Level of Service		A				
Intersection Capacity Utilization		15.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	1.00		0.99		0.95		0.99				0.96
Frt						0.850		0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1713	0	1662	1705	1566
Flt Permitted	0.950			0.348						0.950	0.728	
Satd. Flow (perm)	3324	3578	0	637	3579	1493	0	1739	0	1662	1303	1499
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)						212		117				32
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰		↰↱	↰	↰↱	↰
Traffic Volume (vph)	462	803	1	747	669	1	0	609	3	507
Future Volume (vph)	462	803	1	747	669	1	0	609	3	507
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	32.0	80.0	48.0	48.0	49.0	11.0	11.0	49.0	60.0	32.0
Total Split (%)	22.9%	57.1%	34.3%	34.3%	35.0%	7.9%	7.9%	35.0%	42.9%	22.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	24.6	75.0	45.4	45.4	98.2	6.0	52.8	52.8	79.6	
Actuated g/C Ratio	0.18	0.54	0.32	0.32	0.70		0.04	0.38	0.38	0.57
v/c Ratio	0.77	0.42	0.00	0.64	0.59		0.01	0.49	0.48	0.58
Control Delay	64.3	20.3	43.0	37.3	8.6		0.0	37.4	37.2	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	64.3	20.3	43.0	37.3	8.6		0.0	37.4	37.2	18.1
LOS	E	C	D	D	A		A	D	D	B
Approach Delay		36.4		23.8					28.6	
Approach LOS		D		C					C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 29.4

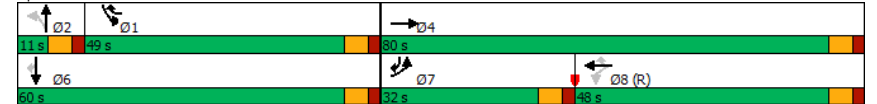
Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	462	805	1	747	669	2	304	308	507
v/c Ratio	0.77	0.42	0.00	0.64	0.59	0.01	0.49	0.48	0.58
Control Delay	64.3	20.3	43.0	37.3	8.6	0.0	37.4	37.2	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	20.3	43.0	37.3	8.6	0.0	37.4	37.2	18.1
Queue Length 50th (m)	66.1	71.6	0.1	86.8	90.2	0.0	68.8	69.4	74.4
Queue Length 95th (m)	85.2	87.7	m0.2	84.5	84.1	0.0	112.4	113.2	102.6
Internal Link Dist (m)		297.4		113.2		71.8		931.9	
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	654	1916	206	1159	1137	186	626	642	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.42	0.00	0.64	0.59	0.01	0.49	0.48	0.56
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	803	2	1	747	669	1	0	1	609	3	507
Future Volume (vph)	462	803	2	1	747	669	1	0	1	609	3	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	0.97
Frbp, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	3395	3577		1739	3579	1534		1696		1662	1705	1518
Flt Permitted	0.95	1.00		0.35	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	3395	3577		636	3579	1534		1739		1662	1302	1518
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	462	803	2	1	747	669	1	0	1	609	3	507
RTOR Reduction (vph)	0	0	0	0	0	71	0	2	0	0	0	13
Lane Group Flow (vph)	462	805	0	1	747	598	0	0	0	304	308	494
Confl. Peds. (#/hr)	27		9	9		27	24					24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	23.6	69.2		39.6	39.6	91.4		1.0		51.8	58.8	82.4
Effective Green, g (s)	24.6	70.2		40.6	40.6	93.4		2.0		52.8	59.8	84.4
Actuated g/C Ratio	0.18	0.50		0.29	0.29	0.67		0.01		0.38	0.43	0.60
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	596	1793		184	1037	1023		24		626	708	969
v/s Ratio Prot	c0.14	0.23			c0.21	c0.22				0.18	0.16	c0.09
v/s Ratio Perm				0.00		0.17		0.00			0.02	0.24
v/c Ratio	0.78	0.45		0.01	0.72	0.58		0.00		0.49	0.44	0.51
Uniform Delay, d1	55.1	22.5		35.3	44.6	12.7		68.0		33.2	28.2	15.9
Progression Factor	1.00	1.00		1.27	0.85	1.23		1.00		1.00	1.00	1.00
Incremental Delay, d2	6.3	0.8		0.0	3.6	0.7		0.0		0.6	0.4	0.5
Delay (s)	61.3	23.3		44.8	41.5	16.4		68.0		33.8	28.6	16.4
Level of Service	E	C		D	D	B		E		C	C	B
Approach Delay (s)		37.1			29.6			68.0			24.5	
Approach LOS		D			C			E			C	
Intersection Summary												
HCM 2000 Control Delay				30.6								
HCM 2000 Volume to Capacity ratio				0.68								
Actuated Cycle Length (s)				140.0				20.0				
Intersection Capacity Utilization				77.6%								
Analysis Period (min)				15								
c Critical Lane Group												

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.98	1.00		0.94	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1578	0	1750	1565	0
Flt Permitted	0.950			0.950			0.755			0.393		
Satd. Flow (perm)	1738	3579	1527	1748	3579	1470	1376	1578	0	723	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85			78			176			171
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	53	1198	155	68	1285	9	212	0	38	0
Future Volume (vph)	53	1198	155	68	1285	9	212	0	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	16.0	76.0	76.0	19.0	79.0	79.0	45.0	45.0	45.0	45.0
Total Split (%)	11.4%	54.3%	54.3%	13.6%	56.4%	56.4%	32.1%	32.1%	32.1%	32.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	10.6	86.9	86.9	11.8	87.9	87.9	27.8	27.8	27.8	27.8
Actuated g/C Ratio	0.08	0.62	0.62	0.08	0.63	0.63	0.20	0.20	0.20	0.20
v/c Ratio	0.40	0.54	0.16	0.46	0.57	0.01	0.78	0.50	0.27	0.01
Control Delay	68.3	16.4	5.7	70.5	16.3	0.0	71.4	15.4	49.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	16.4	5.7	70.5	16.3	0.0	71.4	15.4	49.4	0.0
LOS	E	B	A	E	B	A	E	B	D	A
Approach Delay		17.2			18.9			42.5		44.7
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.7

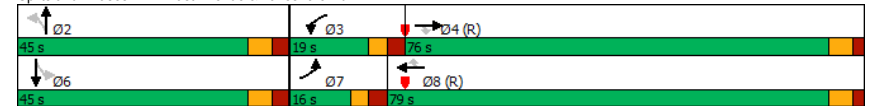
Intersection LOS: C

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1198	155	68	1285	9	212	226	38	4
v/c Ratio	0.40	0.54	0.16	0.46	0.57	0.01	0.78	0.50	0.27	0.01
Control Delay	68.3	16.4	5.7	70.5	16.3	0.0	71.4	15.4	49.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	16.4	5.7	70.5	16.3	0.0	71.4	15.4	49.4	0.0
Queue Length 50th (m)	12.9	98.8	9.8	19.2	96.3	0.0	59.1	12.2	9.5	0.0
Queue Length 95th (m)	28.6	190.8	22.7	m34.9	114.9	m0.0	82.6	34.8	19.4	0.0
Internal Link Dist (m)		89.2		78.4			108.2		154.2	
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	148	2222	980	180	2255	955	383	566	201	559
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.54	0.16	0.38	0.57	0.01	0.55	0.40	0.19	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	53	1198	155	68	1285	9	212	0	226	38	0	4
Future Volume (vph)	53	1198	155	68	1285	9	212	0	226	38	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.94	1.00	0.99		1.00	0.98	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1527	1750	3579	1470	1731	1578		1747	1565	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00		0.39	1.00	
Satd. Flow (perm)	1750	3579	1527	1750	3579	1470	1376	1578		723	1565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1198	155	68	1285	9	212	0	226	38	0	4
RTOR Reduction (vph)	0	0	33	0	0	3	0	141	0	0	3	0
Lane Group Flow (vph)	53	1198	122	68	1285	6	212	85	0	38	1	0
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.4	84.7	84.7	9.5	85.8	85.8	26.8	26.8		26.8	26.8	
Effective Green, g (s)	9.4	85.7	85.7	10.5	86.8	86.8	27.8	27.8		27.8	27.8	
Actuated g/C Ratio	0.07	0.61	0.61	0.08	0.62	0.62	0.20	0.20		0.20	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	2190	934	131	2218	911	273	313		143	310	
v/s Ratio Prot	0.03	0.33		c0.04	c0.36			0.05			0.00	
v/s Ratio Perm			0.08			0.00	c0.15			0.05		
v/c Ratio	0.45	0.55	0.13	0.52	0.58	0.01	0.78	0.27		0.27	0.00	
Uniform Delay, d1	62.8	15.8	11.4	62.3	15.8	10.1	53.2	47.5		47.5	45.0	
Progression Factor	0.99	0.88	0.76	1.02	0.87	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.9	0.3	3.1	1.0	0.0	13.0	0.5		1.0	0.0	
Delay (s)	64.7	14.8	9.0	66.4	14.8	10.2	66.1	48.0		48.5	45.0	
Level of Service	E	B	A	E	B	B	E	D		D	D	
Approach Delay (s)		16.0			17.3			56.8			48.1	
Approach LOS		B			B			E			D	
Intersection Summary												
HCM 2000 Control Delay		22.5			HCM 2000 Level of Service		C					
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)		16.0					
Intersection Capacity Utilization		82.3%			ICU Level of Service		E					
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.49	0.91		0.82	0.76
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	763	1594	3579	1444	1196
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		63			15	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↖	↗	←	↖	↗	Ø2
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø2
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑	
Traffic Volume (vph)	1244	201	84	1122	241	306	
Future Volume (vph)	1244	201	84	1122	241	306	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov	
Protected Phases	4		3	8		3	2
Permitted Phases		4			5	2	
Detector Phase	4	4	3	8	5	3	
Switch Phase							
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	12.0	24.0	12.0	12.0	34.0
Total Split (s)	73.0	73.0	25.0	98.0	42.0	25.0	42.0
Total Split (%)	52.1%	52.1%	17.9%	70.0%	30.0%	17.9%	30%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	6.0	6.0	
Lag/Lead	Lag	Lag	Lead			Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	C-Min	C-Min	None	C-Min	None	None	None
Act Effct Green (s)	80.9	80.9	12.9	99.8	29.2	42.1	
Actuated g/C Ratio	0.58	0.58	0.09	0.71	0.21	0.30	
v/c Ratio	0.60	0.43	0.53	0.44	0.80	0.76	
Control Delay	9.6	6.4	98.0	3.3	71.5	49.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.6	6.4	98.0	3.3	71.5	49.8	
LOS	A	A	F	A	E	D	
Approach Delay	9.2			9.9	59.3		
Approach LOS	A			A	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 18.0

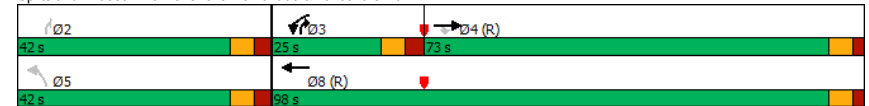
Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1244	201	84	1122	241	306
v/c Ratio	0.60	0.43	0.53	0.44	0.80	0.76
Control Delay	9.6	6.4	98.0	3.3	71.5	49.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	6.4	98.0	3.3	71.5	49.8
Queue Length 50th (m)	37.1	1.9	25.8	13.8	67.1	68.7
Queue Length 95th (m)	51.7	11.2	44.6	19.4	92.8	85.4
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2069	467	237	2558	374	472
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.43	0.35	0.44	0.64	0.65
Intersection Summary						

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1244	201	84	1122	241	306
Future Volume (vph)	1244	201	84	1122	241	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.49	1.00	1.00	1.00	0.84
Fipb, ped/bikes	1.00	1.00	1.00	1.00	0.78	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	763	1750	3579	1372	1309
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	763	1750	3579	1372	1309
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1244	201	84	1122	241	306
RTOR Reduction (vph)	0	27	0	0	0	10
Lane Group Flow (vph)	1244	174	84	1122	241	296
Confl. Peds. (#/hr)	132	132		150	147	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases		4			5	2
Actuated Green, G (s)	79.9	79.9	11.9	98.8	28.2	40.1
Effective Green, g (s)	80.9	80.9	12.9	99.8	29.2	42.1
Actuated g/C Ratio	0.58	0.58	0.09	0.71	0.21	0.30
Clearance Time (s)	6.0	6.0	7.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2068	440	161	2551	286	449
v/s Ratio Prot	c0.35		0.05	0.31		c0.06
v/s Ratio Perm		0.23			c0.18	0.17
v/c Ratio	0.60	0.40	0.52	0.44	0.84	0.66
Uniform Delay, d1	19.1	16.2	60.6	8.4	53.2	42.7
Progression Factor	0.40	0.29	1.46	0.31	1.00	1.00
Incremental Delay, d2	1.1	2.3	2.7	0.5	19.6	3.5
Delay (s)	8.9	7.0	91.4	3.1	72.8	46.1
Level of Service	A	A	F	A	E	D
Approach Delay (s)	8.6			9.3	57.9	
Approach LOS	A			A	E	
Intersection Summary						
HCM 2000 Control Delay		17.3		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.68				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		18.0
Intersection Capacity Utilization		69.5%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				0.98					0.98	0.98	
Frt					0.981						0.876	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1750	3579	1842	1842	3450	0	1879	1921	0	1750	1620	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1712	3579	1842	1842	3450	0	1879	1921	0	1715	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					14						97	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø5
Lane Configurations	↩	↩↩	↩↩	↩	↩			
Traffic Volume (vph)	182	1388	1081	126	20			
Future Volume (vph)	182	1388	1081	126	20			
Turn Type	Prot	NA	NA	pm+pt	NA			
Protected Phases	7	4	8	1	6	2	3	5
Permitted Phases				6				
Detector Phase	7	4	8	1	6			
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.0	45.0	45.0	11.0	9.0
Total Split (s)	23.0	75.0	63.0	9.0	45.0	45.0	11.0	9.0
Total Split (%)	16.4%	53.6%	45.0%	6.4%	32.1%	32%	8%	6%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	2.0	2.0	1.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0	5.0	5.0	3.0	6.0			
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	21.4	117.0	90.6	15.0	12.0			
Actuated g/C Ratio	0.15	0.84	0.65	0.11	0.09			
v/c Ratio	0.68	0.46	0.55	0.67	0.52			
Control Delay	61.2	5.2	16.4	77.7	24.2			
Queue Delay	0.0	0.1	0.1	0.0	0.0			
Total Delay	61.2	5.3	16.5	77.7	24.2			
LOS	E	A	B	E	C			
Approach Delay		11.8	16.5		52.0			
Approach LOS		B	B		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 16.9

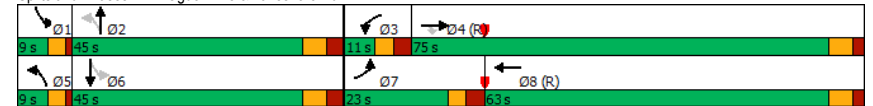
Intersection LOS: B

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	↖	→	←	↘	↓
Lane Group	EBL	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	182	1388	1235	126	117
v/c Ratio	0.68	0.46	0.55	0.67	0.52
Control Delay	61.2	5.2	16.4	77.7	24.2
Queue Delay	0.0	0.1	0.1	0.0	0.0
Total Delay	61.2	5.3	16.5	77.7	24.2
Queue Length 50th (m)	53.1	58.6	120.1	35.9	5.5
Queue Length 95th (m)	78.4	103.0	102.3	57.8	25.2
Internal Link Dist (m)		78.3	60.4		222.5
Turn Bay Length (m)	28.0				
Base Capacity (vph)	275	2991	2237	187	521
Starvation Cap Reductn	0	272	204	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.51	0.61	0.67	0.22
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↘	↓	↗	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↗	↖	↖↗	↗	↖	↖	↗	↖	↖↗	↗
Traffic Volume (vph)	182	1388	0	0	1081	154	0	0	0	126	20	97
Future Volume (vph)	182	1388	0	0	1081	154	0	0	0	126	20	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0			5.0					3.0	6.0	
Lane Util. Factor	1.00	0.95			0.95					1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.98					1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00					1.00	1.00	
Frt	1.00	1.00			0.98					1.00	0.88	
Flt Protected	0.95	1.00			1.00					0.95	1.00	
Satd. Flow (prot)	1750	3579			3451					1750	1619	
Flt Permitted	0.95	1.00			1.00					0.95	1.00	
Satd. Flow (perm)	1750	3579			3451					1750	1619	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	1388	0	0	1081	154	0	0	0	126	20	97
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	89	0
Lane Group Flow (vph)	182	1388	0	0	1230	0	0	0	0	126	28	0
Confl. Peds. (#/hr)	26		84	84		26	9		18	18		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	20.4	116.0			89.6					14.0	11.0	
Effective Green, g (s)	21.4	117.0			90.6					15.0	12.0	
Actuated g/C Ratio	0.15	0.84			0.65					0.11	0.09	
Clearance Time (s)	6.0	6.0			6.0					4.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)	267	2991			2233					187	138	
v/s Ratio Prot	c0.10	0.39			c0.36					c0.07	0.02	
v/s Ratio Perm												
v/c Ratio	0.68	0.46			0.55					0.67	0.21	
Uniform Delay, d1	56.1	3.1			13.5					60.1	59.6	
Progression Factor	0.91	1.47			1.07					1.00	1.00	
Incremental Delay, d2	5.7	0.4			0.9					9.2	0.7	
Delay (s)	56.8	4.9			15.4					69.4	60.3	
Level of Service	E	A			B					E	E	
Approach Delay (s)		11.0			15.4			0.0			65.0	
Approach LOS		B			B			A			E	
Intersection Summary												
HCM 2000 Control Delay		17.0			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)				19.0			
Intersection Capacity Utilization		76.8%			ICU Level of Service				D			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	↖	→	↗	↙	←	↖	↙	↗	↘	↖	↘	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖		↖	↖		↖	↖↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.47	0.91	1.00			0.99			1.00	
Frt			0.850					0.850			0.961	
Flt Protected				0.950			0.950				0.966	
Satd. Flow (prot)	1842	3579	1566	1750	3578	0	1750	1580	0	0	1748	0
Flt Permitted				0.950			0.753				0.838	
Satd. Flow (perm)	1842	3579	737	1585	3578	0	1387	1580	0	0	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124					149			132	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↗	↖	←	↖	↗	↘	↖	↘	↗	↘	↗	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10	
Lane Configurations	↖↖	↖	↖	↖↖	↖	↖	↖	↖↖					
Traffic Volume (vph)	1230	267	94	865	377	0	5	0					
Future Volume (vph)	1230	267	94	865	377	0	5	0					
Turn Type	NA	custom	Prot	NA	Perm	NA	Perm	NA					
Protected Phases	4 9	9	3	8 10		5		2	4	7	8	10	
Permitted Phases		4			5		2						
Detector Phase	4 9	9	3	8 10	5	5	2	2					
Switch Phase													
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)		11.0	11.0		44.0	44.0	44.0	44.0	24.0	11.0	20.0	24.0	
Total Split (s)		25.0	20.0		57.0	57.0	57.0	57.0	38.0	11.0	48.0	24.0	
Total Split (%)		17.9%	14.3%		40.7%	40.7%	40.7%	40.7%	27%	8%	34%	17%	
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0	
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0		-1.0					
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0					
Lead/Lag			Lead						Lag	Lead	Lag		
Lead-Lag Optimize?			Yes						Yes	Yes	Yes		
Recall Mode		None	None		None	None	None	None	C-Max	None	C-Max	None	
Act Effect Green (s)	73.0	63.0	13.1	91.1	43.9	43.9		43.9					
Actuated g/C Ratio	0.52	0.45	0.09	0.65	0.31	0.31		0.31					
v/c Ratio	0.66	0.53	0.58	0.37	0.87	0.58		0.01					
Control Delay	27.9	21.6	84.5	8.7	64.8	25.2		0.0					
Queue Delay	0.3	0.0	0.0	0.1	0.0	0.0		0.0					
Total Delay	28.1	21.6	84.5	8.7	64.8	25.2		0.0					
LOS	C	C	F	A	E	C		A					
Approach Delay	27.0			16.1		45.8							
Approach LOS	C			B		D							

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 27.9

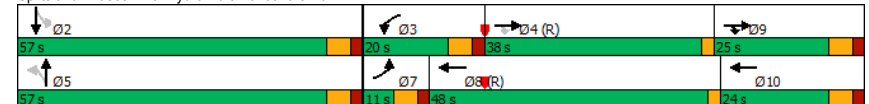
Intersection LOS: C

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	→	↘	↙	←	↖	↑	↓
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1230	267	94	867	377	347	7
v/c Ratio	0.66	0.53	0.58	0.37	0.87	0.58	0.01
Control Delay	27.9	21.6	84.5	8.7	64.8	25.2	0.0
Queue Delay	0.3	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	28.1	21.6	84.5	8.7	64.8	25.2	0.0
Queue Length 50th (m)	123.2	23.3	26.3	14.5	101.8	47.3	0.0
Queue Length 95th (m)	158.4	59.1	41.7	71.2	136.0	74.6	0.0
Internal Link Dist (m)	114.1			171.3		111.3	167.6
Turn Bay Length (m)		50.0	25.0		60.0		
Base Capacity (vph)	1945	531	189	2406	515	680	646
Starvation Cap Reductn	206	0	0	403	0	0	0
Spillback Cap Reductn	0	0	0	34	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.50	0.50	0.43	0.73	0.51	0.01
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	↘	→	↙	↖	←	↗	↘	↙	↖	↗	↘	↙	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↘	↖↗	↘	↘	↖↗		↘	↖	↘		↖↗	↘		
Traffic Volume (vph)	0	1230	267	94	865	2	377	0	347	5	0	2		
Future Volume (vph)	0	1230	267	94	865	2	377	0	347	5	0	2		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5		
Total Lost time (s)		0.0	5.0	5.0	0.0		5.0	5.0				5.0		
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00				1.00		
Frpb, ped/bikes		1.00	0.60	1.00	1.00		1.00	0.99				1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00				1.00		
Flt Protected		1.00	0.85	1.00	1.00		1.00	0.85				0.96		
Flt Permitted		1.00	1.00	0.95	1.00		0.95	1.00				0.97		
Satd. Flow (prot)		3579	946	1750	3577		1750	1580				1748		
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00				0.84		
Satd. Flow (perm)		3579	946	1750	3577		1387	1580				1517		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1230	267	94	865	2	377	0	347	5	0	2		
RTOR Reduction (vph)	0	0	65	0	0	0	0	102	0	0	5	0		
Lane Group Flow (vph)	0	1230	202	94	867	0	377	245	0	0	2	0		
Confl. Peds. (#/hr)	16		154	154		16			1	1				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%		
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA			
Protected Phases	7	4	9	3	8	10		5			2			
Permitted Phases			4					5		2				
Actuated Green, G (s)		67.0	65.0	12.1	85.1		42.9	42.9			42.9			
Effective Green, g (s)		69.0	67.0	13.1	87.1		43.9	43.9			43.9			
Actuated g/C Ratio		0.49	0.48	0.09	0.62		0.31	0.31			0.31			
Clearance Time (s)			6.0	6.0			6.0	6.0			6.0			
Vehicle Extension (s)			3.0	3.0			3.0	3.0			3.0			
Lane Grp Cap (vph)		1763	452	163	2225		434	495			475			
v/s Ratio Prot		c0.34	0.05	c0.05	0.24			0.15						
v/s Ratio Perm			0.16				c0.27				0.00			
v/c Ratio		0.70	0.45	0.58	0.39		0.87	0.49			0.00			
Uniform Delay, d1		27.4	24.2	60.8	13.2		45.3	39.0			33.0			
Progression Factor		0.99	1.07	1.18	0.67		1.00	1.00			1.00			
Incremental Delay, d2		1.1	0.6	4.6	0.1		16.6	0.8			0.0			
Delay (s)		28.3	26.7	76.1	9.0		61.9	39.8			33.0			
Level of Service		C	C	E	A		E	D			C			
Approach Delay (s)		28.0			15.5		51.3				33.0			
Approach LOS		C			B		D				C			
Intersection Summary														
HCM 2000 Control Delay			29.5				HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			15.0				
Intersection Capacity Utilization			77.8%				ICU Level of Service			D				
Analysis Period (min)			15											
c Critical Lane Group														

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00						0.88	
Frt					0.991						0.947	
Flt Protected	0.950										0.970	
Satd. Flow (prot)	1750	3579	1842	1842	3532	0	1879	1921	0	0	1648	0
Flt Permitted	0.950										0.813	
Satd. Flow (perm)	1730	3579	1842	1842	3532	0	1879	1921	0	0	1282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7						132	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↰	↱	↱	↰	↱						
Traffic Volume (vph)	101	1485	939	44	0						
Future Volume (vph)	101	1485	939	44	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	24.0	11.0	11.0
Total Split (s)	22.0			44.0	44.0	44.0	11.0	74.0	63.0	11.0	11.0
Total Split (%)	15.7%			31.4%	31.4%	31%	8%	53%	45%	8%	8%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Min	None	None
Act Effect Green (s)	14.4	127.2	107.6		9.0						
Actuated g/C Ratio	0.10	0.91	0.77		0.06						
v/c Ratio	0.56	0.46	0.37		0.35						
Control Delay	62.5	1.6	6.9		4.7						
Queue Delay	0.0	0.1	0.0		0.0						
Total Delay	62.5	1.7	6.9		4.7						
LOS	E	A	A		A						
Approach Delay		5.5	6.9		4.7						
Approach LOS		A	A		A						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 6.0

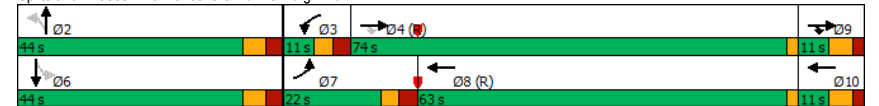
Intersection LOS: A

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	SBT
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	101	1485	1000	72
v/c Ratio	0.56	0.46	0.37	0.35
Control Delay	62.5	1.6	6.9	4.7
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	62.5	1.7	6.9	4.7
Queue Length 50th (m)	30.9	29.7	49.6	0.0
Queue Length 95th (m)	m48.0	27.3	49.4	0.0
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	218	3251	2716	444
Starvation Cap Reductn	0	472	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.53	0.37	0.16
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	101	1485	0	0	939	61	0	0	0	44	0	28
Future Volume (vph)	101	1485	0	0	939	61	0	0	0	44	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0						6.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.95	
Flpb, ped/bikes	1.00	1.00			1.00						0.93	
Flt Protected	0.95	1.00			1.00						0.97	
Satd. Flow (prot)	1750	3579			3532						1530	
Flt Permitted	0.95	1.00			1.00						0.81	
Satd. Flow (perm)	1750	3579			3532						1282	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	1485	0	0	939	61	0	0	0	44	0	28
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	68	0
Lane Group Flow (vph)	101	1485	0	0	998	0	0	0	0	0	4	0
Confl. Peds. (#/hr)	10		97	97		10	99		104	104		99
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4 9		3	8 10			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	13.4	120.6			101.2						6.4	
Effective Green, g (s)	14.4	121.6			102.2						7.4	
Actuated g/C Ratio	0.10	0.87			0.73						0.05	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	180	3108			2578						67	
v/s Ratio Prot	c0.06	c0.41			0.28							
v/s Ratio Perm											c0.00	
v/c Ratio	0.56	0.48			0.39						0.06	
Uniform Delay, d1	59.8	2.1			7.1						63.0	
Progression Factor	0.89	0.89			1.08						1.00	
Incremental Delay, d2	3.2	0.1			0.1						0.4	
Delay (s)	56.5	1.9			7.7						63.3	
Level of Service	E	A			A						E	
Approach Delay (s)	5.4				7.7		0.0				63.3	
Approach LOS	A				A		A				E	
Intersection Summary												
HCM 2000 Control Delay		7.9			HCM 2000 Level of Service		A					
HCM 2000 Volume to Capacity ratio		0.48										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)		17.0					
Intersection Capacity Utilization		87.9%			ICU Level of Service		E					
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↔	↕↕	↔	↔	↕↕	↔	↔	↕↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.99		0.93		1.00			1.00	0.99
Frt		0.998				0.850						0.850
Flt Protected	0.950			0.950			0.950				0.953	
Satd. Flow (prot)	1750	3569	0	1750	3579	1566	0	1789	0	0	1795	1566
Flt Permitted	0.950			0.950			0.500				0.728	
Satd. Flow (perm)	1705	3569	0	1735	3579	1448	0	940	0	0	1370	1544
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125						28
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↕↕	↔	↔	↕↕	↔	↕↕	↔
Traffic Volume (vph)	512	970	1	555	222	1	0	158	1	417
Future Volume (vph)	512	970	1	555	222	1	0	158	1	417
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	60.0	84.0	11.0	35.0	35.0	45.0	45.0	45.0	45.0	60.0
Total Split (%)	42.9%	60.0%	7.9%	25.0%	25.0%	32.1%	32.1%	32.1%	32.1%	42.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0		6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes	
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	47.9	104.0	6.7	53.5	53.5	22.6		22.6		71.5
Actuated g/C Ratio	0.34	0.74	0.05	0.38	0.38		0.16		0.16	0.51
v/c Ratio	0.86	0.37	0.01	0.41	0.35		0.01		0.72	0.52
Control Delay	41.0	6.0	64.0	35.6	17.7		45.0		73.0	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	41.0	6.0	64.0	35.6	17.7		45.0		73.0	19.5
LOS	D	A	E	D	B		D		E	B
Approach Delay		18.0		30.5			45.0		34.2	
Approach LOS		B		C			D		C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 24.7

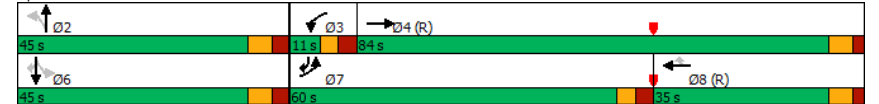
Intersection LOS: C

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	512	981	1	555	222	1	159	417
v/c Ratio	0.86	0.37	0.01	0.41	0.35	0.01	0.72	0.52
Control Delay	41.0	6.0	64.0	35.6	17.7	45.0	73.0	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	6.0	64.0	35.6	17.7	45.0	73.0	19.5
Queue Length 50th (m)	123.5	13.4	0.3	62.4	18.8	0.3	44.5	66.5
Queue Length 95th (m)	189.2	122.8	2.3	96.3	49.9	1.9	66.0	65.5
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	694	2650	83	1367	630	261	381	893
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.37	0.01	0.41	0.35	0.00	0.42	0.47
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	512	970	11	1	555	222	1	0	0	158	1	417
Future Volume (vph)	512	970	11	1	555	222	1	0	0	158	1	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			0.95	1.00
Satd. Flow (prot)	1750	3570		1750	3579	1448		1786			1792	1559
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.50			0.73	1.00
Satd. Flow (perm)	1750	3570		1750	3579	1448		940			1369	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	512	970	11	1	555	222	1	0	0	158	1	417
RTOR Reduction (vph)	0	0	0	0	0	77	0	0	0	0	0	14
Lane Group Flow (vph)	512	981	0	1	555	145	0	1	0	0	159	403
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	46.9	98.2		1.2	52.5	52.5		21.6			21.6	68.5
Effective Green, g (s)	47.9	99.2		2.2	53.5	53.5		22.6			22.6	70.5
Actuated g/C Ratio	0.34	0.71		0.02	0.38	0.38		0.16			0.16	0.50
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	598	2529		27	1367	553		151			220	785
v/s Ratio Prot	c0.29	c0.27		0.00	0.16						c0.12	0.08
v/s Ratio Perm					0.10		0.00					
v/c Ratio	0.86	0.39		0.04	0.41	0.26		0.01			0.72	0.51
Uniform Delay, d1	42.8	8.2		67.9	31.6	29.7		49.3			55.7	23.3
Progression Factor	0.65	0.74		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.7	0.4		0.6	0.9	1.2		0.0			11.1	0.6
Delay (s)	38.6	6.5		68.4	32.5	30.8		49.3			66.8	23.8
Level of Service	D	A		E	C	C		D			E	C
Approach Delay (s)		17.5			32.1			49.3			35.7	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay		25.2										
HCM 2000 Volume to Capacity ratio		0.64										
Actuated Cycle Length (s)		140.0						16.0				
Intersection Capacity Utilization		66.8%										
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 1

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 1

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	6	1357	2	8	1482	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1357	2	8	1482	2	0	0	8	5	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1357	2	8	1482	2	0	0	8	5	0	5
Pedestrians										5		8
Lane Width (m)										3.6		3.7
Walking Speed (m/s)										1.2		1.2
Percent Blockage										0		1
Right turn flare (veh)												
Median type	TWTL			TWTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.78			0.86			0.85	0.85	0.86	0.85	0.85	0.78
vC, conflicting volume	1492			1364			2137	2883	684	2206	2883	750
vC1, stage 1 conf vol							1375	1375		1507	1507	
vC2, stage 2 conf vol							762	1508		698	1376	
vCu, unblocked vol	1061			1092			1228	2107	300	1309	2107	108
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	99	97	100	99
cM capacity (veh/h)	504			542			187	164	595	171	164	715
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	905	454	8	988	496	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	504	1700	1700	542	1700	1700	1700	595	276			
Volume to Capacity	0.01	0.53	0.27	0.01	0.58	0.29	0.00	0.01	0.04			
Queue Length 95th (m)	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.9			
Control Delay (s)	12.2	0.0	0.0	11.7	0.0	0.0	0.0	11.1	18.6			
Lane LOS	B			B			A	B	C			
Approach Delay (s)	0.1			0.1			11.1		18.6			
Approach LOS							B		C			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				52.8%			ICU Level of Service		A			
Analysis Period (min)				15								

Lanes and Geometrics

22: Lakeshore Rd E & Greaves Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

22: Lakeshore Rd E & Greaves Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	1396	1483	14	0	7
Future Volume (Veh/h)	0	1396	1483	14	0	7
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1396	1483	14	0	7
Pedestrians	2	6			12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.78				0.85	0.78
vC, conflicting volume	1509				2206	762
vC1, stage 1 conf vol					1502	
vC2, stage 2 conf vol					704	
vCu, unblocked vol	1091				1327	135
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	491				213	687
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	698	698	989	508	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	14	7
cSH	1700	1700	1700	1700	1700	687
Volume to Capacity	0.00	0.41	0.41	0.58	0.30	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.3
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.3
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			52.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

23: Lakeshore Rd E & Westmount Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

23: Lakeshore Rd E & Westmount Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1456	1346	2	0	5
Future Volume (Veh/h)	0	1456	1346	2	0	5
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1456	1346	2	0	5
Pedestrians						8
Lane Width (m)						3.5
Walking Speed (m/s)						1.2
Percent Blockage						1
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	1356				2083	682
vC1, stage 1 conf vol					1355	
vC2, stage 2 conf vol					728	
vCu, unblocked vol	1106				1255	329
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	541				232	575
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	728	728	897	451	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	2	5	
cSH	1700	1700	1700	1700	575	
Volume to Capacity	0.43	0.43	0.53	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	11.3	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			47.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 1

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 1

Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	0	1463	0	0	1322	29	0	0	0	0	0	34
Future Volume (Veh/h)	0	1463	0	0	1322	29	0	0	0	0	0	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1463	0	0	1322	29	0	0	0	0	0	34
Pedestrians		1			2			60			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			5			1	
Right turn flare (veh)												
Median type		TW	LT		TW	LT						
Median storage veh		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.87			0.79			0.86	0.86	0.79	0.86	0.86	0.87
vC, conflicting volume	1363			1523			2219	2886	794	2082	2872	688
vC1, stage 1 conf vol							1523	1523		1348	1348	
vC2, stage 2 conf vol							696	1363		734	1523	
vCu, unblocked vol	1111			1141			1396	2171	222	1237	2154	333
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	535			458			157	159	592	189	161	568
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	975	488	0	881	470	0	34				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	29	0	34				
cSH	1700	1700	1700	1700	1700	1700	1700	568				
Volume to Capacity	0.00	0.57	0.29	0.00	0.52	0.28	0.00	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7				
Lane LOS							A	B				
Approach Delay (s)	0.0				0.0			0.0	11.7			
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				51.1%				ICU Level of Service	A			
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1564	1199	7	0	6
Future Volume (Veh/h)	0	1564	1199	7	0	6
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1564	1199	7	0	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		212			
pX, platoon unblocked	0.82				0.86	0.82
vC, conflicting volume	1217				1998	616
vC1, stage 1 conf vol					1214	
vC2, stage 2 conf vol					784	
vCu, unblocked vol	824				894	91
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	651				310	769
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	782	782	799	407	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	7	6	
cSH	1700	1700	1700	1700	769	
Volume to Capacity	0.46	0.46	0.47	0.24	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.7	
Approach LOS					A	
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	46.6%					ICU Level of Service A
Analysis Period (min)	15					

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 1

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1559	1132	1	0	5
Future Volume (Veh/h)	0	1559	1132	1	0	5
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1559	1132	1	0	5
Pedestrians		3	3		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWTL	TWTL			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.81				0.86	0.81
vC, conflicting volume	1148				1930	584
vC1, stage 1 conf vol					1148	
vC2, stage 2 conf vol					782	
vCu, unblocked vol	719				775	25
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	704				346	837
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	780	780	755	378	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	1	5	
cSH	1700	1700	1700	1700	837	
Volume to Capacity	0.46	0.46	0.44	0.22	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1	
Control Delay (s)	0.0	0.0	0.0	0.0	9.3	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.3	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			46.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1507	1204	14	0	8
Future Volume (Veh/h)	0	1507	1204	14	0	8
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1507	1204	14	0	8
Pedestrians		4	4		20	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.88				0.93	0.88
vC, conflicting volume	1238				1988	633
vC1, stage 1 conf vol					1231	
vC2, stage 2 conf vol					758	
vCu, unblocked vol	997				1387	309
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	597				260	592
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	754	754	803	415	8	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	14	8	
cSH	1700	1700	1700	1700	592	
Volume to Capacity	0.44	0.44	0.47	0.24	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			45.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1533	972	15	0	20
Future Volume (Veh/h)	0	1533	972	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1533	972	15	0	20
Pedestrians		5	5		30	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.90	
vC, conflicting volume	1017				1781	528
vC1, stage 1 conf vol					1010	
vC2, stage 2 conf vol					772	
vCu, unblocked vol	1017				1639	528
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	661				264	481
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	766	766	648	339	20	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	15	20	
cSH	1700	1700	1700	1700	481	
Volume to Capacity	0.45	0.45	0.38	0.20	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.0	
Control Delay (s)	0.0	0.0	0.0	0.0	12.8	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			52.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.995			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3482	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3482	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 1
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1462	959	31	0	38
Future Volume (Veh/h)	0	1462	959	31	0	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1462	959	31	0	38
Pedestrians		6	6		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)			131			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	1005				1726	516
vC1, stage 1 conf vol					990	
vC2, stage 2 conf vol					737	
vCu, unblocked vol	754				1567	204
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	747				292	701
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	731	731	639	351	38	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	31	38	
cSH	1700	1700	1700	1700	701	
Volume to Capacity	0.43	0.43	0.38	0.21	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			51.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 1
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 1
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	14	221	218	0	16	207
Future Volume (Veh/h)	14	221	218	0	16	207
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	221	218	0	16	207
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	457	218			218	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	457	218			218	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	73			99	
cM capacity (veh/h)	555	822			1352	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	14	221	218	16	207	
Volume Left	14	0	0	16	0	
Volume Right	0	221	0	0	0	
cSH	555	822	1700	1352	1700	
Volume to Capacity	0.03	0.27	0.13	0.01	0.12	
Queue Length 95th (m)	0.6	8.7	0.0	0.3	0.0	
Control Delay (s)	11.7	11.0	0.0	7.7	0.0	
Lane LOS	B	B		A		
Approach Delay (s)	11.0		0.0	0.6		
Approach LOS	B					
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			31.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.890			0.982			0.992	
Frt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1639	0	1750	1809	0	1750	1827	0
Frt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1639	0	1750	1809	0	1750	1827	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 1
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	30	0	0	1	65	176	65	341	47	25	245	14
Future Volume (Veh/h)	30	0	0	1	65	176	65	341	47	25	245	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	0	0	1	65	176	65	341	47	25	245	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	982	820	252	790	804	364	259			388		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	971	807	252	776	790	342	259			366		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	100	100	100	78	74	95			98		
cM capacity (veh/h)	133	288	787	292	294	687	1306			1169		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	30	0	1	241	65	388	25	259				
Volume Left	30	0	1	0	65	0	25	0				
Volume Right	0	0	0	176	0	47	0	14				
cSH	133	1700	292	505	1306	1700	1169	1700				
Volume to Capacity	0.23	0.00	0.00	0.48	0.05	0.23	0.02	0.15				
Queue Length 95th (m)	6.6	0.0	0.1	20.3	1.3	0.0	0.5	0.0				
Control Delay (s)	39.7	0.0	17.4	18.5	7.9	0.0	8.1	0.0				
Lane LOS	E	A	C	C	A		A					
Approach Delay (s)	39.7		18.5		1.1		0.7					
Approach LOS	E		C									
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization			55.0%		ICU Level of Service					B		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 1
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1824	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1824	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 1
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	239	1	25	485	332	27
Future Volume (Veh/h)	239	1	25	485	332	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	239	1	25	485	332	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	880	346	359			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	880	346	359			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	23	100	98			
cM capacity (veh/h)	311	697	1200			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	239	1	25	485	359	
Volume Left	239	0	25	0	0	
Volume Right	0	1	0	0	27	
cSH	311	697	1200	1700	1700	
Volume to Capacity	0.77	0.00	0.02	0.29	0.21	
Queue Length 95th (m)	47.9	0.0	0.5	0.0	0.0	
Control Delay (s)	46.5	10.2	8.1	0.0	0.0	
Lane LOS	E	B	A			
Approach Delay (s)	46.4		0.4		0.0	
Approach LOS	E					
Intersection Summary						
Average Delay			10.2			
Intersection Capacity Utilization			45.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 1

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.97	1.00		0.98		0.92	0.99		1.00	1.00	0.94	
Frt						0.850		0.966				0.850
Flt Protected	0.950			0.950			0.988		0.950	0.950		
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1795	0	1662	1700	1566
Flt Permitted	0.950			0.304			0.833		0.950	0.750		
Satd. Flow (perm)	3283	3578	0	551	3579	1434	0	1504	0	1659	1338	1474
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						179		3				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 1

Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰		↰↱	↰	↰↱	↰
Traffic Volume (vph)	406	938	1	944	538	3	6	853	0	536
Future Volume (vph)	406	938	1	944	538	3	6	853	0	536
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	27.0	78.0	51.0	51.0	51.0	11.0	11.0	51.0	62.0	27.0
Total Split (%)	19.3%	55.7%	36.4%	36.4%	36.4%	7.9%	7.9%	36.4%	44.3%	19.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	21.0	73.0	47.0	47.0	99.6	6.0	52.6	52.6	78.0	
Actuated g/C Ratio	0.15	0.52	0.34	0.34	0.71		0.04	0.38	0.38	0.56
v/c Ratio	0.80	0.50	0.01	0.79	0.48		0.18	0.68	0.67	0.63
Control Delay	69.7	22.9	39.0	48.5	7.1		59.9	44.6	43.9	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	69.7	22.9	39.0	48.5	7.1		59.9	44.6	43.9	21.3
LOS	E	C	D	D	A		E	D	D	C
Approach Delay		37.0		33.5			59.9		35.4	
Approach LOS		D		C			E		D	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 35.3

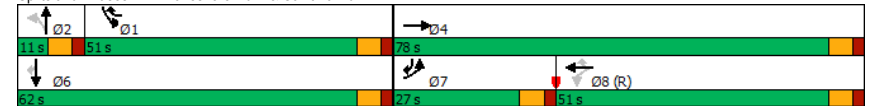
Intersection LOS: D

Intersection Capacity Utilization 81.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	939	1	944	538	12	426	427	536
v/c Ratio	0.80	0.50	0.01	0.79	0.48	0.18	0.68	0.67	0.63
Control Delay	69.7	22.9	39.0	48.5	7.1	59.9	44.6	43.9	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	22.9	39.0	48.5	7.1	59.9	44.6	43.9	21.3
Queue Length 50th (m)	59.1	90.8	0.2	147.3	67.0	2.6	103.2	102.7	86.2
Queue Length 95th (m)	78.1	109.9	m0.3	127.0	42.1	9.9	163.6	162.4	120.5
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	533	1865	185	1200	1121	67	624	638	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.50	0.01	0.79	0.48	0.18	0.68	0.67	0.63
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (vph)	406	938	1	1	944	538	3	6	3	853	0	536
Future Volume (vph)	406	938	1	1	944	538	3	6	3	853	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		0.98	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	3395	3578		1723	3579	1506		1777		1662	1697	1498
Flt Permitted	0.95	1.00		0.30	1.00	1.00		0.83		0.95	0.75	1.00
Satd. Flow (perm)	3395	3578		552	3579	1506		1500		1662	1339	1498
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	938	1	1	944	538	3	6	3	853	0	536
RTOR Reduction (vph)	0	0	0	0	0	56	0	3	0	0	0	10
Lane Group Flow (vph)	406	939	0	1	944	482	0	9	0	426	427	526
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	20.0	68.4		42.4	42.4	94.0		2.0		51.6	59.6	79.6
Effective Green, g (s)	21.0	69.4		43.4	43.4	96.0		3.0		52.6	60.6	81.6
Actuated g/C Ratio	0.15	0.50		0.31	0.31	0.69		0.02		0.38	0.43	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	509	1773		171	1109	1032		32		624	714	926
v/s Ratio Prot	c0.12	0.26			c0.26	0.18				c0.26	0.22	0.09
v/s Ratio Perm				0.00		0.14		0.01			c0.03	0.27
v/c Ratio	0.80	0.53		0.01	0.85	0.47		0.28		0.68	0.60	0.57
Uniform Delay, d1	57.4	24.1		33.4	45.3	10.2		67.4		36.7	30.4	18.2
Progression Factor	1.00	1.00		1.24	1.03	1.47		1.00		1.00	1.00	1.00
Incremental Delay, d2	8.5	1.1		0.1	7.2	0.3		4.8		3.1	1.4	0.8
Delay (s)	65.9	25.3		41.3	53.8	15.2		72.3		39.8	31.7	19.0
Level of Service	E	C		D	D	B		E		D	C	B
Approach Delay (s)	37.6			39.8			72.3			29.3		
Approach LOS	D			D			E			C		
Intersection Summary												
HCM 2000 Control Delay	35.7			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.77											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			20.0					
Intersection Capacity Utilization	81.0%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.88	0.99		0.85	0.99				0.97	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1601	0	1750	1559	0
Flt Permitted	0.950			0.950			0.754			0.734		
Satd. Flow (perm)	1721	3579	1384	1729	3579	1334	1369	1601	0	1352	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		130			126	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	84	1504	134	54	1489	86	106	0	30	0
Future Volume (vph)	84	1504	134	54	1489	86	106	0	30	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	18.0	84.0	84.0	14.0	80.0	80.0	42.0	42.0	42.0	42.0
Total Split (%)	12.9%	60.0%	60.0%	10.0%	57.1%	57.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	13.0	98.5	98.5	10.7	93.8	93.8	17.2	17.2	17.2	17.2
Actuated g/C Ratio	0.09	0.70	0.70	0.08	0.67	0.67	0.12	0.12	0.12	0.12
v/c Ratio	0.52	0.60	0.13	0.41	0.62	0.09	0.63	0.12	0.18	0.02
Control Delay	77.0	11.0	2.6	65.6	16.1	3.0	74.1	0.8	55.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	11.0	2.6	65.6	16.1	3.0	74.1	0.8	55.2	0.2
LOS	E	B	A	E	B	A	E	A	E	A
Approach Delay		13.6			17.0			55.5		46.0
Approach LOS		B			B			E		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 17.2

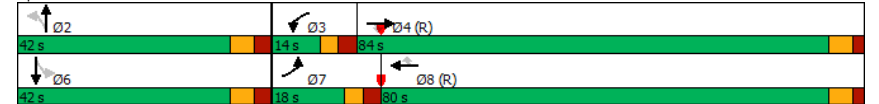
Intersection LOS: B

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	1504	134	54	1489	86	106	36	30	6
v/c Ratio	0.52	0.60	0.13	0.41	0.62	0.09	0.63	0.12	0.18	0.02
Control Delay	77.0	11.0	2.6	65.6	16.1	3.0	74.1	0.8	55.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	11.0	2.6	65.6	16.1	3.0	74.1	0.8	55.2	0.2
Queue Length 50th (m)	22.9	124.0	2.7	14.8	121.1	2.3	29.8	0.0	8.0	0.0
Queue Length 95th (m)	m35.8	230.3	m17.0	m26.9	147.4	m2.8	48.4	0.0	17.5	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	179	2518	997	138	2397	919	352	508	347	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.60	0.13	0.39	0.62	0.09	0.30	0.07	0.09	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	84	1504	134	54	1489	86	106	0	36	30	0	6
Future Volume (vph)	84	1504	134	54	1489	86	106	0	36	30	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1384	1750	3579	1334	1725	1601		1750	1559	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.73	1.00	
Satd. Flow (perm)	1750	3579	1384	1750	3579	1334	1369	1601		1351	1559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1504	134	54	1489	86	106	0	36	30	0	6
RTOR Reduction (vph)	0	0	24	0	0	26	0	32	0	0	5	0
Lane Group Flow (vph)	84	1504	110	54	1489	60	106	4	0	30	1	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2				6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	12.0	96.3	96.3	8.5	92.8	92.8	16.2	16.2		16.2	16.2	
Effective Green, g (s)	13.0	97.3	97.3	9.5	93.8	93.8	17.2	17.2		17.2	17.2	
Actuated g/C Ratio	0.09	0.69	0.69	0.07	0.67	0.67	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	2487	961	118	2397	893	168	196		165	191	
v/s Ratio Prot	c0.05	c0.42		0.03	c0.42		0.00				0.00	
v/s Ratio Perm			0.08			0.05	c0.08			0.02		
v/c Ratio	0.52	0.60	0.11	0.46	0.62	0.07	0.63	0.02		0.18	0.00	
Uniform Delay, d1	60.5	11.2	7.1	62.8	13.1	8.0	58.4	54.0		55.1	53.9	
Progression Factor	1.13	0.81	0.55	0.96	1.04	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.9	0.2	2.3	1.0	0.1	7.5	0.0		0.5	0.0	
Delay (s)	70.6	10.0	4.1	62.4	14.6	8.1	65.9	54.1		55.6	53.9	
Level of Service	E	B	A	E	B	A	E	D		E	D	
Approach Delay (s)		12.5			15.8			62.9			55.3	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			16.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			74.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics

3: Lakefront Promenade & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.41	0.89		0.71	0.68
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	643	1557	3579	1235	1061
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		87			4	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings

3: Lakefront Promenade & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	→	↖	↗	←	↖	↗	Ø2	Ø4	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑				
Traffic Volume (vph)	1196	336	315	1464	248	249				
Future Volume (vph)	1196	336	315	1464	248	249				
Turn Type	NA	custom	Prot	NA	Perm	pm+ov				
Protected Phases	4 9	9	3	8 10		3	2	4	8	10
Permitted Phases		4			5	2				
Detector Phase	4 9	9	3	8 10	5	3				
Switch Phase										
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	8.0	8.0	5.0
Minimum Split (s)		11.0	12.0		12.0	12.0	34.0	24.0	24.0	24.0
Total Split (s)		26.0	38.0		43.0	38.0	43.0	33.0	73.0	24.0
Total Split (%)		18.6%	27.1%		30.7%	27.1%	31%	24%	52%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)		2.0	3.0		3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0				
Total Lost Time (s)		5.0	6.0		6.0	6.0				
Lead/Lag		Lead			Lead			Lag		
Lead-Lag Optimize?		Yes			Yes			Yes		
Recall Mode		None	None		None	None	None	C-Min	C-Min	None
Act Effct Green (s)	65.1	56.1	29.4	100.5	32.5	61.9				
Actuated g/C Ratio	0.46	0.40	0.21	0.72	0.23	0.44				
v/c Ratio	0.72	0.77	0.86	0.57	0.86	0.43				
Control Delay	20.6	28.2	90.7	7.4	78.9	25.4				
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0				
Total Delay	20.6	28.2	90.7	7.5	78.9	25.4				
LOS	C	C	F	A	E	C				
Approach Delay	22.2			22.3	52.1					
Approach LOS	C			C	D					

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 26.2

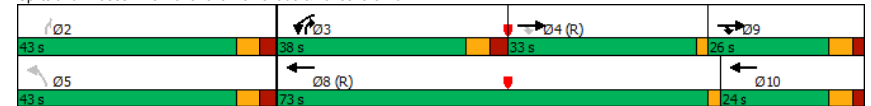
Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1196	336	315	1464	248	249
v/c Ratio	0.72	0.77	0.86	0.57	0.86	0.43
Control Delay	20.6	28.2	90.7	7.4	78.9	25.4
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	20.6	28.2	90.7	7.5	78.9	25.4
Queue Length 50th (m)	126.8	36.8	95.5	28.9	68.4	39.8
Queue Length 95th (m)	83.4	#77.2	#135.3	82.0	#107.5	56.9
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1701	454	400	2568	326	606
Starvation Cap Reductn	0	0	0	222	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.74	0.79	0.62	0.76	0.41

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1196	336	315	1464	248	249
Future Volume (vph)	1196	336	315	1464	248	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	1.0	5.0	6.0	1.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.60	1.00	1.00	1.00	0.83
Fipb, ped/bikes	1.00	1.00	1.00	1.00	0.69	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	942	1750	3579	1213	1301
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	942	1750	3579	1213	1301
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1196	336	315	1464	248	249
RTOR Reduction (vph)	0	50	0	0	0	2
Lane Group Flow (vph)	1196	286	315	1464	248	247
Confl. Peds. (#/hr)	233	233		259	246	
Turn Type	NA	custom	Prot	NA	Perm	pm+ov
Protected Phases	4 9	9	3	8 10		3
Permitted Phases		4			5	2
Actuated Green, G (s)	60.1	58.1	28.4	95.5	31.5	59.9
Effective Green, g (s)	61.1	60.1	29.4	96.5	32.5	61.9
Actuated g/C Ratio	0.44	0.43	0.21	0.69	0.23	0.44
Clearance Time (s)		6.0	7.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1561	404	367	2466	281	630
v/s Ratio Prot	c0.33	0.10	c0.18	0.41		0.08
v/s Ratio Perm		0.21			c0.20	0.11
v/c Ratio	0.77	0.71	0.86	0.59	0.88	0.39
Uniform Delay, d1	33.4	32.8	53.3	11.4	51.9	26.3
Progression Factor	0.57	0.56	1.40	0.67	1.00	1.00
Incremental Delay, d2	1.9	4.7	13.2	0.3	26.1	0.4
Delay (s)	21.0	23.1	87.9	7.9	78.0	26.8
Level of Service	C	C	F	A	E	C
Approach Delay (s)	21.5			22.1	52.3	
Approach LOS	C			C	D	

Intersection Summary

HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↘	↩	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.99					0.98	0.98	
Frt					0.989						0.873	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1750	3579	1842	1842	3501	0	1842	1921	0	1750	1615	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1731	3579	1842	1842	3501	0	1842	1921	0	1719	1615	0
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)					8						96	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø8	Ø9	Ø10
Lane Configurations	↩	↗	↗	↩	↗							
Traffic Volume (vph)	115	1320	1706	156	17							
Future Volume (vph)	115	1320	1706	156	17							
Turn Type	Prot	NA	NA	pm+pt	NA							
Protected Phases	7	4 9	8 10	1	6	2	3	4	5	8	9	10
Permitted Phases				6								
Detector Phase	7	4 9	8 10	1	6							
Switch Phase												
Minimum Initial (s)	5.0			5.0	8.0	8.0	5.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0			9.0	45.0	45.0	11.0	24.0	9.0	24.0	11.0	24.0
Total Split (s)	14.0			9.0	45.0	45.0	11.0	64.0	9.0	48.0	11.0	24.0
Total Split (%)	10.0%			6.4%	32.1%	32%	8%	46%	6%	34%	8%	17%
Yellow Time (s)	3.0			3.0	4.0	4.0	3.0	2.0	3.0	2.0	4.0	4.0
All-Red Time (s)	3.0			1.0	3.0	3.0	3.0	0.0	1.0	0.0	2.0	2.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0							
Total Lost Time (s)	5.0			3.0	6.0							
Lead/Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	None	C-Min	None	None
Act Effect Green (s)	18.4	122.6	99.2	13.4	10.4							
Actuated g/C Ratio	0.13	0.88	0.71	0.10	0.07							
v/c Ratio	0.50	0.42	0.74	0.93	0.54							
Control Delay	55.5	1.6	10.5	116.8	25.7							
Queue Delay	0.0	0.0	0.1	0.0	0.0							
Total Delay	55.5	1.6	10.6	116.8	25.7							
LOS	E	A	B	F	C							
Approach Delay		5.9	10.6		78.5							
Approach LOS		A	B		E							

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 13.9

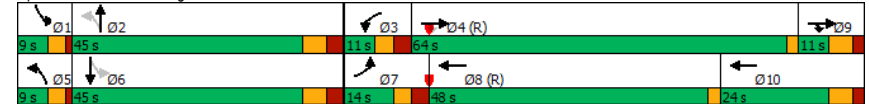
Intersection LOS: B

Intersection Capacity Utilization 89.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	↖	→	←	↘	↓
Lane Group	EBL	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	115	1320	1837	156	113
v/c Ratio	0.50	0.42	0.74	0.93	0.54
Control Delay	55.5	1.6	10.5	116.8	25.7
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	55.5	1.6	10.6	116.8	25.7
Queue Length 50th (m)	33.7	10.5	65.5	~49.0	4.8
Queue Length 95th (m)	m49.5	32.5	71.0	#76.1	24.3
Internal Link Dist (m)		78.3	60.4		222.5
Turn Bay Length (m)	28.0				
Base Capacity (vph)	230	3134	2483	167	519
Starvation Cap Reductn	0	296	41	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.47	0.75	0.93	0.22
Intersection Summary					
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	115	1320	0	0	1706	131	0	0	0	156	17	96
Future Volume (vph)	115	1320	0	0	1706	131	0	0	0	156	17	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0					3.0	6.0	
Lane Util. Factor	1.00	0.95			0.95					1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99					1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00					1.00	1.00	
Frt	1.00	1.00			0.99					1.00	0.87	
Flt Protected	0.95	1.00			1.00					0.95	1.00	
Satd. Flow (prot)	1750	3579			3502					1750	1615	
Flt Permitted	0.95	1.00			1.00					0.95	1.00	
Satd. Flow (perm)	1750	3579			3502					1750	1615	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	1320	0	0	1706	131	0	0	0	156	17	96
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	89	0
Lane Group Flow (vph)	115	1320	0	0	1834	0	0	0	0	156	24	0
Confl. Peds. (#/hr)	29		160	160		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA	custom	Prot	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4 9	9	3	8 10		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	17.4	117.6			94.2					12.4	9.4	
Effective Green, g (s)	18.4	118.6			95.2					13.4	10.4	
Actuated g/C Ratio	0.13	0.85			0.68					0.10	0.07	
Clearance Time (s)	6.0									4.0	7.0	
Vehicle Extension (s)	3.0									3.0	3.0	
Lane Grp Cap (vph)	230	3031			2381					167	119	
v/s Ratio Prot	c0.07	0.37			c0.52					c0.09	0.01	
v/s Ratio Perm												
v/c Ratio	0.50	0.44			0.77					0.93	0.20	
Uniform Delay, d1	56.5	2.6			15.1					62.9	60.9	
Progression Factor	0.88	0.68			0.68					1.00	1.00	
Incremental Delay, d2	1.3	0.1			1.2					50.3	0.8	
Delay (s)	50.9	1.8			11.4					113.2	61.7	
Level of Service	D	A			B					F	E	
Approach Delay (s)		5.8			11.4			0.0			91.6	
Approach LOS		A			B			A			F	
Intersection Summary												
HCM 2000 Control Delay		15.2			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.79										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			20.0				
Intersection Capacity Utilization		89.5%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.39	0.86	1.00			0.99			1.00	
Frt			0.850					0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1750	3579	1566	1750	3578	0	1750	1580	0	0	1789	0
Flt Permitted	0.950			0.950			0.757				0.429	
Satd. Flow (perm)	1723	3579	607	1501	3578	0	1394	1580	0	0	807	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229					365				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔			
Traffic Volume (vph)	1	1041	461	325	1431	409	0	1	0			
Future Volume (vph)	1	1041	461	325	1431	409	0	1	0			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9		3	8 10		5		2	4	8	10
Permitted Phases			4			5		2				
Detector Phase	7	4 9	9	3	8 10	5	5	2	2			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	20.0	24.0
Total Split (s)	11.0		30.0	34.0		52.0	52.0	52.0	52.0	24.0	53.0	24.0
Total Split (%)	7.9%		21.4%	24.3%		37.1%	37.1%	37.1%	37.1%	17%	38%	17%
Yellow Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	2.0		2.0	2.0		2.0	2.0	2.0	2.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0		5.0			
Lead/Lag	Lead			Lead						Lag	Lag	
Lead-Lag Optimize?	Yes			Yes						Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Max	C-Max	None
Act Effect Green (s)	6.2	56.1	47.1	28.5	87.4	44.4	44.4		44.4			
Actuated g/C Ratio	0.04	0.40	0.34	0.20	0.62	0.32	0.32		0.32			
v/c Ratio	0.01	0.73	0.89	0.91	0.64	0.93	0.37		0.00			
Control Delay	63.0	46.1	52.6	93.3	21.2	74.0	1.8		31.0			
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0		0.0			
Total Delay	63.0	46.2	52.6	93.3	21.4	74.0	1.8		31.0			
LOS	E	D	D	F	C	E	A		C			
Approach Delay		48.2			34.7		45.0		31.0			
Approach LOS		D			C		D		C			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 41.6

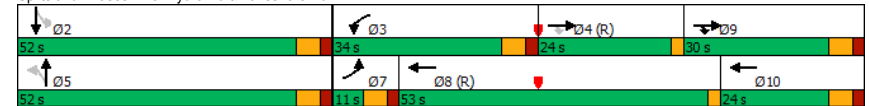
Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1	1041	461	325	1434	409	274	1
v/c Ratio	0.01	0.73	0.89	0.91	0.64	0.93	0.37	0.00
Control Delay	63.0	46.1	52.6	93.3	21.2	74.0	1.8	31.0
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	63.0	46.2	52.6	93.3	21.4	74.0	1.8	31.0
Queue Length 50th (m)	0.2	116.6	67.2	91.6	136.4	111.9	0.0	0.2
Queue Length 95th (m)	m0.6	m148.0	m#117.3	#153.1	120.6	#173.0	1.2	1.6
Internal Link Dist (m)	114.1		50.0		171.3		111.3	
Turn Bay Length (m)	25.0		50.0		25.0		60.0	
Base Capacity (vph)	77	1468	531	366	2269	467	772	270
Starvation Cap Reductn	0	49	0	0	217	0	0	0
Spillback Cap Reductn	0	0	0	0	108	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.73	0.87	0.89	0.70	0.88	0.35	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱		↰	↱			↱	
Traffic Volume (vph)	1	1041	461	325	1431	3	409	0	274	1	0	0
Future Volume (vph)	1	1041	461	325	1431	3	409	0	274	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		5.0	5.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Flrb, ped/bikes	1.00	1.00	0.73	1.00	1.00		1.00	0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00				
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1750	3579	1140	1750	3576		1750	1580				
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00				
Satd. Flow (perm)	1750	3579	1140	1750	3576		1395	1580				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	1041	461	325	1431	3	409	0	274	1	0	0
RTOR Reduction (vph)	0	0	145	0	0	0	0	187	0	0	0	0
Lane Group Flow (vph)	1	1041	316	325	1434	0	409	87	0	0	1	0
Confl. Peds. (#/hr)	29		263	263		29			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9		9 3	8 10			5			2	
Permitted Phases			4				5			2		
Actuated Green, G (s)	1.0	51.1	49.1	27.5	77.6		43.4	43.4			43.4	
Effective Green, g (s)	2.0	52.1	51.1	28.5	78.6		44.4	44.4			44.4	
Actuated g/C Ratio	0.01	0.37	0.37	0.20	0.56		0.32	0.32			0.32	
Clearance Time (s)	6.0		6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	25	1331	416	356	2007		442	501			255	
v/s Ratio Prot	0.00	c0.29	0.15	c0.19	c0.40			0.05				
v/s Ratio Perm			0.12				c0.29				0.00	
v/c Ratio	0.04	0.78	0.76	0.91	0.71		0.93	0.17			0.00	
Uniform Delay, d1	68.1	38.9	39.0	54.5	22.5		46.2	34.5			32.7	
Progression Factor	0.97	1.18	1.41	1.27	1.13		1.00	1.00			1.00	
Incremental Delay, d2	0.6	2.8	7.0	22.7	1.0		25.2	0.2			0.0	
Delay (s)	66.5	48.6	61.9	91.9	26.3		71.4	34.7			32.7	
Level of Service	E	D	E	F	C		E	C			C	
Approach Delay (s)	52.7				38.4			56.7		32.7		
Approach LOS	D				D			E		C		
Intersection Summary												
HCM 2000 Control Delay	47.0			HCM 2000 Level of Service					D			
HCM 2000 Volume to Capacity ratio	0.87											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)					16.0			
Intersection Capacity Utilization	80.0%			ICU Level of Service					D			
Analysis Period (min)	15											
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↘	↩	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				1.00						0.82	
Frt					0.992						0.896	
Flt Protected	0.950										0.989	
Satd. Flow (prot)	1750	3579	1842	1842	3542	0	1879	1921	0	0	1425	0
Flt Permitted	0.950										0.920	
Satd. Flow (perm)	1723	3579	1842	1842	3542	0	1879	1921	0	0	1268	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7						109	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↩	↗	↗	↩	↗						
Traffic Volume (vph)	91	1210	1618	31	0						
Future Volume (vph)	91	1210	1618	31	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	12.0	12.0	24.0
Total Split (s)	16.0			44.0	44.0	44.0	11.0	73.0	56.0	12.0	24.0
Total Split (%)	11.4%			31.4%	31.4%	31%	8%	52%	40%	9%	17%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	3.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Max	None	None
Act Effect Green (s)	13.8	121.3	102.5		11.7						
Actuated g/C Ratio	0.10	0.87	0.73		0.08						
v/c Ratio	0.53	0.39	0.66		0.65						
Control Delay	73.9	0.6	8.4		31.0						
Queue Delay	0.0	0.1	0.0		0.0						
Total Delay	73.9	0.7	8.4		31.1						
LOS	E	A	A		C						
Approach Delay		5.8	8.4		31.1						
Approach LOS		A	A		C						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 8.3

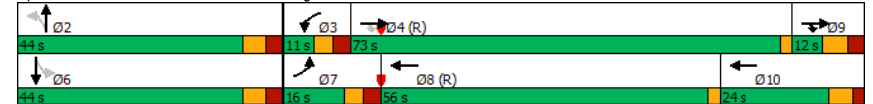
Intersection LOS: A

Intersection Capacity Utilization 96.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	SBT
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	91	1210	1709	134
v/c Ratio	0.53	0.39	0.66	0.65
Control Delay	73.9	0.6	8.4	31.0
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	73.9	0.7	8.4	31.1
Queue Length 50th (m)	27.8	3.3	67.7	7.1
Queue Length 95th (m)	m40.9	6.8	110.1	28.7
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	177	3100	2639	423
Starvation Cap Reductn	0	578	0	0
Spillback Cap Reductn	0	0	83	2
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.48	0.67	0.32
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	91	1210	0	0	1618	91	0	0	0	31	0	103
Future Volume (vph)	91	1210	0	0	1618	91	0	0	0	31	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0							6.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							0.85
Flpb, ped/bikes	1.00	1.00			1.00							0.96
Flt Protected	0.95	1.00			1.00							0.99
Satd. Flow (prot)	1750	3579			3543							1363
Flt Permitted	0.95	1.00			1.00							0.92
Satd. Flow (perm)	1750	3579			3543							1268
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	1210	0	0	1618	91	0	0	0	31	0	103
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	100	0
Lane Group Flow (vph)	91	1210	0	0	1707	0	0	0	0	0	34	0
Confl. Peds. (#/hr)	26		160	160		26	160		167	167		160
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4	9	3	8	10		2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	12.8	115.3			97.5						10.7	
Effective Green, g (s)	13.8	116.3			98.5						11.7	
Actuated g/C Ratio	0.10	0.83			0.70						0.08	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	172	2973			2492						105	
v/s Ratio Prot	c0.05	0.34			c0.48							
v/s Ratio Perm											c0.03	
v/c Ratio	0.53	0.41			0.68						0.32	
Uniform Delay, d1	60.0	3.0			11.9						60.4	
Progression Factor	1.10	0.14			0.69						1.00	
Incremental Delay, d2	2.3	0.1			0.5						1.8	
Delay (s)	68.2	0.5			8.7						62.2	
Level of Service	E	A			A						E	
Approach Delay (s)		5.2			8.7			0.0			62.2	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			9.6		HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)			18.0				
Intersection Capacity Utilization			96.1%		ICU Level of Service			F				
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕		↔	↕↕	↕		↕↕		↔	↕↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.98		0.87		0.99				0.97
Frt		0.998				0.850		0.951				0.850
Flt Protected	0.950			0.950				0.982			0.953	
Satd. Flow (prot)	1750	3568	0	1750	3579	1566	0	1759	0	0	1795	1566
Flt Permitted	0.950			0.950				0.899			0.721	
Satd. Flow (perm)	1698	3568	0	1711	3579	1363	0	1602	0	0	1358	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125		4				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↕↕	↕		↕↕	↔	↕↕	↕
Traffic Volume (vph)	373	824	3	950	244	4	3	255	3	755
Future Volume (vph)	373	824	3	950	244	4	3	255	3	755
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	50.0	84.0	11.0	45.0	45.0	45.0	45.0	45.0	45.0	50.0
Total Split (%)	35.7%	60.0%	7.9%	32.1%	32.1%	32.1%	32.1%	32.1%	32.1%	35.7%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	42.7	94.9	6.6	49.3	49.3		31.9	31.9	31.9	75.7
Actuated g/C Ratio	0.30	0.68	0.05	0.35	0.35		0.23	0.23	0.23	0.54
v/c Ratio	0.70	0.34	0.04	0.75	0.43		0.03	0.83	0.89	0.89
Control Delay	31.8	18.3	65.0	46.0	21.0		30.1	73.4	39.3	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	31.8	18.3	65.0	46.0	21.0		30.1	73.4	39.3	39.3
LOS	C	B	E	D	C		C	E	D	D
Approach Delay		22.5		40.9			30.1	48.0		
Approach LOS		C		D			C	D		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 36.5

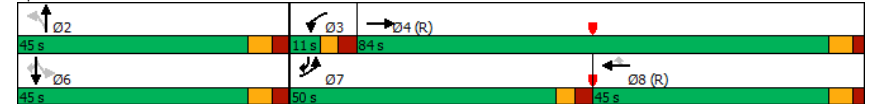
Intersection LOS: D

Intersection Capacity Utilization 95.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	373	834	3	950	244	11	258	755
v/c Ratio	0.70	0.34	0.04	0.75	0.43	0.03	0.83	0.89
Control Delay	31.8	18.3	65.0	46.0	21.0	30.1	73.4	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	18.3	65.0	46.0	21.0	30.1	73.4	39.3
Queue Length 50th (m)	100.1	103.2	0.9	131.8	26.0	1.6	71.6	159.4
Queue Length 95th (m)	147.9	143.5	4.3	#182.8	56.7	6.7	100.7	193.8
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	562	2418	82	1261	561	449	378	868
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	0.66	0.34	0.04	0.75	0.43	0.02	0.68	0.87

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	373	824	10	3	950	244	4	3	4	255	3	755
Future Volume (vph)	373	824	10	3	950	244	4	3	4	255	3	755
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt ped/bikes	1.00	1.00		1.00	1.00	0.87		1.00			1.00	0.99
Flt ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Flt	1.00	1.00		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1750	3568		1750	3579	1363		1750			1795	1542
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90			0.72	1.00
Satd. Flow (perm)	1750	3568		1750	3579	1363		1602			1358	1542
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	824	10	3	950	244	4	3	4	255	3	755
RTOR Reduction (vph)	0	0	0	0	0	81	0	3	0	0	0	11
Lane Group Flow (vph)	373	834	0	3	950	163	0	8	0	0	258	744
Confl. Peds. (#/hr)	24		15	15		24	21					21
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	41.7	89.1		1.0	48.4	48.4		30.9			30.9	72.6
Effective Green, g (s)	42.7	90.1		2.0	49.4	49.4		31.9			31.9	74.6
Actuated g/C Ratio	0.31	0.64		0.01	0.35	0.35		0.23			0.23	0.53
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	533	2296		25	1262	480		365			309	821
v/s Ratio Prot	0.21	0.23		0.00	c0.27							c0.28
v/s Ratio Perm						0.12		0.00			0.19	0.21
v/c Ratio	0.70	0.36		0.12	0.75	0.34		0.02			0.83	0.91
Uniform Delay, d1	43.0	11.6		68.1	39.9	33.3		41.9			51.5	29.5
Progression Factor	0.58	1.67		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.8	0.4		2.1	4.2	1.9		0.0			17.4	13.5
Delay (s)	28.5	19.8		70.3	44.1	35.2		42.0			68.9	43.1
Level of Service	C	B		E	D	D		D			E	D
Approach Delay (s)		22.5			42.4			42.0			49.7	
Approach LOS		C			D			D			D	

Intersection Summary

HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↕	↗	↩	↕	↗	↩	↕	↗	↩	↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998			0.850			0.938	
Frt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Frt Permitted	0.950			0.950			0.950				0.974	
Satd. Flow (perm)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↩	↕	↗	↩	↕	↗	↩	↕	↗	↩	↕	↗
Lane Configurations	↩	↕	↗	↩	↕	↗	↩	↕	↗	↩	↕	↗
Traffic Volume (veh/h)	5	1623	4	3	1683	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	1623	4	3	1683	20	3	0	3	7	0	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	1623	4	3	1683	20	3	0	3	7	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.75			0.83			0.84	0.84	0.83	0.84	0.84	0.75
vC, conflicting volume	1726			1651			2514	3391	838	2548	3383	876
vC1, stage 1 conf vol							1659	1659		1722	1722	
vC2, stage 2 conf vol							854	1732		826	1661	
vCu, unblocked vol	1305			1366			1484	2530	382	1525	2521	174
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			97	100	99	94	100	99
cM capacity (veh/h)	388			404			119	114	498	121	116	618
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	1082	545	3	1122	581	3	3	13			
Volume Left	5	0	0	3	0	0	3	0	7			
Volume Right	0	0	4	0	0	20	0	3	6			
cSH	388	1700	1700	404	1700	1700	119	498	192			
Volume to Capacity	0.01	0.64	0.32	0.01	0.66	0.34	0.03	0.01	0.07			
Queue Length 95th (m)	0.3	0.0	0.0	0.2	0.0	0.0	0.6	0.1	1.7			
Control Delay (s)	14.4	0.0	0.0	14.0	0.0	0.0	36.1	12.3	25.1			
Lane LOS	B			B			E	B	D			
Approach Delay (s)	0.0			0.0			24.2		25.1			
Approach LOS							C		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				61.1%			ICU Level of Service		B			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	1741	1543	47	0	13
Future Volume (Veh/h)	0	1741	1543	47	0	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1741	1543	47	0	13
Pedestrians		2			30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		250	113			
pX, platoon unblocked	0.75				0.84	0.75
vC, conflicting volume	1620				2467	827
vC1, stage 1 conf vol					1596	
vC2, stage 2 conf vol					870	
vCu, unblocked vol	1171				1452	120
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	436				188	668
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	870	870	1029	561	13
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	47	13
cSH	1700	1700	1700	1700	1700	668
Volume to Capacity	0.00	0.51	0.51	0.61	0.33	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.5
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			58.8%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1530	1654	20	0	6
Future Volume (Veh/h)	0	1530	1654	20	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1530	1654	20	0	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.77				0.89	0.77
vC, conflicting volume	1697				2453	861
vC1, stage 1 conf vol					1687	
vC2, stage 2 conf vol					766	
vCu, unblocked vol	1311				1219	227
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	396				163	587
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	765	765	1103	571	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	6	
cSH	1700	1700	1700	1700	587	
Volume to Capacity	0.45	0.45	0.65	0.34	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	11.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			56.7%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 1

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	0	1545	0	0	1644	48	0	0	0	0	0	31
Future Volume (Veh/h)	0	1545	0	0	1644	48	0	0	0	0	0	31
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1545	0	0	1644	48	0	0	0	0	0	31
Pedestrians		1			1			110			28	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			9			2	
Right turn flare (veh)												
Median type	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT
Median storage (veh)	2	2	2	2	2	2	2	2	2	2	2	2
Upstream signal (m)	306	65	65	65	65	65	65	65	65	65	65	65
pX, platoon unblocked	0.78			0.76			0.87	0.87	0.76	0.87	0.87	0.78
vC, conflicting volume	1720			1655			2509	3375	884	2470	3351	875
vC1, stage 1 conf vol							1655	1655		1696	1696	
vC2, stage 2 conf vol							854	1720		774	1655	
vCu, unblocked vol	1357			1226			1290	2287	208	1245	2259	272
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	382			388			129	121	551	122	123	551
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1030	515	0	1096	596	0	31				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	48	0	31				
cSH	1700	1700	1700	1700	1700	1700	1700	551				
Volume to Capacity	0.00	0.61	0.30	0.00	0.64	0.35	0.00	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	11.9				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				57.0%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1458	1754	24	0	9
Future Volume (Veh/h)	0	1458	1754	24	0	9
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1458	1754	24	0	9
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		212			
pX, platoon unblocked	0.63				0.77	0.63
vC, conflicting volume	1801				2520	914
vC1, stage 1 conf vol					1789	
vC2, stage 2 conf vol					731	
vCu, unblocked vol	1094				711	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	391				180	668
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	729	729	1169	609	9	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	24	9	
cSH	1700	1700	1700	1700	668	
Volume to Capacity	0.43	0.43	0.69	0.36	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	10.5	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.5	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			59.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 1

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 1

Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1470	1770	8	0	4
Future Volume (Veh/h)	0	1470	1770	8	0	4
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1470	1770	8	0	4
Pedestrians		3	3		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	170		102			
pX, platoon unblocked	0.64				0.78	0.64
vC, conflicting volume	1805				2539	919
vC1, stage 1 conf vol					1801	
vC2, stage 2 conf vol					738	
vCu, unblocked vol	1123				741	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	385				172	674
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	735	735	1180	598	4	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	8	4	
cSH	1700	1700	1700	1700	674	
Volume to Capacity	0.43	0.43	0.69	0.35	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1	
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			59.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1495	1813	20	0	10
Future Volume (Veh/h)	0	1495	1813	20	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1495	1813	20	0	10
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	84		138			
pX, platoon unblocked	0.70				0.74	0.70
vC, conflicting volume	1860				2602	948
vC1, stage 1 conf vol					1850	
vC2, stage 2 conf vol					752	
vCu, unblocked vol	1362				1890	53
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	341				137	680
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	748	748	1209	624	10	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	10	
cSH	1700	1700	1700	1700	680	
Volume to Capacity	0.44	0.44	0.71	0.37	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			62.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1247	1708	17	0	11
Future Volume (Veh/h)	0	1247	1708	17	0	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1247	1708	17	0	11
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.91	
vC, conflicting volume	1751				2371	894
vC1, stage 1 conf vol					1742	
vC2, stage 2 conf vol					628	
vCu, unblocked vol	1751				2308	894
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	347				118	277
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	624	624	1139	586	11	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	17	11	
cSH	1700	1700	1700	1700	277	
Volume to Capacity	0.37	0.37	0.67	0.34	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.0	
Control Delay (s)	0.0	0.0	0.0	0.0	18.5	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		18.5	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			57.8%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 1
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1204	1688	51	0	32
Future Volume (Veh/h)	0	1204	1688	51	0	32
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1204	1688	51	0	32
Pedestrians		6	6		24	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.76				0.76	0.76
vC, conflicting volume	1763				2346	900
vC1, stage 1 conf vol					1738	
vC2, stage 2 conf vol					608	
vCu, unblocked vol	1381				2143	251
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	369				145	558
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	602	602	1125	614	32	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	51	32	
cSH	1700	1700	1700	1700	558	
Volume to Capacity	0.35	0.35	0.66	0.36	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.5	
Control Delay (s)	0.0	0.0	0.0	0.0	11.8	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			59.0%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 1
Afternoon Peak Hour

	←	↖	↑	↗	→	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 1
Afternoon Peak Hour

	←	↖	↑	↗	→	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	32	68	73	0	82	106
Future Volume (Veh/h)	32	68	73	0	82	106
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	68	73	0	82	106
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	343	73			73	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	343	73			73	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	93			95	
cM capacity (veh/h)	618	989			1527	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	32	68	73	82	106	
Volume Left	32	0	0	82	0	
Volume Right	0	68	0	0	0	
cSH	618	989	1700	1527	1700	
Volume to Capacity	0.05	0.07	0.04	0.05	0.06	
Queue Length 95th (m)	1.3	1.8	0.0	1.4	0.0	
Control Delay (s)	11.1	8.9	0.0	7.5	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.6		0.0	3.3		
Approach LOS	A					
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			21.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.869			0.977			0.991	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1842	1601	0	1750	1800	0	1750	1825	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1842	1601	0	1750	1800	0	1750	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 1
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	8	0	0	0	22	152	22	337	61	90	528	32
Future Volume (Veh/h)	8	0	0	0	22	152	22	337	61	90	528	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	0	0	0	22	152	22	337	61	90	528	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	1268	1166	544	1120	1152	368	560			398		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1264	1160	544	1112	1145	346	560			377		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	100	100	88	78	98			92		
cM capacity (veh/h)	94	173	539	169	177	684	1011			1159		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	8	0	0	174	22	398	90	560				
Volume Left	8	0	0	0	22	0	90	0				
Volume Right	0	0	0	152	0	61	0	32				
cSH	94	1700	1700	502	1011	1700	1159	1700				
Volume to Capacity	0.09	0.00	0.00	0.35	0.02	0.23	0.08	0.33				
Queue Length 95th (m)	2.2	0.0	0.0	12.3	0.5	0.0	2.0	0.0				
Control Delay (s)	47.0	0.0	0.0	15.9	8.6	0.0	8.4	0.0				
Lane LOS	E	A	A	C	A		A					
Approach Delay (s)	47.0		15.9		0.5		1.2					
Approach LOS	E		C									
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			53.6%		ICU Level of Service					A		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 1
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.985		
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1842	1750	1842	1814	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1842	1750	1842	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 1
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	211	0	41	472	694	90
Future Volume (Veh/h)	211	0	41	472	694	90
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	211	0	41	472	694	90
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1293	739	784			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1293	739	784			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	95			
cM capacity (veh/h)	171	417	834			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	211	0	41	472	784	
Volume Left	211	0	41	0	0	
Volume Right	0	0	0	0	90	
cSH	171	1700	834	1700	1700	
Volume to Capacity	1.24	0.00	0.05	0.28	0.46	
Queue Length 95th (m)	94.0	0.0	1.2	0.0	0.0	
Control Delay (s)	199.4	0.0	9.5	0.0	0.0	
Lane LOS	F	A	A			
Approach Delay (s)	199.4		0.8		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			28.2			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	1.00		0.99		0.95		0.99				0.96
Frt						0.850		0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1713	0	1662	1705	1566
Flt Permitted	0.950			0.318						0.950	0.727	
Satd. Flow (perm)	3334	3578	0	582	3579	1493	0	1740	0	1662	1301	1499
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						215		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	893	1	863	781	1	0	713	3	507
Future Volume (vph)	462	893	1	863	781	1	0	713	3	507
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	30.0	79.0	49.0	49.0	50.0	11.0	11.0	50.0	61.0	30.0
Total Split (%)	21.4%	56.4%	35.0%	35.0%	35.7%	7.9%	7.9%	35.7%	43.6%	21.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	23.6	74.0	45.4	45.4	99.2	6.0	53.8	53.8	79.6	
Actuated g/C Ratio	0.17	0.53	0.32	0.32	0.71		0.04	0.38	0.38	0.57
v/c Ratio	0.81	0.47	0.01	0.74	0.68		0.01	0.56	0.55	0.58
Control Delay	67.6	21.8	39.0	44.2	11.9		0.0	38.8	38.5	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	67.6	21.8	39.0	44.2	11.9		0.0	38.8	38.5	18.7
LOS	E	C	D	D	B		A	D	D	B
Approach Delay		37.4		28.9					30.4	
Approach LOS		D		C					C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 32.0

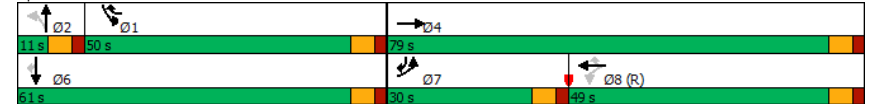
Intersection LOS: C

Intersection Capacity Utilization 80.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	462	895	1	863	781	2	356	360	507
v/c Ratio	0.81	0.47	0.01	0.74	0.68	0.01	0.56	0.55	0.58
Control Delay	67.6	21.8	39.0	44.2	11.9	0.0	38.8	38.5	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	21.8	39.0	44.2	11.9	0.0	38.8	38.5	18.7
Queue Length 50th (m)	66.8	83.7	0.2	128.3	159.4	0.0	82.6	83.2	76.0
Queue Length 95th (m)	86.8	101.7	m0.2	119.5	178.2	0.0	133.1	133.5	106.7
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	606	1891	188	1159	1148	186	638	655	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.47	0.01	0.74	0.68	0.01	0.56	0.55	0.57
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Morning Peak Hour

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	 	 			 			 		 	 	 	 	 	 
Traffic Volume (vph)	462	893	2	1	863	781	1	0	1	713	3	507			
Future Volume (vph)	462	893	2	1	863	781	1	0	1	713	3	507			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5			
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0			
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00			
Flpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00			
Frt	1.00	1.00		1.00	1.00	0.85		0.93		1.00	1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	0.95	1.00			
Satd. Flow (prot)	3395	3577		1740	3579	1534		1698		1662	1705	1517			
Flt Permitted	0.95	1.00		0.32	1.00	1.00		1.00		0.95	0.73	1.00			
Satd. Flow (perm)	3395	3577		583	3579	1534		1740		1662	1301	1517			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Flow (vph)	462	893	2	1	863	781	1	0	1	713	3	507			
RTOR Reduction (vph)	0	0	0	0	0	70	0	2	0	0	0	9			
Lane Group Flow (vph)	462	895	0	1	863	711	0	0	0	356	360	498			
Confl. Peds. (#/hr)	27		9	9		27	24					24			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%			
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov			
Protected Phases	7	4			8	1		2		1	6	7			
Permitted Phases				8		8	2					6			
Actuated Green, G (s)	22.6	68.2		39.6	39.6	92.4		1.0		52.8	59.8	82.4			
Effective Green, g (s)	23.6	69.2		40.6	40.6	94.4		2.0		53.8	60.8	84.4			
Actuated g/C Ratio	0.17	0.49		0.29	0.29	0.67		0.01		0.38	0.43	0.60			
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	572	1768		169	1037	1034		24		638	720	968			
v/s Ratio Prot	c0.14	0.25			c0.24	c0.26				0.21	0.19	c0.09			
v/s Ratio Perm				0.00		0.20		0.00			0.02	0.24			
v/c Ratio	0.81	0.51		0.01	0.83	0.69		0.00		0.56	0.50	0.51			
Uniform Delay, d1	56.0	23.9		35.3	46.5	13.8		68.0		33.8	28.6	16.0			
Progression Factor	1.00	1.00		1.18	0.95	1.44		1.00		1.00	1.00	1.00			
Incremental Delay, d2	8.2	1.0		0.0	6.2	1.5		0.0		1.1	0.5	0.5			
Delay (s)	64.2	24.9		41.6	50.4	21.4		68.0		34.8	29.2	16.5			
Level of Service	E	C		D	D	C		E		C	C	B			
Approach Delay (s)	38.3			36.6			68.0			25.6					
Approach LOS	D			D			E			C					
Intersection Summary															
HCM 2000 Control Delay	34.0			HCM 2000 Level of Service			C								
HCM 2000 Volume to Capacity ratio	0.77														
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			20.0								
Intersection Capacity Utilization	80.7%			ICU Level of Service			D								
Analysis Period (min)	15														
c Critical Lane Group															

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.94	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1578	0	1750	1565	0
Flt Permitted	0.950			0.950			0.755			0.545		
Satd. Flow (perm)	1742	3579	1527	1749	3579	1470	1376	1578	0	1002	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		101			85	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	53	1471	77	27	1626	9	123	0	38	0
Future Volume (vph)	53	1471	77	27	1626	9	123	0	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	15.0	87.0	87.0	11.0	83.0	83.0	42.0	42.0	42.0	42.0
Total Split (%)	10.7%	62.1%	62.1%	7.9%	59.3%	59.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	10.6	101.2	101.2	8.7	96.9	96.9	18.9	18.9	18.9	18.9
Actuated g/C Ratio	0.08	0.72	0.72	0.06	0.69	0.69	0.14	0.14	0.14	0.14
v/c Ratio	0.40	0.57	0.07	0.25	0.66	0.01	0.66	0.44	0.28	0.01
Control Delay	68.5	13.4	4.0	63.1	16.7	0.0	73.9	20.1	57.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	13.4	4.0	63.1	16.7	0.0	73.9	20.1	57.6	0.0
LOS	E	B	A	E	B	A	E	C	E	A
Approach Delay		14.8			17.4			46.0		52.1
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 18.7

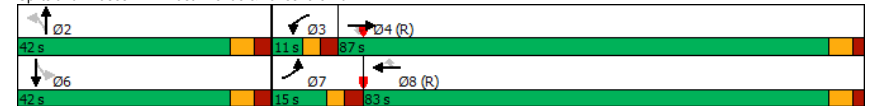
Intersection LOS: B

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1471	77	27	1626	9	123	132	38	4
v/c Ratio	0.40	0.57	0.07	0.25	0.66	0.01	0.66	0.44	0.28	0.01
Control Delay	68.5	13.4	4.0	63.1	16.7	0.0	73.9	20.1	57.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	13.4	4.0	63.1	16.7	0.0	73.9	20.1	57.6	0.0
Queue Length 50th (m)	13.4	113.2	2.6	8.1	138.1	0.0	34.5	8.1	10.1	0.0
Queue Length 95th (m)	m27.5	231.7	10.2	m13.6	185.8	m0.0	54.1	27.1	20.9	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	142	2588	1125	108	2477	1041	353	480	257	465
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.57	0.07	0.25	0.66	0.01	0.35	0.28	0.15	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖		↖	↖		
Traffic Volume (vph)	53	1471	77	27	1626	9	123	0	132	38	0	4	
Future Volume (vph)	53	1471	77	27	1626	9	123	0	132	38	0	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.94	1.00	0.99		1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1750	3579	1527	1750	3579	1470	1731	1578		1747	1565		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00		0.55	1.00		
Satd. Flow (perm)	1750	3579	1527	1750	3579	1470	1376	1578		1002	1565		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	53	1471	77	27	1626	9	123	0	132	38	0	4	
RTOR Reduction (vph)	0	0	23	0	0	3	0	87	0	0	3	0	
Lane Group Flow (vph)	53	1471	54	27	1626	6	123	45	0	38	1	0	
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA		
Protected Phases	7	4		3	8			2			6		
Permitted Phases			4			8	2			6			
Actuated Green, G (s)	8.4	97.8	97.8	5.3	94.7	94.7	17.9	17.9		17.9	17.9		
Effective Green, g (s)	9.4	98.8	98.8	6.3	95.7	95.7	18.9	18.9		18.9	18.9		
Actuated g/C Ratio	0.07	0.71	0.71	0.04	0.68	0.68	0.13	0.13		0.13	0.13		
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	117	2525	1077	78	2446	1004	185	213		135	211		
v/s Ratio Prot	c0.03	c0.41		0.02	c0.45			0.03			0.00		
v/s Ratio Perm			0.04			0.00	c0.09			0.04			
v/c Ratio	0.45	0.58	0.05	0.35	0.66	0.01	0.66	0.21		0.28	0.00		
Uniform Delay, d1	62.8	10.3	6.3	64.9	12.8	7.0	57.5	53.9		54.4	52.4		
Progression Factor	1.00	1.12	1.95	0.95	1.08	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.5	0.9	0.1	2.2	1.2	0.0	8.7	0.5		1.1	0.0		
Delay (s)	65.0	12.5	12.3	63.6	15.1	7.0	66.2	54.4		55.6	52.4		
Level of Service	E	B	B	E	B	A	E	D		E	D		
Approach Delay (s)		14.2			15.8			60.1			55.3		
Approach LOS		B			B			E			E		
Intersection Summary													
HCM 2000 Control Delay			18.7		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.65										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					16.0			
Intersection Capacity Utilization			78.4%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.46	0.93		0.79	0.70
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	720	1621	3579	1375	1091
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		56			8	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	→	↖	↗	←	↖	↗	Ø2
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø2
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑	
Traffic Volume (vph)	1423	201	70	1389	276	292	
Future Volume (vph)	1423	201	70	1389	276	292	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov	
Protected Phases	4		3	8		3	2
Permitted Phases		4			5	2	
Detector Phase	4	4	3	8	5	3	
Switch Phase							
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	12.0	24.0	12.0	12.0	34.0
Total Split (s)	74.0	74.0	22.0	96.0	44.0	22.0	44.0
Total Split (%)	52.9%	52.9%	15.7%	68.6%	31.4%	15.7%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	6.0	6.0	
Lag/Lead	Lag	Lag	Lead			Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	C-Min	C-Min	None	C-Min	None	None	None
Act Effct Green (s)	78.1	78.1	11.9	96.0	33.0	44.9	
Actuated g/C Ratio	0.56	0.56	0.08	0.69	0.24	0.32	
v/c Ratio	0.71	0.47	0.47	0.57	0.85	0.74	
Control Delay	14.2	9.1	72.7	8.2	74.3	48.6	
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	
Total Delay	14.2	9.1	72.7	8.2	74.3	48.6	
LOS	B	A	E	A	E	D	
Approach Delay	13.6			11.3	61.1		
Approach LOS	B			B	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.1

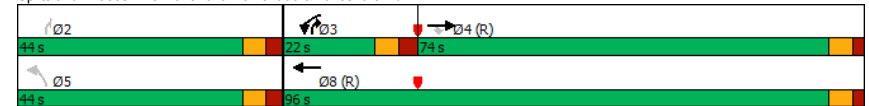
Intersection LOS: C

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1423	201	70	1389	276	292
v/c Ratio	0.71	0.47	0.47	0.57	0.85	0.74
Control Delay	14.2	9.1	72.7	8.2	74.3	48.6
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	14.2	9.1	72.7	8.2	74.3	48.6
Queue Length 50th (m)	36.3	2.4	21.4	49.2	76.3	63.2
Queue Length 95th (m)	78.8	20.0	m30.0	81.1	#110.0	84.1
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1996	426	200	2457	374	441
Starvation Cap Reductn	0	0	0	145	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.47	0.35	0.60	0.74	0.66

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1423	201	70	1389	276	292
Future Volume (vph)	1423	201	70	1389	276	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.46	1.00	1.00	1.00	0.78
Fipb, ped/bikes	1.00	1.00	1.00	1.00	0.75	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	720	1750	3579	1318	1217
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	720	1750	3579	1318	1217
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1423	201	70	1389	276	292
RTOR Reduction (vph)	0	25	0	0	0	5
Lane Group Flow (vph)	1423	176	70	1389	276	287
Confl. Peds. (#/hr)	168	168		194	191	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases		4			5	2
Actuated Green, G (s)	77.1	77.1	10.9	95.0	32.0	42.9
Effective Green, g (s)	78.1	78.1	11.9	96.0	33.0	44.9
Actuated g/C Ratio	0.56	0.56	0.09	0.69	0.24	0.32
Clearance Time (s)	6.0	6.0	7.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1996	401	148	2454	310	442
v/s Ratio Prot	c0.40		0.04	0.39		c0.06
v/s Ratio Perm		0.24			c0.21	0.18
v/c Ratio	0.71	0.44	0.47	0.57	0.89	0.65
Uniform Delay, d1	22.7	18.1	61.1	11.3	51.7	40.8
Progression Factor	0.50	0.38	1.08	0.61	1.00	1.00
Incremental Delay, d2	1.9	3.0	1.8	0.7	25.6	3.3
Delay (s)	13.3	9.8	67.4	7.7	77.3	44.0
Level of Service	B	A	E	A	E	D
Approach Delay (s)	12.9			10.5	60.2	
Approach LOS	B			B	E	
Intersection Summary						
HCM 2000 Control Delay		19.3		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.77				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		18.0
Intersection Capacity Utilization		74.2%		ICU Level of Service		D
Analysis Period (min)		15				

c Critical Lane Group

Lanes and Geometrics

4: Ogden Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.50	0.93	0.98		0.99	0.97		0.99	0.99	
Frt			0.850		0.983			0.873			0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3463	0	1750	1603	0	1750	1687	0
Flt Permitted	0.950			0.950			0.476			0.200		
Satd. Flow (perm)	1714	3579	783	1620	3463	0	870	1603	0	365	1687	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		12		147			56		
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings

4: Ogden Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	180	1360	195	61	1135	199	48	116	55
Future Volume (vph)	180	1360	195	61	1135	199	48	116	55
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	45.0	9.0	45.0
Total Split (s)	23.0	72.0	72.0	14.0	63.0	9.0	45.0	9.0	45.0
Total Split (%)	16.4%	51.4%	51.4%	10.0%	45.0%	6.4%	32.1%	6.4%	32.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	20.7	81.0	81.0	11.2	69.1	35.4	22.0	32.2	20.0
Actuated g/C Ratio	0.15	0.58	0.58	0.08	0.49	0.25	0.16	0.23	0.14
v/c Ratio	0.70	0.66	0.39	0.44	0.75	0.68	0.83	0.66	0.49
Control Delay	73.1	20.9	11.2	73.4	36.3	57.4	47.6	60.6	36.7
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	73.1	20.9	11.2	73.4	36.5	57.4	47.6	60.6	36.7
LOS	E	C	B	E	D	E	D	E	D
Approach Delay		25.2			38.2		51.4		47.4
Approach LOS		C			D		D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 34.7

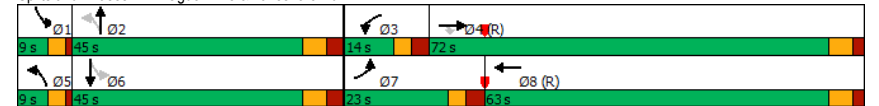
Intersection LOS: C

Intersection Capacity Utilization 94.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	180	1360	195	61	1277	199	311	116	142
v/c Ratio	0.70	0.66	0.39	0.44	0.75	0.68	0.83	0.66	0.49
Control Delay	73.1	20.9	11.2	73.4	36.3	57.4	47.6	60.6	36.7
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	73.1	20.9	11.2	73.4	36.5	57.4	47.6	60.6	36.7
Queue Length 50th (m)	0.0	82.8	5.9	17.3	196.8	46.5	48.6	25.8	22.7
Queue Length 95th (m)	m77.5	127.2	m23.0	m29.5	225.9	67.9	77.9	#47.1	40.9
Internal Link Dist (m)		78.3			60.4		118.3		222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	267	2069	498	145	1714	291	552	175	510
Starvation Cap Reductn	0	54	0	0	56	0	0	0	0
Spillback Cap Reductn	0	36	0	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.67	0.39	0.42	0.77	0.68	0.56	0.66	0.28

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	180	1360	195	61	1135	142	199	48	263	116	55	87
Future Volume (vph)	180	1360	195	61	1135	142	199	48	263	116	55	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Fltp, ped/bikes	1.00	1.00	0.50	1.00	0.98		1.00	0.97		1.00	0.99	
Fltpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Fltp	1.00	1.00	0.85	1.00	0.98		1.00	0.87		1.00	0.91	
Fltp Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	783	1750	3464		1744	1603		1747	1688	
Fltp Permitted	0.95	1.00	1.00	0.95	1.00		0.48	1.00		0.20	1.00	
Satd. Flow (perm)	1750	3579	783	1750	3464		874	1603		368	1688	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	180	1360	195	61	1135	142	199	48	263	116	55	87
RTOR Reduction (vph)	0	0	47	0	6	0	0	124	0	0	48	0
Lane Group Flow (vph)	180	1360	148	61	1271	0	199	187	0	116	94	0
Confl. Peds. (#/hr)	26		105	105		26	9		18	18		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	19.7	78.7	78.7	9.0	68.0		31.3	21.0		27.3	19.0	
Effective Green, g (s)	20.7	79.7	79.7	10.0	69.0		33.3	22.0		29.3	20.0	
Actuated g/C Ratio	0.15	0.57	0.57	0.07	0.49		0.24	0.16		0.21	0.14	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	2037	445	125	1707		278	251		168	241	
v/s Ratio Prot	c0.10	0.38		0.03	c0.37		c0.06	c0.12		0.05	0.06	
v/s Ratio Perm			0.19				0.11			0.10		
v/c Ratio	0.70	0.67	0.33	0.49	0.74		0.72	0.75		0.69	0.39	
Uniform Delay, d1	56.7	20.9	16.0	62.5	28.4		47.2	56.3		47.9	54.5	
Progression Factor	1.11	0.87	1.06	1.07	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.7	1.2	1.4	2.6	2.6		8.5	11.4		11.6	1.0	
Delay (s)	68.7	19.5	18.5	69.7	34.5		55.6	67.7		59.4	55.5	
Level of Service	E	B	B	E	C		E	E		E	E	
Approach Delay (s)		24.5			36.2			63.0			57.3	
Approach LOS		C			D			E			E	

Intersection Summary

HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↘	↩	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.44	0.92	1.00			0.99			1.00	
Frt			0.850					0.850			0.961	
Flt Protected				0.950			0.950				0.966	
Satd. Flow (prot)	1842	3579	1566	1750	3578	0	1750	1580	0	0	1748	0
Flt Permitted				0.950			0.753				0.833	
Satd. Flow (perm)	1842	3579	686	1609	3578	0	1387	1580	0	0	1507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143				153				132	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10
Lane Configurations	↗	↘	↩	↗	↩	↗	↩	↗				
Traffic Volume (vph)	1387	335	142	974	380	0	5	0				
Future Volume (vph)	1387	335	142	974	380	0	5	0				
Turn Type	NA	custom	Prot	NA	Perm	NA	Perm	NA				
Protected Phases	4 9	9	3	8 10		5		2	4	7	8	10
Permitted Phases		4			5		2					
Detector Phase	4 9	9	3	8 10	5	5	2	2				
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		11.0	11.0		44.0	44.0	44.0	44.0	24.0	11.0	20.0	24.0
Total Split (s)		25.0	21.0		53.0	53.0	53.0	53.0	41.0	11.0	52.0	24.0
Total Split (%)		17.9%	15.0%		37.9%	37.9%	37.9%	37.9%	29%	8%	37%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0		-1.0				
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0				
Lead/Lag			Lead						Lag	Lead	Lag	
Lead-Lag Optimize?			Yes						Yes	Yes	Yes	
Recall Mode		None	None		None	None	None	None	C-Max	None	C-Max	None
Act Effect Green (s)	71.5	61.5	15.4	91.9	43.1	43.1		43.1				
Actuated g/C Ratio	0.51	0.44	0.11	0.66	0.31	0.31		0.31				
v/c Ratio	0.76	0.68	0.74	0.42	0.89	0.62		0.01				
Control Delay	21.4	17.0	88.4	9.7	69.2	27.6		0.0				
Queue Delay	0.2	0.0	0.0	0.1	0.0	0.0		0.0				
Total Delay	21.6	17.0	88.4	9.7	69.2	27.6		0.0				
LOS	C	B	F	A	E	C		A				
Approach Delay	20.7			19.7		48.7						
Approach LOS	C			B		D						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 26.2

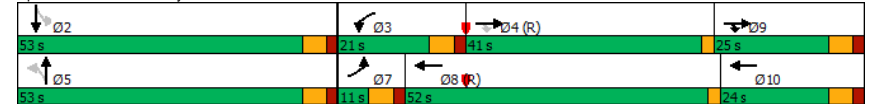
Intersection LOS: C

Intersection Capacity Utilization 85.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	→	↘	↙	←	↖	↑	↓
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1387	335	142	976	380	368	7
v/c Ratio	0.76	0.68	0.74	0.42	0.89	0.62	0.01
Control Delay	21.4	17.0	88.4	9.7	69.2	27.6	0.0
Queue Delay	0.2	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	21.6	17.0	88.4	9.7	69.2	27.6	0.0
Queue Length 50th (m)	157.9	13.3	33.0	16.0	102.6	52.2	0.0
Queue Length 95th (m)	122.6	25.6	#67.9	72.0	#151.9	85.1	0.0
Internal Link Dist (m)	114.1		171.3		111.3	167.6	
Turn Bay Length (m)		50.0	25.0		60.0		
Base Capacity (vph)	1872	513	205	2393	475	642	603
Starvation Cap Reductn	80	0	0	300	0	0	0
Spillback Cap Reductn	0	0	0	237	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.65	0.69	0.47	0.80	0.57	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	↘	→	↙	↖	←	↗	↘	↑	↙	↖	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↖↗	↘	↘	↖↗		↘	↖			↖↗	
Traffic Volume (vph)	0	1387	335	142	974	2	380	0	368	5	0	2
Future Volume (vph)	0	1387	335	142	974	2	380	0	368	5	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		0.0	5.0	5.0	0.0		5.0	5.0			5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	0.59	1.00	1.00		1.00	0.99			1.00	
Frbp, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)		3579	931	1750	3577		1750	1580			1748	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00			0.83	
Satd. Flow (perm)		3579	931	1750	3577		1387	1580			1508	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1387	335	142	974	2	380	0	368	5	0	2
RTOR Reduction (vph)	0	0	76	0	0	0	0	106	0	0	5	0
Lane Group Flow (vph)	0	1387	259	142	976	0	380	262	0	0	2	0
Confl. Peds. (#/hr)	16		197	197		16			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			5			2	
Permitted Phases			4				5			2		
Actuated Green, G (s)		65.5	63.5	14.4	85.9		42.1	42.1			42.1	
Effective Green, g (s)		67.5	65.5	15.4	87.9		43.1	43.1			43.1	
Actuated g/C Ratio		0.48	0.47	0.11	0.63		0.31	0.31			0.31	
Clearance Time (s)			6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)			3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		1725	435	192	2245		426	486			464	
v/s Ratio Prot		c0.39	0.08	c0.08	0.27			0.17				
v/s Ratio Perm			0.20				c0.27				0.00	
v/c Ratio		0.80	0.60	0.74	0.43		0.89	0.54			0.00	
Uniform Delay, d1		30.7	27.5	60.4	13.3		46.2	40.2			33.6	
Progression Factor		0.66	0.56	1.13	0.76		1.00	1.00			1.00	
Incremental Delay, d2		2.2	1.7	12.8	0.1		20.3	1.2			0.0	
Delay (s)		22.3	16.9	80.9	10.2		66.5	41.4			33.6	
Level of Service		C	B	F	B		E	D			C	
Approach Delay (s)		21.3			19.2		54.1				33.6	
Approach LOS		C			B		D				C	
Intersection Summary												
HCM 2000 Control Delay			27.5		HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)			15.0				
Intersection Capacity Utilization			85.0%		ICU Level of Service			E				
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00						0.85	
Frt					0.992						0.943	
Flt Protected	0.950										0.972	
Satd. Flow (prot)	1750	3579	1842	1842	3538	0	1879	1921	0	0	1613	0
Flt Permitted	0.950										0.821	
Satd. Flow (perm)	1734	3579	1842	1842	3538	0	1879	1921	0	0	1243	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6						132	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Group	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↰	↱	↱	↰	↱						
Traffic Volume (vph)	120	1645	1096	44	0						
Future Volume (vph)	120	1645	1096	44	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	24.0	11.0	11.0
Total Split (s)	23.0			44.0	44.0	44.0	11.0	74.0	62.0	11.0	11.0
Total Split (%)	16.4%			31.4%	31.4%	31%	8%	53%	44%	8%	8%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Min	None	None
Act Effct Green (s)	15.9	124.0	103.1		9.0						
Actuated g/C Ratio	0.11	0.89	0.74		0.06						
v/c Ratio	0.61	0.52	0.44		0.37						
Control Delay	59.3	1.8	8.0		5.4						
Queue Delay	0.0	0.2	0.0		0.0						
Total Delay	59.3	2.0	8.0		5.4						
LOS	E	A	A		A						
Approach Delay		5.9	8.0		5.4						
Approach LOS		A	A		A						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 6.7

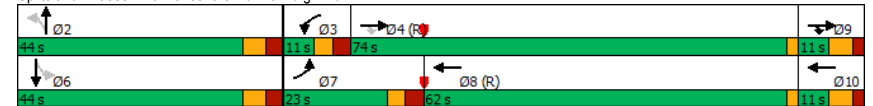
Intersection LOS: A

Intersection Capacity Utilization 92.7%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Morning Peak Hour

				
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	120	1645	1157	76
v/c Ratio	0.61	0.52	0.44	0.37
Control Delay	59.3	1.8	8.0	5.4
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	59.3	2.0	8.0	5.4
Queue Length 50th (m)	35.5	22.7	54.4	0.0
Queue Length 95th (m)	m48.7	37.7	69.4	0.6
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	234	3169	2608	433
Starvation Cap Reductn	0	628	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.65	0.44	0.18

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1645	0	0	1096	61	0	0	0	44	0	32
Future Volume (vph)	120	1645	0	0	1096	61	0	0	0	44	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0						6.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.93	
Flpb, ped/bikes	1.00	1.00			1.00						0.91	
Flt Protected	0.95	1.00			1.00						0.97	
Satd. Flow (prot)	1750	3579			3538						1471	
Flt Permitted	0.95	1.00			1.00						0.82	
Satd. Flow (perm)	1750	3579			3538						1243	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	120	1645	0	0	1096	61	0	0	0	44	0	32
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	71	0
Lane Group Flow (vph)	120	1645	0	0	1155	0	0	0	0	0	5	0
Confl. Peds. (#/hr)	10		127	127		10	129		134	134		129
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4 9		9	3 8 10			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	14.9	119.0			98.1						8.0	
Effective Green, g (s)	15.9	120.0			99.1						9.0	
Actuated g/C Ratio	0.11	0.86			0.71						0.06	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	198	3067			2504						79	
v/s Ratio Prot	0.07	c0.46			0.33							
v/s Ratio Perm											c0.00	
v/c Ratio	0.61	0.54			0.46						0.06	
Uniform Delay, d1	59.1	2.6			8.9						61.5	
Progression Factor	0.86	0.81			0.99						1.00	
Incremental Delay, d2	3.6	0.1			0.1						0.3	
Delay (s)	54.2	2.3			8.9						61.9	
Level of Service	D	A			A						E	
Approach Delay (s)		5.8			8.9			0.0			61.9	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay		8.4			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		92.7%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99		0.93		1.00			1.00	0.99
Frt		0.998				0.850						0.850
Flt Protected	0.950			0.950			0.950				0.953	
Satd. Flow (prot)	1750	3570	0	1750	3579	1566	0	1789	0	0	1795	1566
Flt Permitted	0.950			0.950			0.500				0.728	
Satd. Flow (perm)	1710	3570	0	1737	3579	1448	0	940	0	0	1370	1544
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125						23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	561	1081	1	642	222	1	0	158	1	463
Future Volume (vph)	561	1081	1	642	222	1	0	158	1	463
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	59.0	84.0	11.0	36.0	36.0	45.0	45.0	45.0	45.0	59.0
Total Split (%)	42.1%	60.0%	7.9%	25.7%	25.7%	32.1%	32.1%	32.1%	32.1%	42.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0		6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	51.9	104.0	6.7	49.5	49.5	22.6	22.6	22.6	22.6	75.5
Actuated g/C Ratio	0.37	0.74	0.05	0.35	0.35		0.16		0.16	0.54
v/c Ratio	0.87	0.41	0.01	0.51	0.38		0.01		0.72	0.54
Control Delay	39.6	5.0	64.0	40.2	19.4		45.0		73.0	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	39.6	5.0	64.0	40.2	19.4		45.0		73.0	18.7
LOS	D	A	E	D	B		D		E	B
Approach Delay		16.8		34.9			45.0		32.6	
Approach LOS		B		C			D		C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 24.9

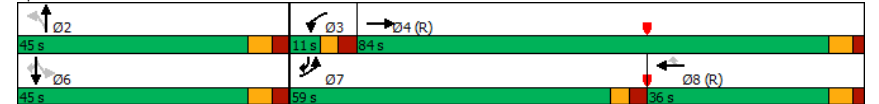
Intersection LOS: C

Intersection Capacity Utilization 71.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	561	1092	1	642	222	1	159	463
v/c Ratio	0.87	0.41	0.01	0.51	0.38	0.01	0.72	0.54
Control Delay	39.6	5.0	64.0	40.2	19.4	45.0	73.0	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	5.0	64.0	40.2	19.4	45.0	73.0	18.7
Queue Length 50th (m)	103.2	5.4	0.3	77.6	19.6	0.3	44.5	73.3
Queue Length 95th (m)	205.4	141.1	2.3	117.7	52.2	1.9	66.0	68.0
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	701	2651	83	1265	592	261	381	897
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.41	0.01	0.51	0.38	0.00	0.42	0.52
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	561	1081	11	1	642	222	1	0	0	158	1	463
Future Volume (vph)	561	1081	11	1	642	222	1	0	0	158	1	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			0.95	1.00
Satd. Flow (prot)	1750	3571		1750	3579	1448		1786			1792	1559
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.50			0.73	1.00
Satd. Flow (perm)	1750	3571		1750	3579	1448		940			1369	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	561	1081	11	1	642	222	1	0	0	158	1	463
RTOR Reduction (vph)	0	0	0	0	0	81	0	0	0	0	0	11
Lane Group Flow (vph)	561	1092	0	1	642	141	0	1	0	0	159	452
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	50.9	98.2		1.2	48.5	48.5		21.6			21.6	72.5
Effective Green, g (s)	51.9	99.2		2.2	49.5	49.5		22.6			22.6	74.5
Actuated g/C Ratio	0.37	0.71		0.02	0.35	0.35		0.16			0.16	0.53
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	648	2530		27	1265	511		151			220	829
v/s Ratio Prot	c0.32	0.31		0.00	c0.18						c0.12	0.09
v/s Ratio Perm					0.10		0.00					
v/c Ratio	0.87	0.43		0.04	0.51	0.28		0.01			0.72	0.55
Uniform Delay, d1	40.8	8.6		67.9	35.6	32.4		49.3			55.7	21.6
Progression Factor	0.66	0.58		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.4	0.5		0.6	1.5	1.3		0.0			11.1	0.7
Delay (s)	37.5	5.4		68.4	37.1	33.8		49.3			66.8	22.3
Level of Service	D	A		E	D	C		D			E	C
Approach Delay (s)		16.3			36.3			49.3			33.7	
Approach LOS		B			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		25.3			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		71.9%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	6	1552	2	8	1733	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1552	2	8	1733	2	0	0	8	5	0	5
Sign Control	Free	Free		Free	Free		Stop	Stop		Stop	Stop	
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1552	2	8	1733	2	0	0	8	5	0	5
Pedestrians										5		8
Lane Width (m)										3.6		3.7
Walking Speed (m/s)										1.2		1.2
Percent Blockage										0		1
Right turn flare (veh)												
Median type	TWTL			TWTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.71			0.83			0.80	0.80	0.83	0.80	0.80	0.71
vC, conflicting volume	1743			1559			2458	3329	782	2554	3329	876
vC1, stage 1 conf vol							1570	1570		1758	1758	
vC2, stage 2 conf vol							888	1759		796	1571	
vCu, unblocked vol	1234			1269			1369	2465	335	1491	2465	15
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	99	96	100	99
cM capacity (veh/h)	396			450			141	123	548	122	123	750
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	1035	519	8	1155	580	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	396	1700	1700	450	1700	1700	1700	548	210			
Volume to Capacity	0.02	0.61	0.31	0.02	0.68	0.34	0.03	0.01	0.05			
Queue Length 95th (m)	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.4	1.2			
Control Delay (s)	14.2	0.0	0.0	13.1	0.0	0.0	0.0	11.7	23.0			
Lane LOS	B			B			A	B	C			
Approach Delay (s)	0.1			0.1			11.7		23.0			
Approach LOS							B		C			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				59.7%			ICU Level of Service		B			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	1591	1735	14	0	7
Future Volume (Veh/h)	0	1591	1735	14	0	7
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1591	1735	14	0	7
Pedestrians		2	6		12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.72				0.80	0.72
vC, conflicting volume	1761				2556	888
vC1, stage 1 conf vol					1754	
vC2, stage 2 conf vol					802	
vCu, unblocked vol	1282				1516	73
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	384				157	695
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	796	796	1157	592	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	14	7
cSH	1700	1700	1700	1700	1700	695
Volume to Capacity	0.00	0.47	0.47	0.68	0.35	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.2
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			59.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1634	1646	2	0	5
Future Volume (Veh/h)	0	1634	1646	2	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1634	1646	2	0	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	102		269			
pX, platoon unblocked	0.79				0.89	0.79
vC, conflicting volume	1656				2472	832
vC1, stage 1 conf vol					1655	
vC2, stage 2 conf vol					817	
vCu, unblocked vol	1296				1340	251
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	416				169	587
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	817	817	1097	551	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	2	5	
cSH	1700	1700	1700	1700	587	
Volume to Capacity	0.48	0.48	0.65	0.32	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	11.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			55.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 2

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Traffic Volume (veh/h)	0	1641	0	0	1617	29	0	0	0	0	0	34
Future Volume (Veh/h)	0	1641	0	0	1617	29	0	0	0	0	0	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1641	0	0	1617	29	0	0	0	0	0	34
Pedestrians		1			2			76			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			7			1	
Right turn flare (veh)												
Median type		TWLT			TWLT							
Median storage (veh)		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.80			0.77			0.87	0.87	0.77	0.87	0.87	0.80
Hourly flow rate (vph)	0	1641	0	0	1617	29	0	0	0	0	0	34
vC, conflicting volume	1658			1717			2560	3375	898	2466	3360	836
vC1, stage 1 conf vol							1717	1717		1644	1644	
vC2, stage 2 conf vol							844	1658		822	1717	
vCu, unblocked vol	1314			1337			1445	2377	275	1337	2361	281
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	411			369			115	120	524	132	121	564
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1094	547	0	1078	568	0	34				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	29	0	34				
cSH	1700	1700	1700	1700	1700	1700	1700	564				
Volume to Capacity	0.00	0.64	0.32	0.00	0.63	0.33	0.00	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	11.8				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				56.3%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1729	1454	7	0	6
Future Volume (Veh/h)	0	1729	1454	7	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1729	1454	7	0	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.72				0.84	0.72
vC, conflicting volume	1472				2335	744
vC1, stage 1 conf vol					1468	
vC2, stage 2 conf vol					866	
vCu, unblocked vol	868				702	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	548				260	769
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	864	864	969	492	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	7	6	
cSH	1700	1700	1700	1700	769	
Volume to Capacity	0.51	0.51	0.57	0.29	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.7	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1724	1366	1	0	5
Future Volume (Veh/h)	0	1724	1366	1	0	5
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1724	1366	1	0	5
Pedestrians		3	3		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.71				0.84	0.71
vC, conflicting volume	1382				2246	702
vC1, stage 1 conf vol					1382	
vC2, stage 2 conf vol					865	
vCu, unblocked vol	723				553	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	614				307	759
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	862	862	911	456	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	1	5	
cSH	1700	1700	1700	1700	759	
Volume to Capacity	0.51	0.51	0.54	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.8	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.8	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			51.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1733	1301	14	0	8
Future Volume (Veh/h)	0	1733	1301	14	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1733	1301	14	0	8
Pedestrians		4	4		20	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.86				0.80	0.86
vC, conflicting volume	1335				2198	682
vC1, stage 1 conf vol					1328	
vC2, stage 2 conf vol					870	
vCu, unblocked vol	1065				1212	305
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	550				244	583
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	866	866	867	448	8	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	14	8	
cSH	1700	1700	1700	1700	583	
Volume to Capacity	0.51	0.51	0.51	0.26	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.3	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1693	1133	15	0	20
Future Volume (Veh/h)	0	1693	1133	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1693	1133	15	0	20
Pedestrians		5	5		30	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.86	
vC, conflicting volume	1178				2022	609
vC1, stage 1 conf vol					1170	
vC2, stage 2 conf vol					852	
vCu, unblocked vol	1178				1865	609
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	574				221	426
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	846	846	755	393	20	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	15	20	
cSH	1700	1700	1700	1700	426	
Volume to Capacity	0.50	0.50	0.44	0.23	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	13.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			57.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 2
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1622	1115	31	0	38
Future Volume (Veh/h)	0	1622	1115	31	0	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1622	1115	31	0	38
Pedestrians		6	6		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)			131			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1161				1962	594
vC1, stage 1 conf vol					1146	
vC2, stage 2 conf vol					817	
vCu, unblocked vol	861				1793	201
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	659				250	681
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	811	811	743	403	38	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	31	38	
cSH	1700	1700	1700	1700	681	
Volume to Capacity	0.48	0.48	0.44	0.24	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			56.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 2
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 2
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	13	161	94	0	48	55
Future Volume (Veh/h)	13	161	94	0	48	55
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	161	94	0	48	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	245	94			94	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	94			94	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	83			97	
cM capacity (veh/h)	720	963			1500	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	13	161	94	48	55	
Volume Left	13	0	0	48	0	
Volume Right	0	161	0	0	0	
cSH	720	963	1700	1500	1700	
Volume to Capacity	0.02	0.17	0.06	0.03	0.03	
Queue Length 95th (m)	0.4	4.8	0.0	0.8	0.0	
Control Delay (s)	10.1	9.5	0.0	7.5	0.0	
Lane LOS	B	A			A	
Approach Delay (s)	9.5		0.0	3.5		
Approach LOS	A					
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization			21.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.859			0.961			0.991	
Frt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1582	0	1750	1770	0	1750	1825	0
Frt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1582	0	1750	1770	0	1750	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 2
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	44	0	0	15	13	199	13	324	112	47	210	13
Future Volume (Veh/h)	44	0	0	15	13	199	13	324	112	47	210	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	0	0	15	13	199	13	324	112	47	210	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	866	772	216	710	723	380	223			436		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	855	760	216	697	710	361	223			418		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	75	100	100	96	96	70	99			96		
cM capacity (veh/h)	180	313	823	336	335	672	1346			1122		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	44	0	15	212	13	436	47	223				
Volume Left	44	0	15	0	13	0	47	0				
Volume Right	0	0	0	199	0	112	0	13				
cSH	180	1700	336	633	1346	1700	1122	1700				
Volume to Capacity	0.25	0.00	0.04	0.33	0.01	0.26	0.04	0.13				
Queue Length 95th (m)	7.4	0.0	1.1	11.8	0.2	0.0	1.0	0.0				
Control Delay (s)	31.4	0.0	16.2	13.5	7.7	0.0	8.3	0.0				
Lane LOS	D	A	C	B	A		A					
Approach Delay (s)	31.4		13.7		0.2		1.5					
Approach LOS	D		B									
Intersection Summary												
Average Delay				5.0								
Intersection Capacity Utilization			56.9%		ICU Level of Service				B			
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 2
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1824	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1824	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 2
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	260	15	86	488	440	36
Future Volume (Veh/h)	260	15	86	488	440	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	260	15	86	488	440	36
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1118	458	476			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1118	458	476			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	98	92			
cM capacity (veh/h)	211	603	1086			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	260	15	86	488	476	
Volume Left	260	0	86	0	0	
Volume Right	0	15	0	0	36	
cSH	211	603	1086	1700	1700	
Volume to Capacity	1.23	0.02	0.08	0.29	0.28	
Queue Length 95th (m)	107.2	0.6	2.1	0.0	0.0	
Control Delay (s)	184.9	11.1	8.6	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	175.4		1.3		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			37.0			
Intersection Capacity Utilization			54.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 2

Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↖↖		↖	↖↖	↖		↖↖		↖	↖↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.97	1.00		0.99		0.92	0.99		1.00	1.00	0.94	
Frt						0.850		0.966				0.850
Flt Protected	0.950			0.950			0.988		0.950	0.950		
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1795	0	1662	1700	1566
Flt Permitted	0.950			0.237			0.833		0.950	0.750		
Satd. Flow (perm)	3302	3578	0	431	3579	1434	0	1505	0	1660	1338	1474
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						183		3				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 2

Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↗
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR		
Lane Configurations	↖↖	↖↖	↖	↖↖	↖		↖↖	↖	↖↖	↖		
Traffic Volume (vph)	406	1092	1	1077	634	3	6	990	0	536		
Future Volume (vph)	406	1092	1	1077	634	3	6	990	0	536		
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov		
Protected Phases	7	4		8	1		2	1	6	7		
Permitted Phases			8	8	2					6		
Detector Phase	7	4	8	8	1	2	2	1	6	7		
Switch Phase												
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0		
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0		
Total Split (s)	25.0	77.0	52.0	52.0	52.0	11.0	11.0	52.0	63.0	25.0		
Total Split (%)	17.9%	55.0%	37.1%	37.1%	37.1%	7.9%	7.9%	37.1%	45.0%	17.9%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None		
Act Effct Green (s)	19.6	72.0	47.4	47.4	101.0	6.0	53.6	53.6	77.6			
Actuated g/C Ratio	0.14	0.51	0.34	0.34	0.72		0.04	0.38	0.38	0.55		
v/c Ratio	0.85	0.59	0.01	0.89	0.56		0.18	0.78	0.76	0.64		
Control Delay	76.2	25.5	41.0	51.6	5.9		59.9	48.8	47.6	21.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay	76.2	25.5	41.0	51.6	5.9		59.9	48.8	47.6	21.7		
LOS	E	C	D	D	A		E	D	D	C		
Approach Delay		39.2		34.6			59.9		38.9			
Approach LOS		D		C			E		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 37.5

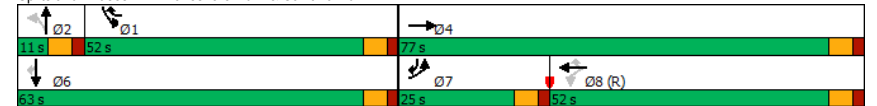
Intersection LOS: D

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	1093	1	1077	634	12	495	495	536
v/c Ratio	0.85	0.59	0.01	0.89	0.56	0.18	0.78	0.76	0.64
Control Delay	76.2	25.5	41.0	51.6	5.9	59.9	48.8	47.6	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	25.5	41.0	51.6	5.9	59.9	48.8	47.6	21.7
Queue Length 50th (m)	60.2	114.2	0.1	174.5	29.9	2.6	125.3	124.2	87.9
Queue Length 95th (m)	#85.5	136.4	m0.4	#176.6	72.3	9.9	#212.6	#208.5	123.0
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	485	1840	145	1211	1135	67	636	650	844
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.59	0.01	0.89	0.56	0.18	0.78	0.76	0.64

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	406	1092	1	1	1077	634	3	6	3	990	0	536
Future Volume (vph)	406	1092	1	1	1077	634	3	6	3	990	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Frbp, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	3395	3578		1730	3579	1507		1778		1662	1697	1496
Flt Permitted	0.95	1.00		0.24	1.00	1.00		0.83		0.95	0.75	1.00
Satd. Flow (perm)	3395	3578		432	3579	1507		1500		1662	1339	1496
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	1092	1	1	1077	634	3	6	3	990	0	536
RTOR Reduction (vph)	0	0	0	0	0	56	0	3	0	0	0	10
Lane Group Flow (vph)	406	1093	0	1	1077	578	0	9	0	495	495	526
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	18.6	67.4		42.8	42.8	95.4		2.0		52.6	60.6	79.2
Effective Green, g (s)	19.6	68.4		43.8	43.8	97.4		3.0		53.6	61.6	81.2
Actuated g/C Ratio	0.14	0.49		0.31	0.31	0.70		0.02		0.38	0.44	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	475	1748		135	1119	1048		32		636	726	921
v/s Ratio Prot	c0.12	0.31			c0.30	0.21				c0.30	0.26	0.08
v/s Ratio Perm				0.00		0.17		0.01			c0.04	0.27
v/c Ratio	0.85	0.63		0.01	0.96	0.55		0.28		0.78	0.68	0.57
Uniform Delay, d1	58.8	26.4		33.1	47.3	10.5		67.4		38.0	31.4	18.5
Progression Factor	1.00	1.00		1.30	0.99	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	14.0	1.7		0.1	16.3	0.5		4.8		6.0	2.6	0.9
Delay (s)	72.8	28.1		43.1	62.9	11.0		72.3		44.0	34.0	19.3
Level of Service	E	C		D	E	B		E		D	C	B
Approach Delay (s)	40.2				43.7		72.3		32.1			
Approach LOS	D				D		E		C			

Intersection Summary

HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.88	0.99		0.85	0.99				0.97	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1601	0	1750	1559	0
Flt Permitted	0.950			0.950			0.754			0.724		
Satd. Flow (perm)	1730	3579	1384	1736	3579	1334	1369	1601	0	1334	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		102			102	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	84	1818	125	62	1762	86	76	0	30	0
Future Volume (vph)	84	1818	125	62	1762	86	76	0	30	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	15.0	85.0	85.0	13.0	83.0	83.0	42.0	42.0	42.0	42.0
Total Split (%)	10.7%	60.7%	60.7%	9.3%	59.3%	59.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	13.3	100.7	100.7	11.5	96.4	96.4	14.3	14.3	14.3	14.3
Actuated g/C Ratio	0.10	0.72	0.72	0.08	0.69	0.69	0.10	0.10	0.10	0.10
v/c Ratio	0.51	0.71	0.12	0.43	0.72	0.09	0.55	0.20	0.22	0.02
Control Delay	71.8	15.0	3.5	61.8	16.4	3.7	73.4	1.8	59.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	15.0	3.5	61.8	16.4	3.7	73.4	1.8	59.7	0.2
LOS	E	B	A	E	B	A	E	A	E	A
Approach Delay		16.7			17.3			44.6		49.8
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.1

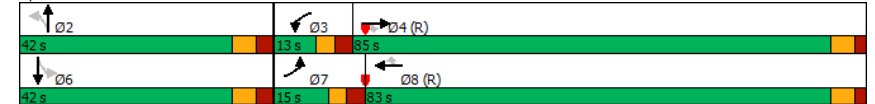
Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	1818	125	62	1762	86	76	51	30	6
v/c Ratio	0.51	0.71	0.12	0.43	0.72	0.09	0.55	0.20	0.22	0.02
Control Delay	71.8	15.0	3.5	61.8	16.4	3.7	73.4	1.8	59.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	15.0	3.5	61.8	16.4	3.7	73.4	1.8	59.7	0.2
Queue Length 50th (m)	22.0	152.2	5.1	0.0	132.6	2.8	21.4	0.0	8.2	0.0
Queue Length 95th (m)	m33.5	295.5	m15.0	m26.7	163.1	m3.0	37.7	0.0	18.2	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	169	2574	1017	145	2464	942	352	487	343	476
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.71	0.12	0.43	0.72	0.09	0.22	0.10	0.09	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	84	1818	125	62	1762	86	76	0	51	30	0	6
Future Volume (vph)	84	1818	125	62	1762	86	76	0	51	30	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1384	1750	3579	1334	1725	1601		1750	1559	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	1750	3579	1384	1750	3579	1334	1369	1601		1333	1559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1818	125	62	1762	86	76	0	51	30	0	6
RTOR Reduction (vph)	0	0	23	0	0	24	0	46	0	0	5	0
Lane Group Flow (vph)	84	1818	102	62	1762	62	76	5	0	30	1	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	12.3	98.5	98.5	9.2	95.4	95.4	13.3	13.3		13.3	13.3	
Effective Green, g (s)	13.3	99.5	99.5	10.2	96.4	96.4	14.3	14.3		14.3	14.3	
Actuated g/C Ratio	0.10	0.71	0.71	0.07	0.69	0.69	0.10	0.10		0.10	0.10	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	2543	983	127	2464	918	139	163		136	159	
v/s Ratio Prot	c0.05	c0.51		0.04	0.49			0.00			0.00	
v/s Ratio Perm			0.07			0.05	c0.06			0.02		
v/c Ratio	0.51	0.71	0.10	0.49	0.72	0.07	0.55	0.03		0.22	0.00	
Uniform Delay, d1	60.2	11.9	6.3	62.4	13.4	7.1	59.8	56.6		57.7	56.5	
Progression Factor	1.07	1.02	0.93	0.91	1.01	1.41	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	1.4	0.2	2.1	1.3	0.1	4.3	0.1		0.8	0.0	
Delay (s)	66.2	13.5	6.1	59.0	14.9	10.2	64.1	56.7		58.6	56.5	
Level of Service	E	B	A	E	B	B	E	E		E	E	
Approach Delay (s)		15.3			16.1		61.1				58.2	
Approach LOS		B			B		E				E	
Intersection Summary												
HCM 2000 Control Delay			17.4							B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			140.0							16.0		
Intersection Capacity Utilization			83.0%							E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.37	0.93		0.68	0.66
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	573	1626	3579	1183	1028
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		63			2	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	→	↖	↗	←	↖	↗	Ø2	Ø4	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑				
Traffic Volume (vph)	1570	282	259	1769	227	181				
Future Volume (vph)	1570	282	259	1769	227	181				
Turn Type	NA	custom	Prot	NA	Perm	pm+ov				
Protected Phases	4 9	9	3	8 10		3	2	4	8	10
Permitted Phases		4			5	2				
Detector Phase	4 9	9	3	8 10	5	3				
Switch Phase										
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	8.0	8.0	5.0
Minimum Split (s)		11.0	12.0		12.0	12.0	34.0	24.0	24.0	24.0
Total Split (s)		20.0	31.0		39.0	31.0	39.0	50.0	77.0	24.0
Total Split (%)		14.3%	22.1%		27.9%	22.1%	28%	36%	55%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)		2.0	3.0		3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0				
Total Lost Time (s)		5.0	6.0		6.0	6.0				
Lead/Lag		Lead			Lead			Lag		
Lead-Lag Optimize?		Yes			Yes			Yes		
Recall Mode		None	None		None	None	None	C-Min	C-Min	None
Act Effct Green (s)	72.8	63.8	23.8	102.7	30.3	54.2				
Actuated g/C Ratio	0.52	0.46	0.17	0.73	0.22	0.39				
v/c Ratio	0.84	0.71	0.87	0.67	0.89	0.37				
Control Delay	21.1	24.1	87.4	6.6	86.4	29.1				
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0				
Total Delay	21.1	24.1	87.4	6.7	86.4	29.1				
LOS	C	C	F	A	F	C				
Approach Delay	21.5			17.0	61.0					
Approach LOS	C			B	E					

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.2

Intersection LOS: C

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E

Ø2	Ø3	Ø4 (R)	Ø9
39 s	31 s	50 s	20 s
Ø5	Ø8 (R)		Ø10
39 s	77 s		24 s

Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1570	282	259	1769	227	181
v/c Ratio	0.84	0.71	0.87	0.67	0.89	0.37
Control Delay	21.1	24.1	87.4	6.6	86.4	29.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	21.1	24.1	87.4	6.7	86.4	29.1
Queue Length 50th (m)	191.8	9.8	80.7	56.2	63.1	31.5
Queue Length 95th (m)	152.7	41.6	m89.0	m74.6	#108.0	49.0
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1871	402	312	2624	278	503
Starvation Cap Reductn	0	0	0	196	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.70	0.83	0.73	0.82	0.36
Intersection Summary						
#	95th percentile volume exceeds capacity, queue may be longer.					
	Queue shown is maximum after two cycles.					
m	Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1570	282	259	1769	227	181
Future Volume (vph)	1570	282	259	1769	227	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	1.0	5.0	6.0	1.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.50	1.00	1.00	1.00	0.81
Fipb, ped/bikes	1.00	1.00	1.00	1.00	0.67	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	787	1750	3579	1170	1264
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	787	1750	3579	1170	1264
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1570	282	259	1769	227	181
RTOR Reduction (vph)	0	32	0	0	0	1
Lane Group Flow (vph)	1570	250	259	1769	227	180
Confl. Peds. (#/hr)	291	291		329	316	
Turn Type	NA	custom	Prot	NA	Perm	pm+ov
Protected Phases	4 9	9	3	8 10		3
Permitted Phases		4			5	2
Actuated Green, G (s)	67.9	65.9	22.8	97.7	29.3	52.1
Effective Green, g (s)	68.9	67.9	23.8	98.7	30.3	54.1
Actuated g/C Ratio	0.49	0.49	0.17	0.71	0.22	0.39
Clearance Time (s)		6.0	7.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1761	381	297	2523	253	542
v/s Ratio Prot	c0.44	0.07	c0.15	0.49		0.06
v/s Ratio Perm		0.25			c0.19	0.09
v/c Ratio	0.89	0.66	0.87	0.70	0.90	0.33
Uniform Delay, d1	32.2	27.2	56.6	12.0	53.3	30.2
Progression Factor	0.57	0.59	1.30	0.56	1.00	1.00
Incremental Delay, d2	4.6	2.9	12.1	0.4	30.7	0.4
Delay (s)	23.0	18.9	85.9	7.2	84.1	30.6
Level of Service	C	B	F	A	F	C
Approach Delay (s)	22.4			17.3	60.4	
Approach LOS	C			B	E	
Intersection Summary						
HCM 2000 Control Delay		23.6		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.90				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		19.0
Intersection Capacity Utilization		83.7%		ICU Level of Service		E
Analysis Period (min)		15				
c	Critical Lane Group					

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.41	0.91	0.99		0.99	0.98		0.99	0.99	
Frt			0.850		0.991			0.894			0.922	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3514	0	1750	1654	0	1750	1718	0
Flt Permitted	0.950			0.950			0.443			0.575		
Satd. Flow (perm)	1732	3579	643	1594	3514	0	811	1654	0	1046	1718	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		7			94			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱			
Traffic Volume (vph)	98	1352	291	235	1756	210	70	141	79			
Future Volume (vph)	98	1352	291	235	1756	210	70	141	79			
Turn Type	Prot	NA	custom	Prot	NA	pm+pt	NA	Perm	NA			
Protected Phases	7	4 9		9	3	8 10	5	2		6	4	8
Permitted Phases			4			2		6				10
Detector Phase	7	4 9	9	3	8 10	5	2	6	6			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	8.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	11.0		11.0	11.0		9.0	45.0	45.0	45.0	24.0	24.0	24.0
Total Split (s)	13.0		18.0	27.0		9.0	54.0	45.0	45.0	41.0	49.0	24.0
Total Split (%)	9.3%		12.9%	19.3%		6.4%	38.6%	32.1%	32.1%	29%	35%	17%
Yellow Time (s)	3.0		4.0	3.0		3.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	3.0		2.0	3.0		1.0	3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		3.0	6.0	6.0	6.0			
Lead/Lag	Lead		Lead	Lead		Lead	Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes		Yes		Yes	Yes	Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	15.2	69.9	60.9	24.9	79.7	36.1	33.1	24.1	24.1			
Actuated g/C Ratio	0.11	0.50	0.44	0.18	0.57	0.26	0.24	0.17	0.17			
v/c Ratio	0.52	0.76	0.64	0.76	0.93	0.84	0.52	0.78	0.50			
Control Delay	59.3	29.4	23.2	78.8	26.7	74.0	30.4	82.5	43.6			
Queue Delay	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0			
Total Delay	59.3	29.4	23.2	78.8	29.2	74.0	30.4	82.5	43.6			
LOS	E	C	C	E	C	E	C	F	D			
Approach Delay		30.0			34.8		50.8		61.5			
Approach LOS		C			C		D		E			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 36.3

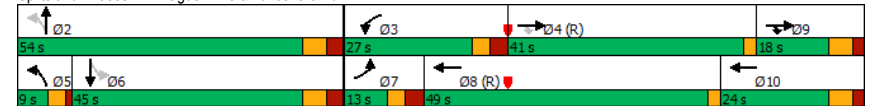
Intersection LOS: D

Intersection Capacity Utilization 104.9%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	98	1352	291	235	1866	210	239	141	165
v/c Ratio	0.52	0.76	0.64	0.76	0.93	0.84	0.52	0.78	0.50
Control Delay	59.3	29.4	23.2	78.8	26.7	74.0	30.4	82.5	43.6
Queue Delay	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0
Total Delay	59.3	29.4	23.2	78.8	29.2	74.0	30.4	82.5	43.6
Queue Length 50th (m)	29.5	97.3	24.1	70.2	282.0	51.9	36.5	39.8	33.4
Queue Length 95th (m)	m37.6	#181.3	m38.4	m94.3	m#344.0	70.5	58.6	60.7	52.9
Internal Link Dist (m)		78.3			60.4		118.3		222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	190	1787	453	320	2002	249	628	291	506
Starvation Cap Reductn	0	0	0	0	72	0	0	0	0
Spillback Cap Reductn	0	14	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.76	0.64	0.73	0.97	0.84	0.38	0.48	0.33

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	98	1352	291	235	1756	110	210	70	169	141	79	86
Future Volume (vph)	98	1352	291	235	1756	110	210	70	169	141	79	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.53	1.00	0.99		1.00	0.98		1.00	0.99	
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	829	1750	3515		1745	1653		1728	1717	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.44	1.00		0.58	1.00	
Satd. Flow (perm)	1750	3579	829	1750	3515		814	1653		1047	1717	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	98	1352	291	235	1756	110	210	70	169	141	79	86
RTOR Reduction (vph)	0	0	84	0	3	0	0	72	0	0	32	0
Lane Group Flow (vph)	98	1352	207	235	1863	0	210	167	0	141	133	0
Confl. Peds. (#/hr)	29		194	194		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	custom	Prot	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10		5	2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	14.2	65.0	63.0	23.9	74.7		32.1	32.1		23.1	23.1	
Effective Green, g (s)	15.2	66.0	65.0	24.9	75.7		33.1	33.1		24.1	24.1	
Actuated g/C Ratio	0.11	0.47	0.46	0.18	0.54		0.24	0.24		0.17	0.17	
Clearance Time (s)	6.0		6.0	6.0			4.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	190	1687	384	311	1900		232	390		180	295	
v/s Ratio Prot	0.06	0.38	0.05	c0.13	c0.53		c0.04	0.10			0.08	
v/s Ratio Perm			0.20				c0.17			0.13		
v/c Ratio	0.52	0.80	0.54	0.76	0.98		0.91	0.43		0.78	0.45	
Uniform Delay, d1	58.9	31.4	26.8	54.7	31.4		52.5	45.4		55.5	52.0	
Progression Factor	0.89	0.90	1.11	1.26	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.7	0.9	6.3	11.9		34.4	0.8		19.6	1.1	
Delay (s)	54.1	30.0	30.8	75.4	33.2		87.0	46.2		75.1	53.1	
Level of Service	D	C	C	E	C		F	D		E	D	
Approach Delay (s)		31.5			37.9			65.3			63.2	
Approach LOS		C			D			E			E	

Intersection Summary

HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.34	0.89	1.00			0.99			1.00	
Frt			0.850					0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1750	3579	1566	1750	3578	0	1750	1580	0	0	1789	0
Flt Permitted	0.950			0.950			0.757				0.422	
Satd. Flow (perm)	1731	3579	526	1557	3578	0	1394	1580	0	0	794	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178					286				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱			
Traffic Volume (vph)	1	1286	410	277	1695	413	0	1	0			
Future Volume (vph)	1	1286	410	277	1695	413	0	1	0			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9		3	8 10		5		2	4	8	10
Permitted Phases			4			5		2				
Detector Phase	7	4 9	9	3	8 10	5	5	2	2			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	20.0	24.0
Total Split (s)	11.0		27.0	30.0		49.0	49.0	49.0	49.0	34.0	56.0	24.0
Total Split (%)	7.9%		19.3%	21.4%		35.0%	35.0%	35.0%	35.0%	24%	40%	17%
Yellow Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	2.0		2.0	2.0		2.0	2.0	2.0	2.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0		5.0			
Lead/Lag	Lead			Lead						Lag	Lag	
Lead-Lag Optimize?	Yes			Yes						Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Max	C-Max	None
Act Effect Green (s)	6.1	61.4	52.4	24.4	88.6	43.2	43.2		43.2			
Actuated g/C Ratio	0.04	0.44	0.37	0.17	0.63	0.31	0.31		0.31			
v/c Ratio	0.01	0.82	0.88	0.91	0.75	0.96	0.40		0.00			
Control Delay	66.0	29.0	36.1	95.5	22.2	82.1	5.0		33.0			
Queue Delay	0.0	0.5	0.0	0.0	0.9	0.0	0.0		0.0			
Total Delay	66.0	29.5	36.1	95.5	23.0	82.1	5.0		33.0			
LOS	E	C	D	F	C	F	A		C			
Approach Delay		31.1			33.2		51.4		33.0			
Approach LOS		C			C		D		C			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 35.2

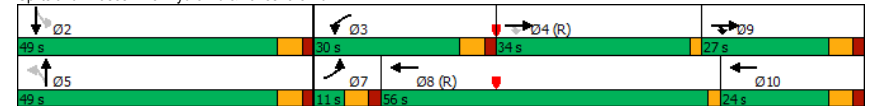
Intersection LOS: D

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1	1286	410	277	1698	413	274	1
v/c Ratio	0.01	0.82	0.88	0.91	0.75	0.96	0.40	0.00
Control Delay	66.0	29.0	36.1	95.5	22.2	82.1	5.0	33.0
Queue Delay	0.0	0.5	0.0	0.0	0.9	0.0	0.0	0.0
Total Delay	66.0	29.5	36.1	95.5	23.0	82.1	5.0	33.0
Queue Length 50th (m)	0.2	148.8	29.2	85.7	138.4	117.5	0.0	0.2
Queue Length 95th (m)	m0.1	88.8	#100.6 m	#128.9	129.9	#185.0	18.0	1.6
Internal Link Dist (m)	114.1		50.0		171.3		111.3	
Turn Bay Length (m)	25.0		50.0		25.0		60.0	
Base Capacity (vph)	76	1593	474	312	2288	438	692	249
Starvation Cap Reductn	0	67	0	0	177	0	0	0
Spillback Cap Reductn	0	0	0	0	298	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.84	0.86	0.89	0.85	0.94	0.40	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	1	1286	410	277	1695	3	413	0	274	1	0	0
Future Volume (vph)	1	1286	410	277	1695	3	413	0	274	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		5.0	5.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Flt Protected	1.00	1.00	0.64	1.00	1.00		1.00	0.99				
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00				
Satd. Flow (prot)	1750	3579	1001	1750	3577		1750	1580				
Satd. Flow (perm)	1750	3579	1001	1750	3577		1395	1580				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	1286	410	277	1695	3	413	0	274	1	0	0
RTOR Reduction (vph)	0	0	106	0	0	0	0	189	0	0	0	0
Lane Group Flow (vph)	1	1286	304	277	1698	0	413	85	0	0	1	0
Confl. Peds. (#/hr)	29		331	331		29			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4	9	3	8	10		5			2	
Permitted Phases			4					5		2		
Actuated Green, G (s)	1.0	56.4	54.4	23.4	78.8		42.2	42.2			42.2	
Effective Green, g (s)	2.0	57.4	56.4	24.4	79.8		43.2	43.2			43.2	
Actuated g/C Ratio	0.01	0.41	0.40	0.17	0.57		0.31	0.31			0.31	
Clearance Time (s)	6.0		6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	25	1467	403	305	2038		430	487			244	
v/s Ratio Prot	0.00	c0.36	0.14	c0.16	c0.47			0.05				
v/s Ratio Perm			0.16				c0.30				0.00	
v/c Ratio	0.04	0.88	0.75	0.91	0.83		0.96	0.17			0.00	
Uniform Delay, d1	68.1	38.0	35.8	56.7	24.6		47.6	35.4			33.5	
Progression Factor	1.03	0.72	0.71	1.26	1.07		1.00	1.00			1.00	
Incremental Delay, d2	0.5	4.6	5.7	21.6	2.1		33.2	0.2			0.0	
Delay (s)	70.6	32.1	31.3	93.2	28.6		80.8	35.5			33.5	
Level of Service	E	C	C	F	C		F	D			C	
Approach Delay (s)	31.9				37.6		62.7				33.5	
Approach LOS	C				D		E				C	

Intersection Summary

HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00						0.77	
Frt					0.993						0.892	
Flt Protected	0.950										0.990	
Satd. Flow (prot)	1750	3579	1842	1842	3546	0	1879	1921	0	0	1341	0
Flt Permitted	0.950										0.930	
Satd. Flow (perm)	1727	3579	1842	1842	3546	0	1879	1921	0	0	1198	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6						109	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↰	↱	↱	↰	↱						
Traffic Volume (vph)	109	1438	1809	31	0						
Future Volume (vph)	109	1438	1809	31	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	12.0	12.0	24.0
Total Split (s)	15.0			44.0	44.0	44.0	11.0	73.0	57.0	12.0	24.0
Total Split (%)	10.7%			31.4%	31.4%	31%	8%	52%	41%	9%	17%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	3.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Max	None	None
Act Effct Green (s)	16.3	119.2	97.9		13.8						
Actuated g/C Ratio	0.12	0.85	0.70		0.10						
v/c Ratio	0.54	0.47	0.77		0.72						
Control Delay	71.7	0.8	11.8		38.4						
Queue Delay	0.0	0.1	0.2		0.0						
Total Delay	71.7	0.8	12.0		38.4						
LOS	E	A	B		D						
Approach Delay		5.8	12.0		38.4						
Approach LOS		A	B		D						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 10.5

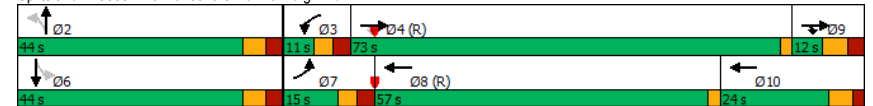
Intersection LOS: B

Intersection Capacity Utilization 102.4%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	SBT
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	109	1438	1900	155
v/c Ratio	0.54	0.47	0.77	0.72
Control Delay	71.7	0.8	11.8	38.4
Queue Delay	0.0	0.1	0.2	0.0
Total Delay	71.7	0.8	12.0	38.4
Queue Length 50th (m)	33.3	4.2	93.8	12.9
Queue Length 95th (m)	m43.6	11.2	m161.4	36.4
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	203	3047	2484	404
Starvation Cap Reductn	0	375	0	0
Spillback Cap Reductn	0	0	106	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.54	0.80	0.39
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	109	1438	0	0	1809	91	0	0	0	31	0	124
Future Volume (vph)	109	1438	0	0	1809	91	0	0	0	31	0	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0							6.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							0.81
Flpb, ped/bikes	1.00	1.00			1.00							0.95
Flt Protected	0.95	1.00			1.00							0.99
Satd. Flow (prot)	1750	3579			3546							1276
Flt Permitted	0.95	1.00			1.00							0.93
Satd. Flow (perm)	1750	3579			3546							1198
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	1438	0	0	1809	91	0	0	0	31	0	124
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	98
Lane Group Flow (vph)	109	1438	0	0	1898	0	0	0	0	0	57	0
Confl. Peds. (#/hr)	26		207	207		26	207		214	214		207
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4	9	3	8	10		2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	15.3	113.2			92.9						12.8	
Effective Green, g (s)	16.3	114.2			93.9						13.8	
Actuated g/C Ratio	0.12	0.82			0.67						0.10	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	203	2919			2378						118	
v/s Ratio Prot	0.06	c0.40			c0.54							
v/s Ratio Perm											c0.05	
v/c Ratio	0.54	0.49			0.80						0.48	
Uniform Delay, d1	58.3	4.0			16.3						59.7	
Progression Factor	1.13	0.13			0.69						1.00	
Incremental Delay, d2	1.8	0.1			0.9						3.1	
Delay (s)	67.5	0.6			12.2						62.8	
Level of Service	E	A			B						E	
Approach Delay (s)		5.3			12.2			0.0			62.8	
Approach LOS		A			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			11.4		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				18.0			
Intersection Capacity Utilization			102.4%		ICU Level of Service				G			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕		↔	↕↕	↕		↕↕			↕↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.98		0.87		0.99				0.97
Frt		0.999				0.850		0.951				0.850
Flt Protected	0.950			0.950				0.982			0.953	
Satd. Flow (prot)	1750	3572	0	1750	3579	1566	0	1759	0	0	1795	1566
Flt Permitted	0.950			0.950				0.899			0.721	
Satd. Flow (perm)	1703	3572	0	1720	3579	1363	0	1602	0	0	1358	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125		4				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↕↕	↕		↕↕		↕↕	↕
Traffic Volume (vph)	402	995	3	1032	244	4	3	255	3	849
Future Volume (vph)	402	995	3	1032	244	4	3	255	3	849
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	46.0	84.0	11.0	49.0	49.0	45.0	45.0	45.0	45.0	46.0
Total Split (%)	32.9%	60.0%	7.9%	35.0%	35.0%	32.1%	32.1%	32.1%	32.1%	32.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	44.0	94.9	6.6	48.1	48.1		31.9	31.9	31.9	76.9
Actuated g/C Ratio	0.31	0.68	0.05	0.34	0.34		0.23	0.23	0.23	0.55
v/c Ratio	0.73	0.42	0.04	0.84	0.44		0.03	0.83	0.99	
Control Delay	32.6	21.4	65.0	50.6	20.7		30.1	73.4	56.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	32.6	21.4	65.0	50.6	20.7		30.1	73.4	56.8	
LOS	C	C	E	D	C		C	E	E	
Approach Delay		24.6		44.9			30.1	60.6		
Approach LOS		C		D			C	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 41.9

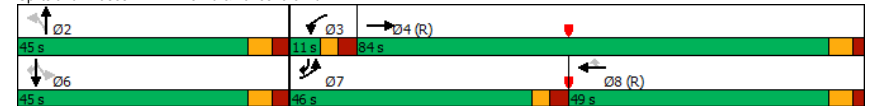
Intersection LOS: D

Intersection Capacity Utilization 103.1%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	402	1005	3	1032	244	11	258	849
v/c Ratio	0.73	0.42	0.04	0.84	0.44	0.03	0.83	0.99
Control Delay	32.6	21.4	65.0	50.6	20.7	30.1	73.4	56.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	21.4	65.0	50.6	20.7	30.1	73.4	56.8
Queue Length 50th (m)	111.6	144.1	0.9	152.6	27.0	1.6	71.6	192.0
Queue Length 95th (m)	158.4	171.4	4.3	#193.3	54.2	6.7	100.7	#320.3
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	549	2421	82	1229	550	449	378	857
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	0.73	0.42	0.04	0.84	0.44	0.02	0.68	0.99

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	402	995	10	3	1032	244	4	3	4	255	3	849
Future Volume (vph)	402	995	10	3	1032	244	4	3	4	255	3	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.87		1.00			1.00	0.99
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1750	3570		1750	3579	1363		1750			1795	1543
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90			0.72	1.00
Satd. Flow (perm)	1750	3570		1750	3579	1363		1602			1358	1543
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	402	995	10	3	1032	244	4	3	4	255	3	849
RTOR Reduction (vph)	0	0	0	0	0	82	0	3	0	0	0	11
Lane Group Flow (vph)	402	1005	0	3	1032	162	0	8	0	0	258	838
Confl. Peds. (#/hr)	24		15	15		24	21					21
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	43.0	89.1		1.0	47.1	47.1		30.9			30.9	73.9
Effective Green, g (s)	44.0	90.1		2.0	48.1	48.1		31.9			31.9	75.9
Actuated g/C Ratio	0.31	0.64		0.01	0.34	0.34		0.23			0.23	0.54
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	550	2297		25	1229	468		365			309	836
v/s Ratio Prot	0.23	0.28		0.00	c0.29						c0.32	
v/s Ratio Perm					0.12		0.00				0.19	0.23
v/c Ratio	0.73	0.44		0.12	0.84	0.35		0.02			0.83	1.00
Uniform Delay, d1	42.7	12.4		68.1	42.4	34.2		41.9			51.5	32.0
Progression Factor	0.57	1.82		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.5	0.5		2.1	7.0	2.0		0.0			17.4	31.8
Delay (s)	28.8	23.1		70.3	49.4	36.3		42.0			68.9	63.9
Level of Service	C	C		E	D	D		D			E	E
Approach Delay (s)		24.7			46.9			42.0			65.1	
Approach LOS		C			D			D			E	

Intersection Summary

HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 2

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998			0.850			0.938	
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Flt Permitted	0.950			0.950			0.950				0.974	
Satd. Flow (perm)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 2

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	5	1925	4	3	1933	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	1925	4	3	1933	20	3	0	3	7	0	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	1925	4	3	1933	20	3	0	3	7	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.67			0.78			0.78	0.78	0.78	0.78	0.78	0.67
vC, conflicting volume	1976			1953			2940	3943	990	2948	3935	1000
vC1, stage 1 conf vol							1961	1961		1972	1972	
vC2, stage 2 conf vol							980	1982		976	1963	
vCu, unblocked vol	1465			1652			1635	2922	412	1645	2912	3
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			96	100	99	92	100	99
cM capacity (veh/h)	299			294			74	79	448	85	81	705
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	1283	646	3	1289	664	3	3	13			
Volume Left	5	0	0	3	0	0	3	0	7			
Volume Right	0	0	4	0	0	20	0	3	6			
cSH	299	1700	1700	294	1700	1700	74	448	144			
Volume to Capacity	0.02	0.75	0.38	0.01	0.76	0.39	0.04	0.01	0.09			
Queue Length 95th (m)	0.4	0.0	0.0	0.2	0.0	0.0	1.0	0.2	2.3			
Control Delay (s)	17.3	0.0	0.0	17.4	0.0	0.0	55.9	13.1	32.6			
Lane LOS	C			C			F	B	D			
Approach Delay (s)	0.0			0.0			34.5		32.6			
Approach LOS							D		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				68.1%			ICU Level of Service		C			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	2052	1785	47	0	13
Future Volume (Veh/h)	0	2052	1785	47	0	13
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2052	1785	47	0	13
Pedestrians		2			30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.68				0.79	0.68
vC, conflicting volume	1862				2864	948
vC1, stage 1 conf vol					1838	
vC2, stage 2 conf vol					1026	
vCu, unblocked vol	1318				1563	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	343				142	715
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	1026	1026	1190	642	13
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	47	13
cSH	1700	1700	1700	1700	1700	715
Volume to Capacity	0.00	0.60	0.60	0.70	0.38	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.1
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			67.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1857	1941	20	0	6
Future Volume (Veh/h)	0	1857	1941	20	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1857	1941	20	0	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.68				0.83	0.68
vC, conflicting volume	1984				2904	1004
vC1, stage 1 conf vol					1974	
vC2, stage 2 conf vol					930	
vCu, unblocked vol	1495				1164	44
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	295				114	673
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	928	928	1294	667	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	6	
cSH	1700	1700	1700	1700	673	
Volume to Capacity	0.55	0.55	0.76	0.39	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 2

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 2

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	0	1868	0	0	1929	48	0	0	0	0	0	31
Future Volume (Veh/h)	0	1868	0	0	1929	48	0	0	0	0	0	31
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1868	0	0	1929	48	0	0	0	0	0	31
Pedestrians		1			1			135			28	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			12			2	
Right turn flare (veh)												
Median type	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT	TWLT
Median storage (veh)	2	2	2	2	2	2	2	2	2	2	2	2
Upstream signal (m)	306	65	65	65	65	65	65	65	65	65	65	65
pX, platoon unblocked	0.70			0.65			0.80	0.80	0.65	0.80	0.80	0.70
vC, conflicting volume	2005			2003			3000	4008	1070	2916	3984	1018
vC1, stage 1 conf vol							2003	2003		1981	1981	
vC2, stage 2 conf vol							996	2005		935	2003	
vCu, unblocked vol	1574			1462			1299	2561	22	1194	2531	160
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	95
cM capacity (veh/h)	282			263			77	80	605	80	82	583
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1245	623	0	1286	691	0	31				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	48	0	31				
cSH	1700	1700	1700	1700	1700	1700	1700	583				
Volume to Capacity	0.00	0.73	0.37	0.00	0.76	0.41	0.00	0.05				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	11.5				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				64.9%			ICU Level of Service				C	
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1769	2005	24	0	9
Future Volume (Veh/h)	0	1769	2005	24	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1769	2005	24	0	9
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.48				0.68	0.48
vC, conflicting volume	2052				2926	1040
vC1, stage 1 conf vol					2040	
vC2, stage 2 conf vol					886	
vCu, unblocked vol	1035				231	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	316				578	513
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	884	884	1337	692	9	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	24	9	
cSH	1700	1700	1700	1700	513	
Volume to Capacity	0.52	0.52	0.79	0.41	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	12.1	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			66.2%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1782	2014	8	0	4
Future Volume (Veh/h)	0	1782	2014	8	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1782	2014	8	0	4
Pedestrians		3	3		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.47				0.68	0.47
vC, conflicting volume	2049				2939	1041
vC1, stage 1 conf vol					2045	
vC2, stage 2 conf vol					894	
vCu, unblocked vol	994				166	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	321				580	501
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	891	891	1343	679	4	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	8	4	
cSH	1700	1700	1700	1700	501	
Volume to Capacity	0.52	0.52	0.79	0.40	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	12.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			65.9%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1687	2081	20	0	10
Future Volume (Veh/h)	0	1687	2081	20	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1687	2081	20	0	10
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.59				0.75	0.59
vC, conflicting volume	2128				2966	1082
vC1, stage 1 conf vol					2118	
vC2, stage 2 conf vol					848	
vCu, unblocked vol	1523				1003	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	251				100	624
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	844	844	1387	714	10	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	10	
cSH	1700	1700	1700	1700	624	
Volume to Capacity	0.50	0.50	0.82	0.42	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			69.7%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1479	1903	17	0	11
Future Volume (Veh/h)	0	1479	1903	17	0	11
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1479	1903	17	0	11
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.87	
vC, conflicting volume	1946				2682	991
vC1, stage 1 conf vol					1938	
vC2, stage 2 conf vol					744	
vCu, unblocked vol	1946				2633	991
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	291				93	239
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	740	740	1269	651	11	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	17	11	
cSH	1700	1700	1700	1700	239	
Volume to Capacity	0.43	0.43	0.75	0.38	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	20.8	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		20.8	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			63.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 2
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1432	1882	51	0	32
Future Volume (Veh/h)	0	1432	1882	51	0	32
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1432	1882	51	0	32
Pedestrians		6	6		24	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.73				0.73	0.73
vC, conflicting volume	1957				2654	996
vC1, stage 1 conf vol					1932	
vC2, stage 2 conf vol					722	
vCu, unblocked vol	1573				2526	259
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	297				110	528
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	716	716	1255	678	32	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	51	32	
cSH	1700	1700	1700	1700	528	
Volume to Capacity	0.42	0.42	0.74	0.40	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.5	
Control Delay (s)	0.0	0.0	0.0	0.0	12.3	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			64.3%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 2
Afternoon Peak Hour

	←	↖	↑	↗	→	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 2
Afternoon Peak Hour

	←	↖	↑	↗	→	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	27	74	52	0	124	63
Future Volume (Veh/h)	27	74	52	0	124	63
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	27	74	52	0	124	63
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	363	52			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	363	52			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	93			92	
cM capacity (veh/h)	585	1016			1554	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	27	74	52	124	63	
Volume Left	27	0	0	124	0	
Volume Right	0	74	0	0	0	
cSH	585	1016	1700	1554	1700	
Volume to Capacity	0.05	0.07	0.03	0.08	0.04	
Queue Length 95th (m)	1.2	1.9	0.0	2.1	0.0	
Control Delay (s)	11.4	8.8	0.0	7.5	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.5		0.0	5.0		
Approach LOS	A					
Intersection Summary						
Average Delay			5.6			
Intersection Capacity Utilization			23.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.860			0.952			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1584	0	1750	1754	0	1750	1816	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1584	0	1750	1754	0	1750	1816	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 2
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	18	0	0	30	10	134	10	256	120	96	403	42
Future Volume (Veh/h)	18	0	0	30	10	134	10	256	120	96	403	42
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	0	0	30	10	134	10	256	120	96	403	42
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	1.00	1.00		1.00	1.00	1.00				1.00		
vC, conflicting volume	1031	1012	424	931	973	316	445			376		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1030	1011	424	930	972	314	445			374		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	100	87	96	82	99			92		
cM capacity (veh/h)	155	218	630	230	229	725	1115			1182		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	18	0	30	144	10	376	96	445				
Volume Left	18	0	30	0	10	0	96	0				
Volume Right	0	0	0	134	0	120	0	42				
cSH	155	1700	230	631	1115	1700	1182	1700				
Volume to Capacity	0.12	0.00	0.13	0.23	0.01	0.22	0.08	0.26				
Queue Length 95th (m)	3.1	0.0	3.5	7.0	0.2	0.0	2.1	0.0				
Control Delay (s)	31.2	0.0	23.0	12.4	8.3	0.0	8.3	0.0				
Lane LOS	D	A	C	B	A		A					
Approach Delay (s)	31.2		14.2		0.2		1.5					
Approach LOS	D		B									
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			52.0%			ICU Level of Service				A		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 2
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.985	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1814	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 2
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	220	30	89	467	608	77
Future Volume (Veh/h)	220	30	89	467	608	77
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	220	30	89	467	608	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1292	646	685			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1292	646	685			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	94	90			
cM capacity (veh/h)	162	471	908			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	220	30	89	467	685	
Volume Left	220	0	89	0	0	
Volume Right	0	30	0	0	77	
cSH	162	471	908	1700	1700	
Volume to Capacity	1.35	0.06	0.10	0.27	0.40	
Queue Length 95th (m)	107.0	1.6	2.6	0.0	0.0	
Control Delay (s)	248.0	13.2	9.4	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	219.8		1.5		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			37.4			
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 3A

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔		↔	↔↔	↔		↔↔		↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	1.00		0.99		0.95		0.99				0.96
Frt						0.850		0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1713	0	1662	1705	1566
Flt Permitted	0.950			0.298						0.950	0.727	
Satd. Flow (perm)	3338	3578	0	546	3579	1493	0	1741	0	1662	1301	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						215		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 3A

Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔	↔		↔↔	↔	↔↔	↔
Traffic Volume (vph)	462	958	1	902	870	1	0	789	3	507
Future Volume (vph)	462	958	1	902	870	1	0	789	3	507
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	30.0	79.0	49.0	49.0	50.0	11.0	11.0	50.0	61.0	30.0
Total Split (%)	21.4%	56.4%	35.0%	35.0%	35.7%	7.9%	7.9%	35.7%	43.6%	21.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	23.6	74.0	45.4	45.4	99.2	6.0	53.8	53.8	79.6	79.6
Actuated g/C Ratio	0.17	0.53	0.32	0.32	0.71		0.04	0.38	0.38	0.57
v/c Ratio	0.81	0.51	0.01	0.78	0.76		0.01	0.62	0.61	0.58
Control Delay	67.6	22.5	48.0	46.2	13.2		0.0	40.9	40.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	67.6	22.5	48.0	46.2	13.2		0.0	40.9	40.4	18.7
LOS	E	C	D	D	B		A	D	D	B
Approach Delay		37.1		30.0					32.1	
Approach LOS		D		C					C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 32.8

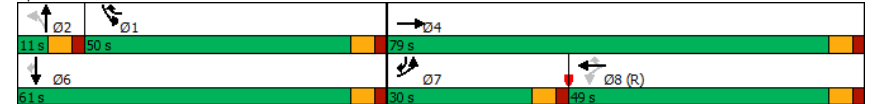
Intersection LOS: C

Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	462	960	1	902	870	2	394	398	507
v/c Ratio	0.81	0.51	0.01	0.78	0.76	0.01	0.62	0.61	0.58
Control Delay	67.6	22.5	48.0	46.2	13.2	0.0	40.9	40.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	22.5	48.0	46.2	13.2	0.0	40.9	40.4	18.7
Queue Length 50th (m)	66.8	92.1	0.1	106.6	125.9	0.0	94.3	94.7	76.0
Queue Length 95th (m)	86.8	110.9	m0.2	134.0	215.5	0.0	150.6	150.7	106.7
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	606	1891	176	1159	1148	186	638	655	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.51	0.01	0.78	0.76	0.01	0.62	0.61	0.57

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	958	2	1	902	870	1	0	1	789	3	507
Future Volume (vph)	462	958	2	1	902	870	1	0	1	789	3	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	0.97
Flpt, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	3395	3577		1741	3579	1534		1698		1662	1705	1517
Flt Permitted	0.95	1.00		0.30	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	3395	3577		546	3579	1534		1741		1662	1301	1517
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	462	958	2	1	902	870	1	0	1	789	3	507
RTOR Reduction (vph)	0	0	0	0	0	70	0	2	0	0	0	9
Lane Group Flow (vph)	462	960	0	1	902	800	0	0	0	394	398	498
Confl. Peds. (#/hr)	27		9	9		27	24					24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	22.6	68.2		39.6	39.6	92.4		1.0		52.8	59.8	82.4
Effective Green, g (s)	23.6	69.2		40.6	40.6	94.4		2.0		53.8	60.8	84.4
Actuated g/C Ratio	0.17	0.49		0.29	0.29	0.67		0.01		0.38	0.43	0.60
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	572	1768		158	1037	1034		24		638	720	968
v/s Ratio Prot	c0.14	0.27			c0.25	c0.30				0.24	0.21	0.09
v/s Ratio Perm				0.00		0.22		0.00			c0.03	0.24
v/c Ratio	0.81	0.54		0.01	0.87	0.77		0.00		0.62	0.55	0.51
Uniform Delay, d1	56.0	24.5		35.4	47.2	15.5		68.0		34.8	29.5	16.0
Progression Factor	1.00	1.00		1.44	0.98	1.16		1.00		1.00	1.00	1.00
Incremental Delay, d2	8.2	1.2		0.1	7.4	2.7		0.0		1.8	0.9	0.5
Delay (s)	64.2	25.7		50.8	53.5	20.7		68.0		36.6	30.4	16.5
Level of Service	E	C		D	D	C		E		D	C	B
Approach Delay (s)	38.2			37.4			68.0			26.8		
Approach LOS	D			D			E			C		

Intersection Summary

HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.94	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1578	0	1750	1565	0
Flt Permitted	0.950			0.950			0.755			0.475		
Satd. Flow (perm)	1743	3579	1527	1749	3579	1470	1376	1578	0	873	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		90			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	53	1632	55	12	1744	9	132	0	38	0
Future Volume (vph)	53	1632	55	12	1744	9	132	0	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	15.0	87.0	87.0	11.0	83.0	83.0	42.0	42.0	42.0	42.0
Total Split (%)	10.7%	62.1%	62.1%	7.9%	59.3%	59.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	10.6	103.8	103.8	7.6	96.0	96.0	19.8	19.8	19.8	19.8
Actuated g/C Ratio	0.08	0.74	0.74	0.05	0.69	0.69	0.14	0.14	0.14	0.14
v/c Ratio	0.40	0.62	0.05	0.13	0.71	0.01	0.68	0.52	0.31	0.01
Control Delay	66.7	14.8	3.0	63.1	17.9	0.0	73.8	29.6	58.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	14.8	3.0	63.1	17.9	0.0	73.8	29.6	58.4	0.0
LOS	E	B	A	E	B	A	E	C	E	A
Approach Delay		16.0			18.2			49.8		52.8
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 19.9

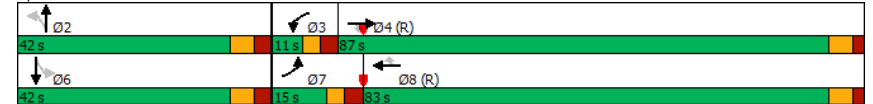
Intersection LOS: B

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1632	55	12	1744	9	132	157	38	4
v/c Ratio	0.40	0.62	0.05	0.13	0.71	0.01	0.68	0.52	0.31	0.01
Control Delay	66.7	14.8	3.0	63.1	17.9	0.0	73.8	29.6	58.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	14.8	3.0	63.1	17.9	0.0	73.8	29.6	58.4	0.0
Queue Length 50th (m)	13.4	114.8	0.6	3.5	147.3	0.0	37.1	17.8	10.1	0.0
Queue Length 95th (m)	m26.1	263.4	m5.6	m5.7	197.8	m0.0	57.2	39.3	20.9	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	142	2652	1152	94	2454	1032	353	472	224	461
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.62	0.05	0.13	0.71	0.01	0.37	0.33	0.17	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	53	1632	55	12	1744	9	132	0	157	38	0	4
Future Volume (vph)	53	1632	55	12	1744	9	132	0	157	38	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.94	1.00	0.99		1.00	0.98	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1527	1750	3579	1470	1731	1578		1747	1565	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00		0.48	1.00	
Satd. Flow (perm)	1750	3579	1527	1750	3579	1470	1376	1578		874	1565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1632	55	12	1744	9	132	0	157	38	0	4
RTOR Reduction (vph)	0	0	16	0	0	3	0	77	0	0	3	0
Lane Group Flow (vph)	53	1632	39	12	1744	6	132	80	0	38	1	0
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.4	99.1	99.1	3.1	93.8	93.8	18.8	18.8		18.8	18.8	
Effective Green, g (s)	9.4	100.1	100.1	4.1	94.8	94.8	19.8	19.8		19.8	19.8	
Actuated g/C Ratio	0.07	0.71	0.71	0.03	0.68	0.68	0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	2558	1091	51	2423	995	194	223		123	221	
v/s Ratio Prot	c0.03	c0.46		0.01	c0.49			0.05			0.00	
v/s Ratio Perm			0.03			0.00	c0.10			0.04		
v/c Ratio	0.45	0.64	0.04	0.24	0.72	0.01	0.68	0.36		0.31	0.00	
Uniform Delay, d1	62.8	10.5	5.8	66.4	14.2	7.3	57.1	54.3		54.0	51.6	
Progression Factor	0.97	1.28	3.20	0.97	1.03	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	1.0	0.1	1.8	1.5	0.0	9.4	1.0		1.4	0.0	
Delay (s)	63.4	14.5	18.7	66.4	16.2	7.3	66.5	55.3		55.4	51.6	
Level of Service	E	B	B	E	B	A	E	E		E	D	
Approach Delay (s)		16.1			16.4			60.4			55.0	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			20.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			82.2%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.44	0.94		0.75	0.68
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	689	1654	3579	1313	1072
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		37			3	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	→	↖	↗	←	↖	↗	Ø2
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø2
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑	
Traffic Volume (vph)	1658	153	39	1469	300	303	
Future Volume (vph)	1658	153	39	1469	300	303	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov	
Protected Phases	4		3	8		3	2
Permitted Phases		4			5	2	
Detector Phase	4	4	3	8	5	3	
Switch Phase							
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	12.0	24.0	12.0	12.0	34.0
Total Split (s)	74.0	74.0	22.0	96.0	44.0	22.0	44.0
Total Split (%)	52.9%	52.9%	15.7%	68.6%	31.4%	15.7%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	6.0	6.0	
Lag/Lead	Lag	Lag	Lead			Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	C-Min	C-Min	None	C-Min	None	None	None
Act Effct Green (s)	77.3	77.3	10.4	93.7	35.3	45.7	
Actuated g/C Ratio	0.55	0.55	0.07	0.67	0.25	0.33	
v/c Ratio	0.84	0.39	0.30	0.61	0.91	0.78	
Control Delay	21.1	11.2	72.2	9.6	81.0	52.8	
Queue Delay	0.5	0.0	0.0	0.1	0.0	0.0	
Total Delay	21.5	11.2	72.2	9.7	81.0	52.8	
LOS	C	B	E	A	F	D	
Approach Delay	20.6			11.3	66.8		
Approach LOS	C			B	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 24.2

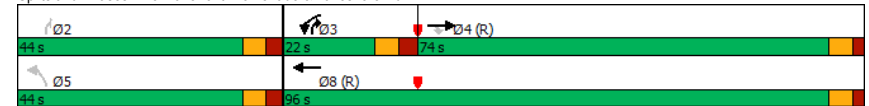
Intersection LOS: C

Intersection Capacity Utilization 81.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1658	153	39	1469	300	303
v/c Ratio	0.84	0.39	0.30	0.61	0.91	0.78
Control Delay	21.1	11.2	72.2	9.6	81.0	52.8
Queue Delay	0.5	0.0	0.0	0.1	0.0	0.0
Total Delay	21.5	11.2	72.2	9.7	81.0	52.8
Queue Length 50th (m)	239.5	15.3	12.1	46.6	83.0	66.5
Queue Length 95th (m)	#217.1	21.3	m16.5	81.8	#134.1	88.6
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1976	396	200	2394	356	451
Starvation Cap Reductn	0	0	0	124	0	0
Spillback Cap Reductn	74	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.39	0.20	0.65	0.84	0.67

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1658	153	39	1469	300	303
Future Volume (vph)	1658	153	39	1469	300	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.44	1.00	1.00	1.00	0.76
Fipb, ped/bikes	1.00	1.00	1.00	1.00	0.73	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	689	1750	3579	1279	1185
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	689	1750	3579	1279	1185
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1658	153	39	1469	300	303
RTOR Reduction (vph)	0	17	0	0	0	2
Lane Group Flow (vph)	1658	136	39	1469	300	301
Confl. Peds. (#/hr)	194	194		226	223	
Turn Type	NA	Perm	Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases		4			5	2
Actuated Green, G (s)	76.3	76.3	9.4	92.7	34.3	43.7
Effective Green, g (s)	77.3	77.3	10.4	93.7	35.3	45.7
Actuated g/C Ratio	0.55	0.55	0.07	0.67	0.25	0.33
Clearance Time (s)	6.0	6.0	7.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1976	380	130	2395	322	437
v/s Ratio Prot	c0.46		0.02	0.41		c0.05
v/s Ratio Perm		0.20			c0.23	0.20
v/c Ratio	0.84	0.36	0.30	0.61	0.93	0.69
Uniform Delay, d1	26.2	17.5	61.4	13.0	51.2	41.0
Progression Factor	0.61	0.58	1.13	0.64	1.00	1.00
Incremental Delay, d2	3.7	2.2	1.0	0.9	32.8	4.5
Delay (s)	19.7	12.3	70.1	9.2	83.9	45.5
Level of Service	B	B	E	A	F	D
Approach Delay (s)	19.1			10.8	64.6	
Approach LOS	B			B	E	

Intersection Summary

HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.48	0.95	0.98		0.99	0.97		0.99	0.98	
Frt			0.850		0.984			0.875			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3468	0	1750	1605	0	1750	1652	0
Flt Permitted	0.950			0.950			0.577			0.181		
Satd. Flow (perm)	1717	3579	747	1658	3468	0	1054	1605	0	330	1652	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		12		138			88		
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	197	1638	146	71	1195	188	54	123	31
Future Volume (vph)	197	1638	146	71	1195	188	54	123	31
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	45.0	9.0	45.0
Total Split (s)	23.0	72.0	72.0	14.0	63.0	9.0	45.0	9.0	45.0
Total Split (%)	16.4%	51.4%	51.4%	10.0%	45.0%	6.4%	32.1%	6.4%	32.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	22.0	78.1	78.1	11.8	67.9	35.1	23.2	33.0	22.1
Actuated g/C Ratio	0.16	0.56	0.56	0.08	0.48	0.25	0.17	0.24	0.16
v/c Ratio	0.72	0.82	0.31	0.48	0.80	0.61	0.85	0.78	0.36
Control Delay	69.0	25.8	9.1	74.2	34.3	52.6	51.1	74.4	17.8
Queue Delay	0.0	0.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	69.0	26.4	9.1	74.2	34.5	52.6	51.1	74.4	17.8
LOS	E	C	A	E	C	D	D	E	B
Approach Delay		29.4			36.5		51.7		46.6
Approach LOS		C			D		D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 35.6

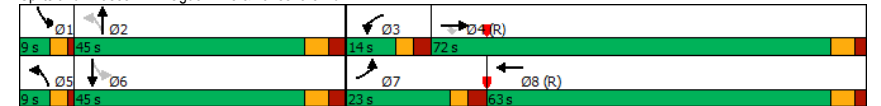
Intersection LOS: D

Intersection Capacity Utilization 98.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	1638	146	71	1342	188	322	123	119
v/c Ratio	0.72	0.82	0.31	0.48	0.80	0.61	0.85	0.78	0.36
Control Delay	69.0	25.8	9.1	74.2	34.3	52.6	51.1	74.4	17.8
Queue Delay	0.0	0.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	69.0	26.4	9.1	74.2	34.5	52.6	51.1	74.4	17.8
Queue Length 50th (m)	57.5	108.2	4.6	20.1	208.1	46.4	54.5	29.1	7.8
Queue Length 95th (m)	m74.2	#287.5	m13.6	m36.1	#246.1	62.9	84.2	#53.0	24.0
Internal Link Dist (m)		78.3			60.4		118.3		222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	278	1997	465	149	1687	309	546	158	523
Starvation Cap Reductn	0	56	0	0	49	0	0	0	0
Spillback Cap Reductn	0	116	0	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.87	0.31	0.48	0.82	0.61	0.59	0.78	0.23

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	197	1638	146	71	1195	147	188	54	268	123	31	88
Future Volume (vph)	197	1638	146	71	1195	147	188	54	268	123	31	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.48	1.00	0.98		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.88		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	747	1750	3466		1742	1605		1748	1652	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.58	1.00		0.18	1.00	
Satd. Flow (perm)	1750	3579	747	1750	3466		1058	1605		333	1652	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	1638	146	71	1195	147	188	54	268	123	31	88
RTOR Reduction (vph)	0	0	48	0	6	0	0	115	0	0	74	0
Lane Group Flow (vph)	197	1638	98	71	1336	0	188	207	0	123	45	0
Confl. Peds. (#/hr)	26		121	121		26	9		18	18		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	21.0	77.0	77.0	10.8	66.8		30.4	22.3		28.0	21.1	
Effective Green, g (s)	22.0	78.0	78.0	11.8	67.8		32.4	23.3		30.0	22.1	
Actuated g/C Ratio	0.16	0.56	0.56	0.08	0.48		0.23	0.17		0.21	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	275	1994	416	147	1678		289	267		151	260	
v/s Ratio Prot	c0.11	c0.46		0.04	0.39		c0.04	c0.13		c0.05	0.03	
v/s Ratio Perm			0.13				0.11			0.13		
v/c Ratio	0.72	0.82	0.23	0.48	0.80		0.65	0.78		0.81	0.17	
Uniform Delay, d1	56.0	25.3	15.8	61.2	30.3		47.6	55.8		48.5	51.0	
Progression Factor	1.07	0.86	1.32	1.06	0.97		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	2.3	0.8	2.2	3.6		5.2	13.1		27.4	0.3	
Delay (s)	65.1	24.2	21.6	66.9	32.9		52.7	69.0		76.0	51.4	
Level of Service	E	C	C	E	C		D	E		E	D	
Approach Delay (s)		28.1			34.6			63.0			63.9	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay 36.7 HCM 2000 Level of Service D

HCM 2000 Volume to Capacity ratio 0.82

Actuated Cycle Length (s) 140.0 Sum of lost time (s) 19.0

Intersection Capacity Utilization 98.6% ICU Level of Service F

Analysis Period (min) 15

c Critical Lane Group

Lanes and Geometrics

5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.41	0.95	1.00			0.99			1.00	
Frt			0.850					0.850			0.961	
Flt Protected				0.950			0.950				0.966	
Satd. Flow (prot)	1842	3579	1566	1750	3578	0	1750	1580	0	0	1748	0
Flt Permitted				0.950			0.753				0.840	
Satd. Flow (perm)	1842	3579	649	1660	3578	0	1387	1580	0	0	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117					150			132	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	→	↗	↖	←	↘	↑	↙	↓				
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10
Lane Configurations	↕↕	↗	↖	↕↕	↖	↕		↕↕				
Traffic Volume (vph)	1742	269	100	1102	326	0	5	0				
Future Volume (vph)	1742	269	100	1102	326	0	5	0				
Turn Type	NA	custom	Prot	NA	Perm	NA	Perm	NA				
Protected Phases	4 9	9	3	8 10		5		2	4	7	8	10
Permitted Phases		4			5		2					
Detector Phase	4 9	9	3	8 10	5	5	2	2				
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		11.0	11.0		44.0	44.0	44.0	44.0	24.0	11.0	20.0	24.0
Total Split (s)		25.0	21.0		53.0	53.0	53.0	53.0	41.0	11.0	52.0	24.0
Total Split (%)		17.9%	15.0%		37.9%	37.9%	37.9%	37.9%	29%	8%	37%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0		-1.0				
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0				
Lead/Lag		Lead							Lag	Lead	Lag	
Lead-Lag Optimize?		Yes							Yes	Yes	Yes	
Recall Mode		None	None		None	None	None	None	C-Max	None	C-Max	None
Act Effect Green (s)	77.4	67.4	13.6	96.0	39.0	39.0		39.0				
Actuated g/C Ratio	0.55	0.48	0.10	0.69	0.28	0.28		0.28				
v/c Ratio	0.88	0.53	0.59	0.45	0.85	0.56		0.01				
Control Delay	20.8	10.6	81.7	11.3	66.8	24.0		0.0				
Queue Delay	0.9	0.0	0.0	0.1	0.0	0.0		0.0				
Total Delay	21.6	10.6	81.7	11.3	66.8	24.0		0.0				
LOS	C	B	F	B	E	C		A				
Approach Delay	20.2			17.2		46.1						
Approach LOS	C			B		D						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

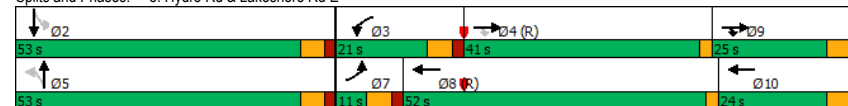
Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.4

Intersection Capacity Utilization 88.8%

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



5: Hydro Rd & Lakeshore Rd E

Morning Peak Hour

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1742	269	100	1104	326	305	7
v/c Ratio	0.88	0.53	0.59	0.45	0.85	0.56	0.01
Control Delay	20.8	10.6	81.7	11.3	66.8	24.0	0.0
Queue Delay	0.9	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	21.6	10.6	81.7	11.3	66.8	24.0	0.0
Queue Length 50th (m)	170.5	10.0	30.9	42.5	89.5	37.9	0.0
Queue Length 95th (m)	#325.3	m17.6	51.0	93.1	118.6	63.1	0.0
Internal Link Dist (m)	114.1			171.3		111.3	167.6
Turn Bay Length (m)		50.0	25.0		60.0		
Base Capacity (vph)	1979	504	201	2454	475	640	607
Starvation Cap Reductn	72	0	0	194	0	0	0
Spillback Cap Reductn	0	0	0	238	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.53	0.50	0.50	0.69	0.48	0.01

Intersection Summary

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

Queue shown is maximum after two cycles.

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

5: Hydro Rd & Lakeshore Rd E

Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1742	269	100	1102	2	326	0	305	5	0	2
Future Volume (vph)	0	1742	269	100	1102	2	326	0	305	5	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		0.0	5.0	5.0	0.0		5.0	5.0			5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.58	1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)		3579	905	1750	3577		1750	1580			1748	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00			0.84	
Satd. Flow (perm)		3579	905	1750	3577		1387	1580			1520	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1742	269	100	1102	2	326	0	305	5	0	2
RTOR Reduction (vph)	0	0	57	0	0	0	0	108	0	0	5	0
Lane Group Flow (vph)	0	1742	212	100	1104	0	326	197	0	0	2	0
Conf. Peds. (#/hr)	16		228	228		16			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9		3	8 10			5			2	
Permitted Phases			4				5			2		
Actuated Green, G (s)		71.4	69.4	12.6	90.0		38.0	38.0			38.0	
Effective Green, g (s)		73.4	71.4	13.6	92.0		39.0	39.0			39.0	
Actuated g/C Ratio		0.52	0.51	0.10	0.66		0.28	0.28			0.28	
Clearance Time (s)			6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)			3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		1876	461	170	2350		386	440			423	
v/s Ratio Prot		c0.49	0.07	c0.06	0.31			0.12				
v/s Ratio Perm			0.17				c0.23				0.00	
v/c Ratio		0.93	0.46	0.59	0.47		0.84	0.45			0.00	
Uniform Delay, d1		30.9	21.9	60.5	11.9		47.6	41.6			36.5	
Progression Factor		0.54	0.48	1.15	0.98		1.00	1.00			1.00	
Incremental Delay, d2		5.5	0.4	4.5	0.1		15.4	0.7			0.0	
Delay (s)		22.2	11.0	74.2	11.8		63.1	42.3			36.5	
Level of Service		C	B	E	B		E	D			D	
Approach Delay (s)		20.7			17.0			53.1			36.5	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C

HCM 2000 Volume to Capacity ratio	0.87

From 2000 Volume to Capacity Ratio	0.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0

Intersection Capacity Utilization	88.8%	ICU Level of Service

Analysis Period (min)

c Critical Lane Group

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.45	0.95	1.00		0.86	0.84			0.89	
Frt			0.850		0.992			0.869			0.958	
Flt Protected	0.950			0.950			0.950				0.979	
Satd. Flow (prot)	1750	3579	1566	1750	3537	0	1750	1374	0	0	1668	0
Flt Permitted	0.950			0.950			0.659				0.687	
Satd. Flow (perm)	1732	3579	709	1658	3537	0	1046	1374	0	0	1106	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123		6			83			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔			
Traffic Volume (vph)	114	1672	270	121	1017	163	21	45	28			
Future Volume (vph)	114	1672	270	121	1017	163	21	45	28			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9	9	3	8 10		2		6	4	8	10
Permitted Phases			4			2		6				
Detector Phase	7	4 9	9	3	8 10	2	2	6	6			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		8.0	8.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	24.0	11.0
Total Split (s)	23.0		11.0	11.0		44.0	44.0	44.0	44.0	74.0	62.0	11.0
Total Split (%)	16.4%		7.9%	7.9%		31.4%	31.4%	31.4%	31.4%	53%	44%	8%
Yellow Time (s)	3.0		4.0	3.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	3.0		2.0	3.0		3.0	3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		6.0	6.0		6.0			
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	14.9	83.0	74.0	17.6	85.7	27.4	27.4		27.4			
Actuated g/C Ratio	0.11	0.59	0.53	0.13	0.61	0.20	0.20		0.20			
v/c Ratio	0.61	0.79	0.54	0.55	0.50	0.80	0.50		0.46			
Control Delay	75.9	11.7	8.0	66.5	14.5	79.3	28.7		46.8			
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0		0.0			
Total Delay	75.9	12.3	8.0	66.5	14.5	79.3	28.7		46.8			
LOS	E	B	A	E	B	E	C		D			
Approach Delay		15.3			19.8		53.6		46.8			
Approach LOS		B			B		D		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 21.1

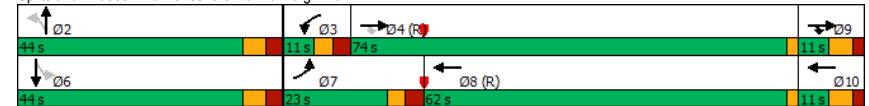
Intersection LOS: C

Intersection Capacity Utilization 113.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	114	1672	270	121	1078	163	169	106
v/c Ratio	0.61	0.79	0.54	0.55	0.50	0.80	0.50	0.46
Control Delay	75.9	11.7	8.0	66.5	14.5	79.3	28.7	46.8
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	12.3	8.0	66.5	14.5	79.3	28.7	46.8
Queue Length 50th (m)	34.8	50.5	8.3	35.4	63.0	45.7	22.0	23.3
Queue Length 95th (m)	m42.6	67.2	m14.8	#94.1	86.4	67.3	42.0	39.5
Internal Link Dist (m)		171.3			98.1		99.3	859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	225	2120	503	220	2167	283	433	311
Starvation Cap Reductn	0	162	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.85	0.54	0.55	0.50	0.58	0.39	0.34

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	114	1672	270	121	1017	61	163	21	148	45	28	33
Future Volume (vph)	114	1672	270	121	1017	61	163	21	148	45	28	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		6.0	6.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Fltpb, ped/bikes	1.00	1.00	0.53	1.00	1.00		1.00	0.84				
Fltpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.86	1.00				
Fltpb, ped/bikes	1.00	1.00	0.85	1.00	0.99		1.00	0.87				
Fltpb, ped/bikes	0.95	1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1750	3579	837	1750	3535		1512	1373				
Fltpb, ped/bikes	0.95	1.00	1.00	0.95	1.00		0.66	1.00				
Satd. Flow (perm)	1750	3579	837	1750	3535		1049	1373				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	1672	270	121	1017	61	163	21	148	45	28	33
RTOR Reduction (vph)	0	0	54	0	2	0	0	67	0	0	13	0
Lane Group Flow (vph)	114	1672	216	121	1076	0	163	102	0	0	93	0
Confl. Peds. (#/hr)	10		148	148		10	150		155	155		150
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	13.9	78.0	76.0	16.6	80.7		26.4	26.4			26.4	
Effective Green, g (s)	14.9	79.0	78.0	17.6	81.7		27.4	27.4			27.4	
Actuated g/C Ratio	0.11	0.56	0.56	0.13	0.58		0.20	0.20			0.20	
Clearance Time (s)	6.0		6.0	6.0			7.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	186	2019	466	220	2062		205	268			216	
v/s Ratio Prot	0.07	c0.47	0.04	c0.07	c0.30			0.07				
v/s Ratio Perm			0.22				c0.16				0.08	
v/c Ratio	0.61	0.83	0.46	0.55	0.52		0.80	0.38			0.43	
Uniform Delay, d1	59.8	24.9	18.5	57.5	17.5		53.6	48.9			49.5	
Progression Factor	1.14	0.45	0.54	0.98	0.82		1.00	1.00			1.00	
Incremental Delay, d2	3.3	1.6	0.4	2.6	0.2		18.8	0.9			1.4	
Delay (s)	71.6	12.9	10.4	58.9	14.5		72.5	49.8			50.8	
Level of Service	E	B	B	E	B		E	D			D	
Approach Delay (s)		15.8			19.0			61.0			50.8	
Approach LOS		B			B			E			D	

Intersection Summary

HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99		0.93		1.00			1.00	0.99
Frt		0.999				0.850						0.850
Flt Protected	0.950			0.950			0.950				0.953	
Satd. Flow (prot)	1750	3573	0	1750	3579	1566	0	1789	0	0	1795	1566
Flt Permitted	0.950			0.950			0.500				0.728	
Satd. Flow (perm)	1710	3573	0	1739	3579	1448	0	940	0	0	1370	1544
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125						23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	601	1170	1	651	222	1	0	158	1	496
Future Volume (vph)	601	1170	1	651	222	1	0	158	1	496
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	59.0	84.0	11.0	36.0	36.0	45.0	45.0	45.0	45.0	59.0
Total Split (%)	42.1%	60.0%	7.9%	25.7%	25.7%	32.1%	32.1%	32.1%	32.1%	42.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0		6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	54.5	104.0	6.7	46.9	46.9	22.6	22.6	22.6	22.6	78.1
Actuated g/C Ratio	0.39	0.74	0.05	0.34	0.34		0.16		0.16	0.56
v/c Ratio	0.88	0.44	0.01	0.54	0.39		0.01		0.72	0.56
Control Delay	33.4	15.1	64.0	42.4	20.1		45.0		73.0	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	33.4	15.1	64.0	42.4	20.1		45.0		73.0	18.1
LOS	C	B	E	D	C		D		E	B
Approach Delay		21.3		36.8			45.0		31.4	
Approach LOS		C		D			D		C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 27.4

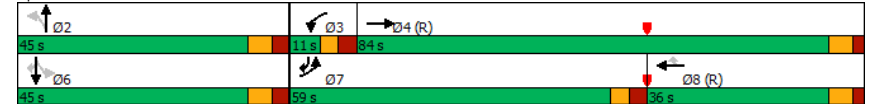
Intersection LOS: C

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	601	1181	1	651	222	1	159	496
v/c Ratio	0.88	0.44	0.01	0.54	0.39	0.01	0.72	0.56
Control Delay	33.4	15.1	64.0	42.4	20.1	45.0	73.0	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	15.1	64.0	42.4	20.1	45.0	73.0	18.1
Queue Length 50th (m)	149.8	116.3	0.3	82.1	20.5	0.3	44.5	76.2
Queue Length 95th (m)	214.8	206.2	2.3	119.7	52.2	1.9	66.0	75.2
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	711	2654	83	1199	568	261	381	906
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	0.85	0.44	0.01	0.54	0.39	0.00	0.42	0.55
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	601	1170	11	1	651	222	1	0	0	158	1	496
Future Volume (vph)	601	1170	11	1	651	222	1	0	0	158	1	496
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.93		1.00			1.00	1.00
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.50			0.73	1.00
Satd. Flow (prot)	1750	3572		1750	3579	1448		1786			1792	1559
Satd. Flow (perm)	1750	3572		1750	3579	1448		940			1369	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	601	1170	11	1	651	222	1	0	0	158	1	496
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	0	0	0	10
Lane Group Flow (vph)	601	1181	0	1	651	139	0	1	0	0	159	486
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	53.5	98.2		1.2	45.9	45.9		21.6			21.6	75.1
Effective Green, g (s)	54.5	99.2		2.2	46.9	46.9		22.6			22.6	77.1
Actuated g/C Ratio	0.39	0.71		0.02	0.33	0.33		0.16			0.16	0.55
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	681	2531		27	1198	485		151			220	858
v/s Ratio Prot	c0.34	0.33		0.00	c0.18						c0.12	0.09
v/s Ratio Perm					0.10		0.00					
v/c Ratio	0.88	0.47		0.04	0.54	0.29		0.01			0.72	0.57
Uniform Delay, d1	39.8	8.9		67.9	37.8	34.2		49.3			55.7	20.5
Progression Factor	0.57	1.78		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	9.1	0.4		0.6	1.8	1.5		0.0			11.1	0.9
Delay (s)	31.7	16.2		68.4	39.6	35.7		49.3			66.8	21.4
Level of Service	C	B		E	D	D		D			E	C
Approach Delay (s)		21.5			38.7			49.3			32.4	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		28.2			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.72										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		74.4%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3A

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3A

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	6	1692	2	8	1861	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1692	2	8	1861	2	0	0	8	5	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1692	2	8	1861	2	0	0	8	5	0	5
Pedestrians										5		8
Lane Width (m)										3.6		3.7
Walking Speed (m/s)										1.2		1.2
Percent Blockage										0		1
Right turn flare (veh)												
Median type	TWTL			TWTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.66			0.81			0.75	0.75	0.81	0.75	0.75	0.66
vC, conflicting volume	1871			1699			2662	3597	852	2752	3597	940
vC1, stage 1 conf vol							1710	1710		1886	1886	
vC2, stage 2 conf vol							952	1887		866	1711	
vCu, unblocked vol	1285			1403			1439	2684	363	1559	2684	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	98	95	100	99
cM capacity (veh/h)	350			392			114	104	514	105	104	709
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	1128	566	8	1241	622	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	350	1700	1700	392	1700	1700	1700	514	182			
Volume to Capacity	0.02	0.66	0.33	0.02	0.73	0.37	0.04	0.02	0.05			
Queue Length 95th (m)	0.4	0.0	0.0	0.5	0.0	0.0	0.0	0.4	1.4			
Control Delay (s)	15.5	0.0	0.0	14.4	0.0	0.0	0.0	12.1	25.9			
Lane LOS	C			B			A	B	D			
Approach Delay (s)	0.1			0.1			12.1		25.9			
Approach LOS							B		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				63.3%			ICU Level of Service		B			
Analysis Period (min)				15								

Lanes and Geometrics

22: Lakeshore Rd E & Greaves Ave

Scenario 3A

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

22: Lakeshore Rd E & Greaves Ave

Scenario 3A

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	1731	1863	14	0	7
Future Volume (Veh/h)	0	1731	1863	14	0	7
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1731	1863	14	0	7
Pedestrians		2	6		12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.67				0.76	0.67
vC, conflicting volume	1889				2754	952
vC1, stage 1 conf vol					1882	
vC2, stage 2 conf vol					872	
vCu, unblocked vol	1347				1589	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	338				135	721
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	866	866	1242	635	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	14	7
cSH	1700	1700	1700	1700	1700	721
Volume to Capacity	0.00	0.51	0.51	0.73	0.37	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.0
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			62.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

23: Lakeshore Rd E & Westmount Ave

Scenario 3A

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

23: Lakeshore Rd E & Westmount Ave

Scenario 3A

Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1821	1750	2	0	5
Future Volume (Veh/h)	0	1821	1750	2	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1821	1750	2	0	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.75				0.87	0.75
vC, conflicting volume	1760				2670	884
vC1, stage 1 conf vol					1759	
vC2, stage 2 conf vol					910	
vCu, unblocked vol	1354				1346	192
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	377				150	612
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	910	910	1167	585	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	2	5	
cSH	1700	1700	1700	1700	612	
Volume to Capacity	0.54	0.54	0.69	0.34	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	10.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			58.4%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 3A

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3571	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3571	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 3A

Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	0	1828	0	0	1720	29	0	0	0	0	0	34
Future Volume (Veh/h)	0	1828	0	0	1720	29	0	0	0	0	0	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1828	0	0	1720	29	0	0	0	0	0	34
Pedestrians		1			2			87			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			7			1	
Right turn flare (veh)												
Median type		TW	LT		TW	LT						
Median storage (veh)		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.76			0.72			0.84	0.84	0.72	0.84	0.84	0.76
vC, conflicting volume	1761			1915			2810	3676	1003	2662	3662	888
vC1, stage 1 conf vol							1915	1915		1746	1746	
vC2, stage 2 conf vol							895	1761		916	1915	
vCu, unblocked vol	1378			1503			1513	2541	245	1338	2523	234
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	373			296			85	98	510	115	99	580
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1219	609	0	1147	602	0	34				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	29	0	34				
cSH	1700	1700	1700	1700	1700	1700	1700	580				
Volume to Capacity	0.00	0.72	0.36	0.00	0.67	0.35	0.00	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	11.6				
Approach LOS							A	B				
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			61.2%		ICU Level of Service					B		
Analysis Period (min)			15									

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1975	1504	7	0	6
Future Volume (Veh/h)	0	1975	1504	7	0	6
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1975	1504	7	0	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		212			
pX, platoon unblocked	0.69				0.76	0.69
vC, conflicting volume	1522				2508	768
vC1, stage 1 conf vol					1518	
vC2, stage 2 conf vol					990	
vCu, unblocked vol	857				509	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	533				282	740
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	988	988	1003	508	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	7	6	
cSH	1700	1700	1700	1700	740	
Volume to Capacity	0.58	0.58	0.59	0.30	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.9	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.9	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			57.9%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3A

Morning Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3A

Morning Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1970	1378	1	0	5
Future Volume (Veh/h)	0	1970	1378	1	0	5
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1970	1378	1	0	5
Pedestrians		3	3		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	170		102			
pX, platoon unblocked	0.68				0.75	0.68
vC, conflicting volume	1394				2382	708
vC1, stage 1 conf vol					1394	
vC2, stage 2 conf vol					988	
vCu, unblocked vol	647				266	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	630				566	729
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	985	985	919	460	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	1	5	
cSH	1700	1700	1700	1700	729	
Volume to Capacity	0.58	0.58	0.54	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	10.0	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		10.0	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			57.8%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	2022	1356	14	0	8
Future Volume (Veh/h)	0	2022	1356	14	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2022	1356	14	0	8
Pedestrians		4	4		20	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.85				0.69	0.85
vC, conflicting volume	1390				2398	709
vC1, stage 1 conf vol					1383	
vC2, stage 2 conf vol					1015	
vCu, unblocked vol	1097				1127	292
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	526				231	584
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	1011	1011	904	466	8	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	14	8	
cSH	1700	1700	1700	1700	584	
Volume to Capacity	0.59	0.59	0.53	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			59.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1809	1175	15	0	20
Future Volume (Veh/h)	0	1809	1175	15	0	20
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1809	1175	15	0	20
Pedestrians		5	5		30	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	122					
pX, platoon unblocked					0.60	
vC, conflicting volume	1220				2122	630
vC1, stage 1 conf vol					1212	
vC2, stage 2 conf vol					910	
vCu, unblocked vol	1220				1546	630
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	554				220	412
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	904	904	783	407	20	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	15	20	
cSH	1700	1700	1700	1700	412	
Volume to Capacity	0.53	0.53	0.46	0.24	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	14.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		14.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 3A
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1751	1157	31	0	38
Future Volume (Veh/h)	0	1751	1157	31	0	38
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1751	1157	31	0	38
Pedestrians		6	6		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	1203				2069	615
vC1, stage 1 conf vol					1188	
vC2, stage 2 conf vol					882	
vCu, unblocked vol	894				1909	204
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	636				233	673
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	876	876	771	417	38	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	31	38	
cSH	1700	1700	1700	1700	673	
Volume to Capacity	0.52	0.52	0.45	0.25	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.7	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.7	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			59.7%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 3A
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 3A
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	9	198	91	0	37	30
Future Volume (Veh/h)	9	198	91	0	37	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	198	91	0	37	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	195	91			91	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	91			91	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	80			98	
cM capacity (veh/h)	774	967			1504	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	9	198	91	37	30	
Volume Left	9	0	0	37	0	
Volume Right	0	198	0	0	0	
cSH	774	967	1700	1504	1700	
Volume to Capacity	0.01	0.20	0.05	0.02	0.02	
Queue Length 95th (m)	0.3	6.1	0.0	0.6	0.0	
Control Delay (s)	9.7	9.7	0.0	7.5	0.0	
Lane LOS	A	A		A		
Approach Delay (s)	9.7		0.0	4.1		
Approach LOS	A					
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization			23.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.853			0.968			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1571	0	1750	1783	0	1750	1787	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1571	0	1750	1783	0	1750	1787	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 3A
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	62	0	0	12	5	221	5	319	85	45	117	29
Future Volume (Veh/h)	62	0	0	12	5	221	5	319	85	45	117	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	62	0	0	12	5	221	5	319	85	45	117	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	1.00	1.00		1.00	1.00	1.00				1.00		
vC, conflicting volume	774	636	132	578	608	362	146			404		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	771	632	132	575	604	357	146			399		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	70	100	100	97	99	68	100			96		
cM capacity (veh/h)	205	379	918	414	393	685	1436			1154		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	62	0	12	226	5	404	45	146				
Volume Left	62	0	12	0	5	0	45	0				
Volume Right	0	0	0	221	0	85	0	29				
cSH	205	1700	414	673	1436	1700	1154	1700				
Volume to Capacity	0.30	0.00	0.03	0.34	0.00	0.24	0.04	0.09				
Queue Length 95th (m)	9.7	0.0	0.7	11.8	0.1	0.0	1.0	0.0				
Control Delay (s)	30.0	0.0	14.0	13.0	7.5	0.0	8.2	0.0				
Lane LOS	D	A	B	B	A		A					
Approach Delay (s)	30.0		13.1		0.1		1.9					
Approach LOS	D		B									
Intersection Summary												
Average Delay			6.0									
Intersection Capacity Utilization			56.0%			ICU Level of Service				B		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 3A
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1820	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1820	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 3A
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	239	12	70	392	335	33
Future Volume (Veh/h)	239	12	70	392	335	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	239	12	70	392	335	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	884	352	368			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	884	352	368			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	20	98	94			
cM capacity (veh/h)	298	692	1191			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	239	12	70	392	368	
Volume Left	239	0	70	0	0	
Volume Right	0	12	0	0	33	
cSH	298	692	1191	1700	1700	
Volume to Capacity	0.80	0.02	0.06	0.23	0.22	
Queue Length 95th (m)	51.9	0.4	1.5	0.0	0.0	
Control Delay (s)	52.4	10.3	8.2	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	50.4		1.2		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			12.2			
Intersection Capacity Utilization			46.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.97	1.00		0.99		0.92	0.99		1.00	1.00		0.94
Frt						0.850		0.966				0.850
Flt Protected	0.950			0.950			0.988		0.950	0.950		
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1795	0	1662	1700	1566
Flt Permitted	0.950			0.227			0.833		0.950	0.750		
Satd. Flow (perm)	3310	3578	0	413	3579	1434	0	1506	0	1659	1338	1474
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						183		3				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰		↰↱	↰	↰↱	↰
Traffic Volume (vph)	406	1134	1	1144	704	3	6	1075	0	536
Future Volume (vph)	406	1134	1	1144	704	3	6	1075	0	536
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	25.0	80.0	55.0	55.0	49.0	11.0	11.0	49.0	60.0	25.0
Total Split (%)	17.9%	57.1%	39.3%	39.3%	35.0%	7.9%	7.9%	35.0%	42.9%	17.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	19.6	75.0	50.4	50.4	101.0	6.0	50.6	50.6	74.6	
Actuated g/C Ratio	0.14	0.54	0.36	0.36	0.72		0.04	0.36	0.36	0.53
v/c Ratio	0.85	0.59	0.01	0.89	0.62		0.18	0.90	0.88	0.66
Control Delay	76.2	23.7	42.0	50.3	4.7		59.9	61.3	58.8	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	76.2	23.7	42.0	50.3	4.7		59.9	61.3	58.8	24.2
LOS	E	C	D	D	A		E	E	E	C
Approach Delay		37.5		32.9			59.9		48.1	
Approach LOS		D		C			E		D	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 39.3

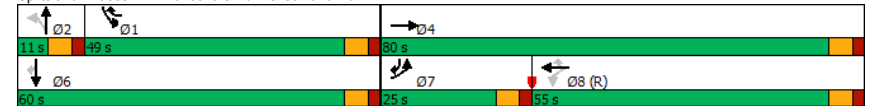
Intersection LOS: D

Intersection Capacity Utilization 92.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	1135	1	1144	704	12	537	538	536
v/c Ratio	0.85	0.59	0.01	0.89	0.62	0.18	0.90	0.88	0.66
Control Delay	76.2	23.7	42.0	50.3	4.7	59.9	61.3	58.8	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	23.7	42.0	50.3	4.7	59.9	61.3	58.8	24.2
Queue Length 50th (m)	60.2	114.7	0.1	158.0	0.0	2.6	146.6	145.4	93.1
Queue Length 95th (m)	#85.5	136.5	m0.4	#183.3	111.6	9.9	#252.0	#248.8	130.3
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	485	1916	148	1288	1133	67	600	614	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.59	0.01	0.89	0.62	0.18	0.90	0.88	0.66

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	406	1134	1	1	1144	704	3	6	3	1075	0	536
Future Volume (vph)	406	1134	1	1	1144	704	3	6	3	1075	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Frlp, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	3395	3578		1731	3579	1503		1779		1662	1697	1497
Flt Permitted	0.95	1.00		0.23	1.00	1.00		0.83		0.95	0.75	1.00
Satd. Flow (perm)	3395	3578		413	3579	1503		1501		1662	1339	1497
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	1134	1	1	1144	704	3	6	3	1075	0	536
RTOR Reduction (vph)	0	0	0	0	0	56	0	3	0	0	0	10
Lane Group Flow (vph)	406	1135	0	1	1144	648	0	9	0	537	538	526
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	18.6	70.4		45.8	45.8	95.4		2.0		49.6	57.6	76.2
Effective Green, g (s)	19.6	71.4		46.8	46.8	97.4		3.0		50.6	58.6	78.2
Actuated g/C Ratio	0.14	0.51		0.33	0.33	0.70		0.02		0.36	0.42	0.56
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	475	1824		138	1196	1045		32		600	689	889
v/s Ratio Prot	c0.12	0.32			c0.32	0.22				c0.32	0.28	0.08
v/s Ratio Perm				0.00		0.21		0.01			c0.04	0.27
v/c Ratio	0.85	0.62		0.01	0.96	0.62		0.28		0.90	0.78	0.59
Uniform Delay, d1	58.8	24.6		31.1	45.6	11.4		67.4		42.2	35.2	20.4
Progression Factor	1.00	1.00		1.42	1.01	0.56		1.00		1.00	1.00	1.00
Incremental Delay, d2	14.0	1.6		0.1	14.2	0.9		4.8		15.8	5.7	1.1
Delay (s)	72.8	26.2		44.2	60.4	7.2		72.3		58.0	40.9	21.4
Level of Service	E	C		D	E	A		E		E	D	C
Approach Delay (s)	38.5			40.1			72.3			40.1		
Approach LOS	D			D			E			D		

Intersection Summary

HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.88	0.99		0.85	0.99				0.97	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1601	0	1750	1559	0
Flt Permitted	0.950			0.950			0.754			0.735		
Satd. Flow (perm)	1734	3579	1384	1738	3579	1334	1369	1601	0	1354	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		99			99	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	84	1939	131	72	1906	86	68	0	30	0
Future Volume (vph)	84	1939	131	72	1906	86	68	0	30	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	15.0	85.0	85.0	13.0	83.0	83.0	42.0	42.0	42.0	42.0
Total Split (%)	10.7%	60.7%	60.7%	9.3%	59.3%	59.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	13.3	100.9	100.9	12.5	100.1	100.1	13.6	13.6	13.6	13.6
Actuated g/C Ratio	0.10	0.72	0.72	0.09	0.72	0.72	0.10	0.10	0.10	0.10
v/c Ratio	0.51	0.75	0.13	0.46	0.74	0.09	0.52	0.14	0.23	0.03
Control Delay	69.4	18.7	4.4	64.7	13.6	2.7	72.8	1.2	60.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.4	18.7	4.4	64.7	13.6	2.7	72.8	1.2	60.9	0.2
LOS	E	B	A	E	B	A	E	A	E	A
Approach Delay		19.8			14.9			48.9		50.8
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.4

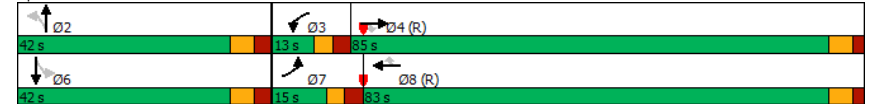
Intersection LOS: B

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	1939	131	72	1906	86	68	34	30	6
v/c Ratio	0.51	0.75	0.13	0.46	0.74	0.09	0.52	0.14	0.23	0.03
Control Delay	69.4	18.7	4.4	64.7	13.6	2.7	72.8	1.2	60.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.4	18.7	4.4	64.7	13.6	2.7	72.8	1.2	60.9	0.2
Queue Length 50th (m)	22.4	268.6	8.0	21.1	100.7	1.4	19.2	0.0	8.2	0.0
Queue Length 95th (m)	m31.0	316.9	m15.4	m28.8	210.6	m2.6	34.6	0.0	18.3	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	169	2579	1019	156	2559	976	352	485	348	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.75	0.13	0.46	0.74	0.09	0.19	0.07	0.09	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	84	1939	131	72	1906	86	68	0	34	30	0	6
Future Volume (vph)	84	1939	131	72	1906	86	68	0	34	30	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Flt ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1384	1750	3579	1334	1725	1601		1750	1559	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.73	1.00	
Satd. Flow (perm)	1750	3579	1384	1750	3579	1334	1369	1601		1354	1559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1939	131	72	1906	86	68	0	34	30	0	6
RTOR Reduction (vph)	0	0	23	0	0	23	0	31	0	0	5	0
Lane Group Flow (vph)	84	1939	108	72	1906	63	68	3	0	30	1	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2				6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	12.3	98.5	98.5	11.5	97.7	97.7	11.0	11.0		11.0	11.0	
Effective Green, g (s)	13.3	99.5	99.5	12.5	98.7	98.7	12.0	12.0		12.0	12.0	
Actuated g/C Ratio	0.10	0.71	0.71	0.09	0.71	0.71	0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	2543	983	156	2523	940	117	137		116	133	
v/s Ratio Prot	c0.05	c0.54		0.04	0.53		0.00				0.00	
v/s Ratio Perm			0.08			0.05	c0.05			0.02		
v/c Ratio	0.51	0.76	0.11	0.46	0.76	0.07	0.58	0.02		0.26	0.00	
Uniform Delay, d1	60.2	12.8	6.4	60.6	13.0	6.4	61.6	58.6		59.8	58.5	
Progression Factor	1.04	1.19	1.11	0.98	0.82	1.09	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.6	0.2	1.4	1.4	0.1	7.2	0.1		1.2	0.0	
Delay (s)	64.2	16.8	7.2	60.5	12.2	7.0	68.7	58.7		61.0	58.5	
Level of Service	E	B	A	E	B	A	E	E		E	E	
Approach Delay (s)		18.1			13.6		65.4				60.6	
Approach LOS		B			B		E				E	
Intersection Summary												
HCM 2000 Control Delay			17.4							B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			140.0							16.0		
Intersection Capacity Utilization			86.3%							E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.34	0.94		0.66	0.64
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	1750	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	528	1638	3579	1162	1005
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		59			1	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	→	↖	↗	←	↖	↗	Ø2	Ø4	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑				
Traffic Volume (vph)	1673	282	271	1924	226	142				
Future Volume (vph)	1673	282	271	1924	226	142				
Turn Type	NA	custom	Prot	NA	Perm	pm+ov				
Protected Phases	4 9	9	3	8 10		3	2	4	8	10
Permitted Phases		4			5	2				
Detector Phase	4 9	9	3	8 10	5	3				
Switch Phase										
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	8.0	8.0	5.0
Minimum Split (s)		11.0	12.0		12.0	12.0	34.0	24.0	24.0	24.0
Total Split (s)		20.0	31.0		39.0	31.0	39.0	50.0	77.0	24.0
Total Split (%)		14.3%	22.1%		27.9%	22.1%	28%	36%	55%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)		2.0	3.0		3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0				
Total Lost Time (s)		5.0	6.0		6.0	6.0				
Lead/Lag		Lead			Lead			Lag		
Lead-Lag Optimize?		Yes			Yes			Yes		
Recall Mode		None	None		None	None	None	C-Min	C-Min	None
Act Effct Green (s)	72.0	63.0	24.4	102.4	30.6	55.0				
Actuated g/C Ratio	0.51	0.45	0.17	0.73	0.22	0.39				
v/c Ratio	0.91	0.74	0.89	0.73	0.89	0.29				
Control Delay	26.1	28.5	84.4	10.3	87.4	27.0				
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0				
Total Delay	26.1	28.5	84.4	10.5	87.4	27.0				
LOS	C	C	F	B	F	C				
Approach Delay	26.4			19.6	64.1					
Approach LOS	C			B	E					

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 26.2

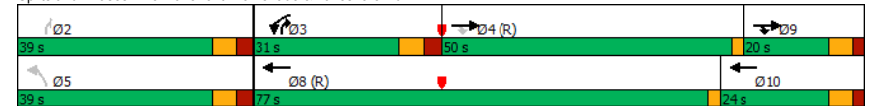
Intersection LOS: C

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1673	282	271	1924	226	142
v/c Ratio	0.91	0.74	0.89	0.73	0.89	0.29
Control Delay	26.1	28.5	84.4	10.3	87.4	27.0
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	26.1	28.5	84.4	10.5	87.4	27.0
Queue Length 50th (m)	70.6	9.6	84.2	84.2	63.0	24.1
Queue Length 95th (m)	#292.0	m#45.9	m90.4	m103.3	#108.3	39.0
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1840	381	315	2618	273	501
Starvation Cap Reductn	0	0	0	191	0	0
Spillback Cap Reductn	2	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.74	0.86	0.79	0.83	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1673	282	271	1924	226	142
Future Volume (vph)	1673	282	271	1924	226	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	1.0	5.0	6.0	1.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.49	1.00	1.00	1.00	0.80
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.66	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	760	1750	3579	1149	1254
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	760	1750	3579	1149	1254
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1673	282	271	1924	226	142
RTOR Reduction (vph)	0	31	0	0	0	1
Lane Group Flow (vph)	1673	251	271	1924	226	141
Confl. Peds. (#/hr)	329	329		376	363	
Turn Type	NA	custom	Prot	NA	Perm	pm+ov
Protected Phases	4 9	9	3	8 10		3
Permitted Phases		4			5	2
Actuated Green, G (s)	67.0	65.0	23.4	97.4	29.6	53.0
Effective Green, g (s)	68.0	67.0	24.4	98.4	30.6	55.0
Actuated g/C Ratio	0.49	0.48	0.17	0.70	0.22	0.39
Clearance Time (s)		6.0	7.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1738	363	305	2515	251	546
v/s Ratio Prot	c0.47	0.07	c0.15	0.54		0.05
v/s Ratio Perm		0.26			c0.20	0.07
v/c Ratio	0.96	0.69	0.89	0.77	0.90	0.26
Uniform Delay, d1	34.8	28.5	56.5	13.4	53.2	28.7
Progression Factor	0.62	0.65	1.25	0.82	1.00	1.00
Incremental Delay, d2	10.4	3.8	12.3	0.6	31.8	0.3
Delay (s)	31.8	22.4	83.0	11.5	85.1	29.0
Level of Service	C	C	F	B	F	C
Approach Delay (s)	30.4			20.3	63.4	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay 28.2 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio 0.95
Actuated Cycle Length (s) 140.0 Sum of lost time (s) 19.0
Intersection Capacity Utilization 87.1% ICU Level of Service E
Analysis Period (min) 15
c Critical Lane Group

Lanes and Geometrics

4: Ogden Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.39	0.92	0.99		0.99	0.98		0.99	0.99	
Frt			0.850		0.991			0.904			0.912	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3513	0	1750	1671	0	1750	1704	0
Flt Permitted	0.950			0.950			0.537			0.458		
Satd. Flow (perm)	1737	3579	610	1602	3513	0	983	1671	0	833	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78		6			64			50	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings

4: Ogden Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	
Traffic Volume (vph)	102	1412	291	240	1948	175	72	146	68	
Future Volume (vph)	102	1412	291	240	1948	175	72	146	68	
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA	
Protected Phases	7	4 9		3	8		2		6	4
Permitted Phases			4			2		6		
Detector Phase	7	4 9	9	3	8	2	2	6	6	
Switch Phase										
Minimum Initial (s)	5.0		5.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0		11.0	11.0	24.0	45.0	45.0	45.0	45.0	24.0
Total Split (s)	29.0		20.0	29.0	66.0	45.0	45.0	45.0	45.0	46.0
Total Split (%)	20.7%		14.3%	20.7%	47.1%	32.1%	32.1%	32.1%	32.1%	33%
Yellow Time (s)	3.0		4.0	3.0	2.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	3.0		2.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0	5.0	1.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead			Lead	Lag					Lag
Lead-Lag Optimize?	Yes			Yes	Yes					Yes
Recall Mode	None		None	None	C-Min	None	None	None	None	C-Min
Act Effect Green (s)	14.5	75.0	66.0	24.0	84.6	28.9	28.9	28.9	28.9	
Actuated g/C Ratio	0.10	0.54	0.47	0.17	0.60	0.21	0.21	0.21	0.21	
v/c Ratio	0.56	0.74	0.67	0.80	0.98	0.86	0.51	0.85	0.42	
Control Delay	61.8	22.2	26.3	81.3	28.5	88.2	36.1	90.3	34.6	
Queue Delay	0.0	0.1	0.0	0.0	7.0	0.0	0.0	0.0	0.0	
Total Delay	61.8	22.3	26.3	81.3	35.5	88.2	36.1	90.3	34.6	
LOS	E	C	C	F	D	F	D	F	C	
Approach Delay		25.2			40.2		60.3		60.9	
Approach LOS		C			D		E		E	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 37.5

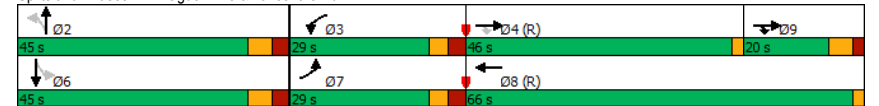
Intersection LOS: D

Intersection Capacity Utilization 109.9%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1412	291	240	2076	175	201	146	164
v/c Ratio	0.56	0.74	0.67	0.80	0.98	0.86	0.51	0.85	0.42
Control Delay	61.8	22.2	26.3	81.3	28.5	88.2	36.1	90.3	34.6
Queue Delay	0.0	0.1	0.0	0.0	7.0	0.0	0.0	0.0	0.0
Total Delay	61.8	22.3	26.3	81.3	35.5	88.2	36.1	90.3	34.6
Queue Length 50th (m)	31.6	83.7	28.2	70.5	224.3	49.5	35.3	41.2	28.6
Queue Length 95th (m)	m36.3	101.7	m34.8	m90.6	#422.8	73.5	55.8	63.9	47.1
Internal Link Dist (m)		78.3		60.4		118.3		222.5	
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	300	1917	434	318	2124	273	511	232	510
Starvation Cap Reductn	0	45	0	0	70	0	0	0	0
Spillback Cap Reductn	0	55	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.76	0.67	0.75	1.01	0.64	0.39	0.63	0.32

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	102	1412	291	240	1948	128	175	72	129	146	68	96
Future Volume (vph)	102	1412	291	240	1948	128	175	72	129	146	68	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.52	1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	821	1750	3512		1738	1670		1729	1704	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.54	1.00		0.46	1.00	
Satd. Flow (perm)	1750	3579	821	1750	3512		983	1670		833	1704	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	102	1412	291	240	1948	128	175	72	129	146	68	96
RTOR Reduction (vph)	0	0	39	0	2	0	0	51	0	0	40	0
Lane Group Flow (vph)	102	1412	252	240	2074	0	175	150	0	146	124	0
Confl. Peds. (#/hr)	29		217	217		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4	9	3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	13.5	70.1	68.1	23.0	83.6		27.9	27.9		27.9	27.9	
Effective Green, g (s)	14.5	71.1	70.1	24.0	84.6		28.9	28.9		28.9	28.9	
Actuated g/C Ratio	0.10	0.51	0.50	0.17	0.60		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0		6.0	6.0	2.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	181	1817	411	300	2122		202	344		171	351	
v/s Ratio Prot	0.06	0.39	0.07	c0.14	c0.59			0.09			0.07	
v/s Ratio Perm			0.24				c0.18			0.18		
v/c Ratio	0.56	0.78	0.61	0.80	0.98		0.87	0.44		0.85	0.35	
Uniform Delay, d1	59.7	28.0	25.2	55.7	26.8		53.7	48.5		53.5	47.6	
Progression Factor	0.94	0.77	0.87	1.27	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.1	1.4	8.2	10.0		29.9	0.9		31.6	0.6	
Delay (s)	58.3	22.5	23.2	78.8	25.9		83.6	49.3		85.1	48.2	
Level of Service	E	C	C	E	C		F	D		F	D	
Approach Delay (s)		24.7			31.4			65.3			65.6	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.30	0.90	1.00			0.99			1.00	
Frt			0.850					0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1750	3579	1566	1750	3578	0	1750	1580	0	0	1789	0
Flt Permitted	0.950			0.950			0.757				0.582	
Satd. Flow (perm)	1737	3579	471	1569	3578	0	1394	1580	0	0	1095	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143					285				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔			
Traffic Volume (vph)	1	1370	351	239	1981	340	0	1	0			
Future Volume (vph)	1	1370	351	239	1981	340	0	1	0			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9	9	3	8 10		5		2	4	8	10
Permitted Phases			4			5		2				
Detector Phase	7	4 9	9	3	8 10	5	5	2	2			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	20.0	24.0
Total Split (s)	11.0		27.0	30.0		49.0	49.0	49.0	49.0	34.0	56.0	24.0
Total Split (%)	7.9%		19.3%	21.4%		35.0%	35.0%	35.0%	35.0%	24%	40%	17%
Yellow Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	2.0		2.0	2.0		2.0	2.0	2.0	2.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0		5.0			
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Max	C-Max	None
Act Effect Green (s)	6.3	66.9	57.9	23.2	93.0	38.8	38.8		38.8			
Actuated g/C Ratio	0.04	0.48	0.41	0.17	0.66	0.28	0.28		0.28			
v/c Ratio	0.01	0.80	0.78	0.82	0.84	0.88	0.24		0.00			
Control Delay	65.0	31.2	33.5	82.1	16.5	71.6	0.9		33.0			
Queue Delay	0.0	0.3	0.0	0.0	5.0	0.0	0.0		0.0			
Total Delay	65.0	31.5	33.5	82.1	21.5	71.6	0.9		33.0			
LOS	E	C	C	F	C	E	A		C			
Approach Delay		32.0			28.0		49.5		33.0			
Approach LOS		C			C		D		C			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 31.9

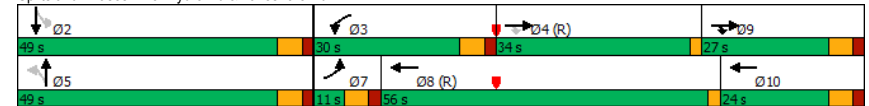
Intersection LOS: C

Intersection Capacity Utilization 88.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1	1370	351	239	1984	340	155	1
v/c Ratio	0.01	0.80	0.78	0.82	0.84	0.88	0.24	0.00
Control Delay	65.0	31.2	33.5	82.1	16.5	71.6	0.9	33.0
Queue Delay	0.0	0.3	0.0	0.0	5.0	0.0	0.0	0.0
Total Delay	65.0	31.5	33.5	82.1	21.5	71.6	0.9	33.0
Queue Length 50th (m)	0.3	159.8	32.0	73.8	97.5	93.2	0.0	0.2
Queue Length 95th (m)	m0.2	155.7	#82.6	m78.3	m#138.1	#136.6	0.0	1.6
Internal Link Dist (m)		114.1			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	79	1710	450	314	2375	438	692	344
Starvation Cap Reductn	0	64	0	0	156	0	0	0
Spillback Cap Reductn	0	15	0	0	333	0	1	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.83	0.78	0.76	0.97	0.78	0.22	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	1	1370	351	239	1981	3	340	0	155	1	0	0
Future Volume (vph)	1	1370	351	239	1981	3	340	0	155	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		5.0	5.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Flt Protected	1.00	1.00	0.60	1.00	1.00		1.00	0.99				
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00				
Satd. Flow (prot)	1750	3579	946	1750	3577		1750	1580				
Satd. Flow (perm)	1750	3579	946	1750	3577		1395	1580				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	1370	351	239	1981	3	340	0	155	1	0	0
RTOR Reduction (vph)	0	0	80	0	0	0	0	112	0	0	0	0
Lane Group Flow (vph)	1	1370	271	239	1984	0	340	43	0	0	1	0
Confl. Peds. (#/hr)	29		377	377		29			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4	9	3	8	10		5			2	
Permitted Phases			4					5		2		
Actuated Green, G (s)	1.0	62.0	60.0	22.2	83.2		37.8	37.8			37.8	
Effective Green, g (s)	2.0	63.0	62.0	23.2	84.2		38.8	38.8			38.8	
Actuated g/C Ratio	0.01	0.45	0.44	0.17	0.60		0.28	0.28			0.28	
Clearance Time (s)	6.0		6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	25	1610	418	290	2151		386	437			303	
v/s Ratio Prot	0.00	0.38	0.12	c0.14	c0.55			0.03				
v/s Ratio Perm			0.16				c0.24				0.00	
v/c Ratio	0.04	0.85	0.65	0.82	0.92		0.88	0.10			0.00	
Uniform Delay, d1	68.1	34.3	30.5	56.4	25.0		48.4	37.6			36.6	
Progression Factor	1.01	0.86	0.90	1.29	0.74		1.00	1.00			1.00	
Incremental Delay, d2	0.5	3.3	2.5	7.1	3.0		20.2	0.1			0.0	
Delay (s)	69.1	32.8	29.9	80.1	21.5		68.6	37.7			36.6	
Level of Service	E	C	C	F	C		E	D			D	
Approach Delay (s)		32.2			27.8			58.9			36.6	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			33.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			88.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.37	0.89	1.00		0.83	0.76			0.77	
Frt			0.850		0.993			0.875			0.902	
Flt Protected	0.950			0.950			0.950				0.992	
Satd. Flow (prot)	1750	3579	1566	1750	3545	0	1750	1257	0	0	1347	0
Flt Permitted	0.950			0.950			0.301				0.886	
Satd. Flow (perm)	1728	3579	580	1561	3545	0	463	1257	0	0	1165	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		4			184			95	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔	
Traffic Volume (vph)	79	1262	163	114	1775	271	44	31	20	
Future Volume (vph)	79	1262	163	114	1775	271	44	31	20	
Turn Type	Prot	NA	custom	Prot	NA	pm+pt	NA	Perm	NA	
Protected Phases	7	4 9		3	8	5	2		6	4
Permitted Phases			4			2		6		
Detector Phase	7	4 9	9	3	8	5	2	6	6	
Switch Phase										
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0		12.0	11.0	12.0	11.0	44.0	44.0	44.0	24.0
Total Split (s)	16.0		16.0	16.0	59.0	21.0	65.0	44.0	44.0	43.0
Total Split (%)	11.4%		11.4%	11.4%	42.1%	15.0%	46.4%	31.4%	31.4%	31%
Yellow Time (s)	3.0		4.0	3.0	2.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	0.0	2.0	3.0	3.0	3.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0		6.0	5.0	1.0	5.0	6.0		6.0	
Lead/Lag	Lead		Lead	Lag	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None		None	None	C-Max	None	None	None	None	C-Min
Act Effct Green (s)	12.6	72.3	61.3	16.1	75.7	40.6	39.6		18.6	
Actuated g/C Ratio	0.09	0.52	0.44	0.12	0.54	0.29	0.28		0.13	
v/c Ratio	0.50	0.68	0.41	0.57	0.97	0.96	0.54		0.79	
Control Delay	78.1	17.9	9.2	59.5	44.9	87.8	16.1		50.8	
Queue Delay	0.0	0.2	0.0	0.0	1.4	0.0	0.0		0.0	
Total Delay	78.1	18.0	9.2	59.5	46.2	87.8	16.1		50.8	
LOS	E	B	A	E	D	F	B		D	
Approach Delay		20.2			47.0		52.4		50.8	
Approach LOS		C			D		D		D	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 38.3

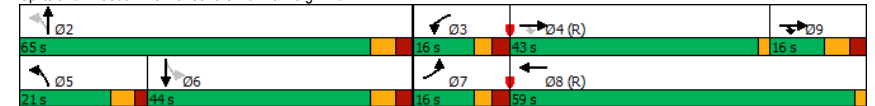
Intersection LOS: D

Intersection Capacity Utilization 133.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	79	1262	163	114	1866	271	264	188
v/c Ratio	0.50	0.68	0.41	0.57	0.97	0.96	0.54	0.79
Control Delay	78.1	17.9	9.2	59.5	44.9	87.8	16.1	50.8
Queue Delay	0.0	0.2	0.0	0.0	1.4	0.0	0.0	0.0
Total Delay	78.1	18.0	9.2	59.5	46.2	87.8	16.1	50.8
Queue Length 50th (m)	24.3	46.1	4.9	32.8	245.6	66.8	18.2	27.0
Queue Length 95th (m)	m31.6	70.7	m14.2	m34.3	m#362.5	#89.6	42.3	52.0
Internal Link Dist (m)		171.3			98.1		99.3	859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	165	1847	400	201	1919	281	636	385
Starvation Cap Reductn	0	92	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	19	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.72	0.41	0.57	0.98	0.96	0.42	0.49

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	79	1262	163	114	1775	91	271	44	220	31	20	137
Future Volume (vph)	79	1262	163	114	1775	91	271	44	220	31	20	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	6.0	5.0	1.0		5.0	6.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Frbp, ped/bikes	1.00	1.00	0.47	1.00	1.00		1.00	0.76				
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.96	1.00				
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.88				
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1750	3579	742	1750	3545		1678	1257				
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.30	1.00				
Satd. Flow (perm)	1750	3579	742	1750	3545		531	1257				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1262	163	114	1775	91	271	44	220	31	20	137
RTOR Reduction (vph)	0	0	66	0	2	0	0	132	0	0	82	0
Lane Group Flow (vph)	79	1262	97	114	1864	0	271	132	0	0	106	0
Confl. Peds. (#/hr)	26		238	238		26	238		245	245		238
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	custom	Prot	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4	9	3	8		5	2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	11.6	66.3	64.3	15.1	74.8		38.6	38.6			17.6	
Effective Green, g (s)	12.6	67.3	66.3	16.1	75.8		39.6	39.6			18.6	
Actuated g/C Ratio	0.09	0.48	0.47	0.12	0.54		0.28	0.28			0.13	
Clearance Time (s)	6.0		7.0	6.0	2.0		6.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	157	1720	351	201	1919		281	355			154	
v/s Ratio Prot	0.05	0.35	0.02	c0.07	c0.53		c0.11	0.11				
v/s Ratio Perm			0.11				c0.16				0.09	
v/c Ratio	0.50	0.73	0.28	0.57	0.97		0.96	0.37			0.69	
Uniform Delay, d1	60.7	29.2	22.3	58.7	31.1		46.8	40.2			57.9	
Progression Factor	1.18	0.60	0.81	0.95	1.21		1.00	1.00			1.00	
Incremental Delay, d2	1.7	1.1	0.3	1.4	7.4		43.6	0.7			12.0	
Delay (s)	73.5	18.5	18.4	57.0	45.1		90.4	40.9			69.9	
Level of Service	E	B	B	E	D		F	D			E	
Approach Delay (s)		21.3			45.8			66.0			69.9	
Approach LOS		C			D			E			E	

Intersection Summary

HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	133.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱↰		↰	↱↰	↰		↱↰			↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.98		0.87	0.99					0.97
Frt		0.999				0.850		0.951				0.850
Flt Protected	0.950			0.950			0.982				0.953	
Satd. Flow (prot)	1750	3572	0	1750	3579	1566	0	1759	0	0	1795	1566
Flt Permitted	0.950			0.950			0.899				0.721	
Satd. Flow (perm)	1705	3572	0	1722	3579	1363	0	1602	0	0	1358	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125			4			23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱↰	↰	↱↰	↰		↱↰		↰↱	↰
Traffic Volume (vph)	424	1065	3	1054	244	4	3	255	3	907
Future Volume (vph)	424	1065	3	1054	244	4	3	255	3	907
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	47.0	84.0	11.0	48.0	48.0	45.0	45.0	45.0	45.0	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	32.1%	32.1%	32.1%	32.1%	33.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	49.1	94.9	6.6	43.0	43.0		31.9	31.9	31.9	82.0
Actuated g/C Ratio	0.35	0.68	0.05	0.31	0.31		0.23	0.23	0.23	0.59
v/c Ratio	0.69	0.44	0.04	0.96	0.48		0.03	0.83	0.99	
Control Delay	41.5	26.1	65.0	66.5	22.1		30.1	73.4	54.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	41.5	26.1	65.0	66.5	22.1		30.1	73.4	54.8	
LOS	D	C	E	E	C		C	E	D	
Approach Delay		30.4		58.2			30.1	59.0		
Approach LOS		C		E			C	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 47.9

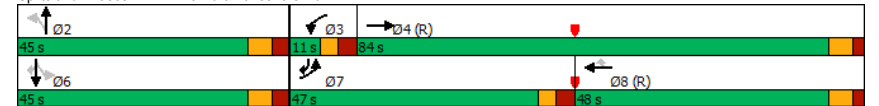
Intersection LOS: D

Intersection Capacity Utilization 107.3%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	424	1075	3	1054	244	11	258	907
v/c Ratio	0.69	0.44	0.04	0.96	0.48	0.03	0.83	0.99
Control Delay	41.5	26.1	65.0	66.5	22.1	30.1	73.4	54.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	26.1	65.0	66.5	22.1	30.1	73.4	54.8
Queue Length 50th (m)	127.6	128.4	0.9	158.9	27.3	1.6	71.6	218.7
Queue Length 95th (m)	#169.7	192.4	4.3	#204.7	54.8	6.7	100.7	#353.1
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	613	2421	82	1099	505	449	378	913
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	0.69	0.44	0.04	0.96	0.48	0.02	0.68	0.99

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	424	1065	10	3	1054	244	4	3	4	255	3	907
Future Volume (vph)	424	1065	10	3	1054	244	4	3	4	255	3	907
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.87		1.00			1.00	0.99
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1750	3571		1750	3579	1363		1750			1795	1544
Satd. Flow (perm)	1750	3571		1750	3579	1363		1602			1358	1544
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	424	1065	10	3	1054	244	4	3	4	255	3	907
RTOR Reduction (vph)	0	0	0	0	0	87	0	3	0	0	0	10
Lane Group Flow (vph)	424	1075	0	3	1054	157	0	8	0	0	258	897
Confl. Peds. (#/hr)	24		15	15		24	21					21
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	48.1	89.1		1.0	42.0	42.0		30.9			30.9	79.0
Effective Green, g (s)	49.1	90.1		2.0	43.0	43.0		31.9			31.9	81.0
Actuated g/C Ratio	0.35	0.64		0.01	0.31	0.31		0.23			0.23	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	613	2298		25	1099	418		365			309	893
v/s Ratio Prot	0.24	0.30		0.00	0.29						0.35	
v/s Ratio Perm						0.12		0.00			0.19	0.23
v/c Ratio	0.69	0.47		0.12	0.96	0.38		0.02			0.83	1.00
Uniform Delay, d1	39.0	12.7		68.1	47.6	38.0		41.9			51.5	29.5
Progression Factor	0.89	2.17		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.6	0.5		2.1	18.9	2.6		0.0			17.4	31.3
Delay (s)	37.1	28.1		70.3	66.6	40.6		42.0			68.9	60.8
Level of Service	D	C		E	E	D		D			E	E
Approach Delay (s)		30.7			61.7			42.0			62.6	
Approach LOS		C			E			D			E	

Intersection Summary

HCM 2000 Control Delay	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.999			0.850			0.938	
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1750	3579	0	1750	3575	0	1750	1601	0	0	1721	0
Flt Permitted	0.950			0.950			0.950				0.974	
Satd. Flow (perm)	1750	3579	0	1750	3575	0	1750	1601	0	0	1721	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	5	2052	4	3	2069	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	2052	4	3	2069	20	3	0	3	7	0	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	2052	4	3	2069	20	3	0	3	7	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.61			0.77			0.73	0.73	0.77	0.73	0.73	0.61
vC, conflicting volume	2112			2080			3136	4206	1053	3148	4198	1068
vC1, stage 1 conf vol							2088	2088		2108	2108	
vC2, stage 2 conf vol							1048	2118		1040	2090	
vCu, unblocked vol	1553			1810			1783	3256	482	1800	3245	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	100	99	90	100	99
cM capacity (veh/h)	254			254			58	64	401	69	66	652
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	1368	688	3	1379	710	3	3	13			
Volume Left	5	0	0	3	0	0	3	0	7			
Volume Right	0	0	4	0	0	20	0	3	6			
cSH	254	1700	1700	254	1700	1700	58	401	118			
Volume to Capacity	0.02	0.80	0.40	0.01	0.81	0.42	0.05	0.01	0.11			
Queue Length 95th (m)	0.5	0.0	0.0	0.3	0.0	0.0	1.3	0.2	2.9			
Control Delay (s)	19.4	0.0	0.0	19.3	0.0	0.0	70.3	14.0	39.4			
Lane LOS	C			C			F	B	E			
Approach Delay (s)	0.0			0.0			42.2		39.4			
Approach LOS							E		E			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				71.8%			ICU Level of Service		C			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	2179	1921	47	0	13
Future Volume (Veh/h)	0	2179	1921	47	0	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2179	1921	47	0	13
Pedestrians		2			30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		250	113			
pX, platoon unblocked	0.63				0.74	0.63
vC, conflicting volume	1998				3064	1016
vC1, stage 1 conf vol					1974	
vC2, stage 2 conf vol					1090	
vCu, unblocked vol	1405				1716	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	295				119	663
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	1090	1090	1281	687	13
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	47	13
cSH	1700	1700	1700	1700	1700	663
Volume to Capacity	0.00	0.64	0.64	0.75	0.40	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.5
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			70.9%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1960	2095	20	0	6
Future Volume (Veh/h)	0	1960	2095	20	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1960	2095	20	0	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.59				0.78	0.59
vC, conflicting volume	2138				3109	1082
vC1, stage 1 conf vol					2128	
vC2, stage 2 conf vol					981	
vCu, unblocked vol	1542				976	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	248				99	629
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	980	980	1397	718	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	6	
cSH	1700	1700	1700	1700	629	
Volume to Capacity	0.58	0.58	0.82	0.42	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	10.8	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			68.9%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 3A

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱		↱	↱	↱	↱	↱
Traffic Volume (veh/h)	0	1972	0	0	2083	48	0	0	0	0	0	31
Future Volume (Veh/h)	0	1972	0	0	2083	48	0	0	0	0	0	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1972	0	0	2083	48	0	0	0	0	0	31
Pedestrians		1			1			151			28	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			13			2	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage (veh)		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.63			0.57			0.76	0.76	0.57	0.76	0.76	0.63
vC, conflicting volume	2159			2123			3196	4282	1138	3122	4258	1094
vC1, stage 1 conf vol							2123	2123		2135	2135	
vC2, stage 2 conf vol							1074	2159		987	2123	
vCu, unblocked vol	1666			1471			1065	2496	0	967	2465	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	95
cM capacity (veh/h)	235			227			66	69	544	66	70	666
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1315	657	0	1389	742	0	31				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	48	0	31				
cSH	1700	1700	1700	1700	1700	1700	1700	666				
Volume to Capacity	0.00	0.77	0.39	0.00	0.82	0.44	0.00	0.05				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	10.7				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				69.2%			ICU Level of Service			C		
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1834	2171	24	0	9
Future Volume (Veh/h)	0	1834	2171	24	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1834	2171	24	0	9
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.42				0.65	0.42
vC, conflicting volume	2218				3125	1122
vC1, stage 1 conf vol					2206	
vC2, stage 2 conf vol					919	
vCu, unblocked vol	1140				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	251				653	447
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	917	917	1447	748	9	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	24	9	
cSH	1700	1700	1700	1700	447	
Volume to Capacity	0.54	0.54	0.85	0.44	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.5	
Control Delay (s)	0.0	0.0	0.0	0.0	13.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			70.8%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3A

Afternoon Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕			↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3A

Afternoon Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕			↕
Traffic Volume (veh/h)	0	1847	2184	8	0	4
Future Volume (Veh/h)	0	1847	2184	8	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1847	2184	8	0	4
Pedestrians		3	3		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.41				0.64	0.41
vC, conflicting volume	2219				3142	1126
vC1, stage 1 conf vol					2215	
vC2, stage 2 conf vol					926	
vCu, unblocked vol	1099				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	253				643	435
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	924	924	1456	736	4	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	8	4	
cSH	1700	1700	1700	1700	435	
Volume to Capacity	0.54	0.54	0.86	0.43	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	13.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			70.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1712	2295	20	0	10
Future Volume (Veh/h)	0	1712	2295	20	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1712	2295	20	0	10
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	84		138			
pX, platoon unblocked	0.43				0.59	0.43
vC, conflicting volume	2342				3192	1190
vC1, stage 1 conf vol					2332	
vC2, stage 2 conf vol					860	
vCu, unblocked vol	1473				843	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	191				81	455
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	856	856	1530	785	10	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	10	
cSH	1700	1700	1700	1700	455	
Volume to Capacity	0.50	0.50	0.90	0.46	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.5	
Control Delay (s)	0.0	0.0	0.0	0.0	13.1	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			75.6%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1513	1984	17	0	11
Future Volume (Veh/h)	0	1513	1984	17	0	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1513	1984	17	0	11
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.71	
vC, conflicting volume	2027				2780	1032
vC1, stage 1 conf vol					2018	
vC2, stage 2 conf vol					762	
vCu, unblocked vol	2027				2690	1032
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	270				84	224
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	756	756	1323	678	11	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	17	11	
cSH	1700	1700	1700	1700	224	
Volume to Capacity	0.45	0.45	0.78	0.40	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	21.9	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		21.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			65.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1524	1963	51	0	32
Future Volume (Veh/h)	0	1524	1963	51	0	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1524	1963	51	0	32
Pedestrians		6	6		24	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)			131			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	2038				2780	1037
vC1, stage 1 conf vol					2012	
vC2, stage 2 conf vol					768	
vCu, unblocked vol	1643				2690	230
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	271				98	534
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	762	762	1309	705	32	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	51	32	
cSH	1700	1700	1700	1700	534	
Volume to Capacity	0.45	0.45	0.77	0.41	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.5	
Control Delay (s)	0.0	0.0	0.0	0.0	12.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			66.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 3A
Afternoon Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 3A
Afternoon Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	27	71	30	0	133	69
Future Volume (Veh/h)	27	71	30	0	133	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	27	71	30	0	133	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage (veh)						
Upstream signal (m)					132	
pX, platoon unblocked						
vC, conflicting volume	365	30			30	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365	30			30	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	93			92	
cM capacity (veh/h)	581	1044			1583	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	27	71	30	133	69	
Volume Left	27	0	0	133	0	
Volume Right	0	71	0	0	0	
cSH	581	1044	1700	1583	1700	
Volume to Capacity	0.05	0.07	0.02	0.08	0.04	
Queue Length 95th (m)	1.2	1.7	0.0	2.2	0.0	
Control Delay (s)	11.5	8.7	0.0	7.5	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.5		0.0	4.9		
Approach LOS	A					
Intersection Summary						
Average Delay			5.8			
Intersection Capacity Utilization			24.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.850			0.958			0.970	
Frt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1750	1842	0	1750	1566	0	1842	1765	0	1750	1787	0
Frt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1750	1842	0	1750	1566	0	1842	1765	0	1750	1787	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 3A
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	23	0	0	30	0	125	0	219	86	122	343	87
Future Volume (Veh/h)	23	0	0	30	0	125	0	219	86	122	343	87
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	0	0	30	0	125	0	219	86	122	343	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked												
vC, conflicting volume	974	936	386	849	936	262	430			305		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	974	936	386	849	936	262	430			305		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	100	88	100	84	100			90		
cM capacity (veh/h)	179	239	661	260	239	777	1129			1256		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	23	0	30	125	0	305	122	430				
Volume Left	23	0	30	0	0	0	122	0				
Volume Right	0	0	0	125	0	86	0	87				
cSH	179	1700	260	777	1700	1700	1256	1700				
Volume to Capacity	0.13	0.00	0.12	0.16	0.00	0.18	0.10	0.25				
Queue Length 95th (m)	3.5	0.0	3.1	4.6	0.0	0.0	2.6	0.0				
Control Delay (s)	28.0	0.0	20.6	10.5	0.0	0.0	8.2	0.0				
Lane LOS	D	A	C	B			A					
Approach Delay (s)	28.0		12.5		0.0		1.8					
Approach LOS	D		B									
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			51.1%		ICU Level of Service					A		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 3A
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.981	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1807	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1807	0
Link Speed (k/h)	50		50	50		
Link Distance (m)	72.3		87.6	135.3		
Travel Time (s)	5.2		6.3	9.7		

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 3A
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	167	30	68	328	504	85
Future Volume (Veh/h)	167	30	68	328	504	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	167	30	68	328	504	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1010	546	589			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1010	546	589			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	32	94	93			
cM capacity (veh/h)	247	537	986			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	167	30	68	328	589	
Volume Left	167	0	68	0	0	
Volume Right	0	30	0	0	85	
cSH	247	537	986	1700	1700	
Volume to Capacity	0.68	0.06	0.07	0.19	0.35	
Queue Length 95th (m)	34.8	1.4	1.8	0.0	0.0	
Control Delay (s)	45.3	12.1	8.9	0.0	0.0	
Lane LOS	E	B	A			
Approach Delay (s)	40.2		1.5		0.0	
Approach LOS	E					
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			54.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	1.00		0.99		0.95		0.99				0.96
Frt						0.850		0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1713	0	1662	1705	1566
Flt Permitted	0.950			0.315						0.950	0.727	
Satd. Flow (perm)	3337	3578	0	577	3579	1493	0	1740	0	1662	1301	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						226		117				25
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	904	1	897	860	1	0	726	3	507
Future Volume (vph)	462	904	1	897	860	1	0	726	3	507
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	27.0	80.0	53.0	53.0	49.0	11.0	11.0	49.0	60.0	27.0
Total Split (%)	19.3%	57.1%	37.9%	37.9%	35.0%	7.9%	7.9%	35.0%	42.9%	19.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	21.6	75.0	48.4	48.4	101.2	6.0	52.8	52.8	76.6	
Actuated g/C Ratio	0.15	0.54	0.35	0.35	0.72		0.04	0.38	0.38	0.55
v/c Ratio	0.88	0.47	0.01	0.73	0.74		0.01	0.58	0.57	0.60
Control Delay	76.7	21.2	48.0	41.5	14.3		0.0	40.2	39.8	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	76.7	21.2	48.0	41.5	14.3		0.0	40.2	39.8	20.9
LOS	E	C	D	D	B		A	D	D	C
Approach Delay		40.0		28.2					32.2	
Approach LOS		D		C					C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 33.0

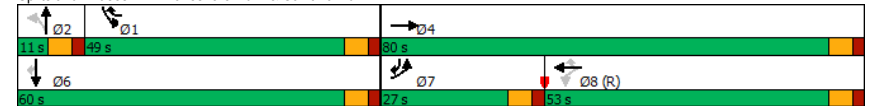
Intersection LOS: C

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	462	906	1	897	860	2	363	366	507
v/c Ratio	0.88	0.47	0.01	0.73	0.74	0.01	0.58	0.57	0.60
Control Delay	76.7	21.2	48.0	41.5	14.3	0.0	40.2	39.8	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	21.2	48.0	41.5	14.3	0.0	40.2	39.8	20.9
Queue Length 50th (m)	68.6	83.7	0.1	73.8	204.4	0.0	85.7	86.2	81.9
Queue Length 95th (m)	#96.7	101.3	m0.2	125.4	209.4	0.0	138.0	137.7	115.1
Internal Link Dist (m)		297.4		113.2		71.8		931.9	
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	533	1916	199	1236	1168	186	626	642	846
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.47	0.01	0.73	0.74	0.01	0.58	0.57	0.60

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	904	2	1	897	860	1	0	1	726	3	507
Future Volume (vph)	462	904	2	1	897	860	1	0	1	726	3	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	0.97
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	3395	3577		1740	3579	1533		1698		1662	1705	1516
Satd. Flow (perm)	3395	3577		576	3579	1533		1740		1662	1301	1516
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	462	904	2	1	897	860	1	0	1	726	3	507
RTOR Reduction (vph)	0	0	0	0	0	70	0	2	0	0	0	10
Lane Group Flow (vph)	462	906	0	1	897	790	0	0	0	363	366	497
Confl. Peds. (#/hr)	27		9	9		27	24					24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)	20.6	69.2		42.6	42.6	94.4		1.0		51.8	58.8	79.4
Effective Green, g (s)	21.6	70.2		43.6	43.6	96.4		2.0		52.8	59.8	81.4
Actuated g/C Ratio	0.15	0.50		0.31	0.31	0.69		0.01		0.38	0.43	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	523	1793		179	1114	1055		24		626	708	935
v/s Ratio Prot	c0.14	0.25			c0.25	c0.28				0.22	0.19	c0.08
v/s Ratio Perm				0.00		0.23		0.00			0.03	0.25
v/c Ratio	0.88	0.51		0.01	0.81	0.75		0.00		0.58	0.52	0.53
Uniform Delay, d1	58.0	23.3		33.2	44.3	14.0		68.0		34.8	29.5	17.7
Progression Factor	1.00	1.00		1.56	0.96	1.67		1.00		1.00	1.00	1.00
Incremental Delay, d2	16.1	1.0		0.0	4.6	2.1		0.0		1.3	0.6	0.6
Delay (s)	74.1	24.3		51.9	47.0	25.6		68.0		36.1	30.1	18.3
Level of Service	E	C		D	D	C		E		D	C	B
Approach Delay (s)		41.1			36.5			68.0			27.0	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay 35.3 HCM 2000 Level of Service D

HCM 2000 Volume to Capacity ratio 0.80

Actuated Cycle Length (s) 140.0 Sum of lost time (s) 20.0

Intersection Capacity Utilization 85.6% ICU Level of Service E

Analysis Period (min) 15

c Critical Lane Group

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.94	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1578	0	1750	1565	0
Flt Permitted	0.950			0.950			0.755			0.444		
Satd. Flow (perm)	1743	3579	1527	1749	3579	1470	1376	1578	0	816	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78			97		82	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	53	1488	83	29	1715	9	147	0	38	0
Future Volume (vph)	53	1488	83	29	1715	9	147	0	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	10.8	98.7	98.7	8.8	94.5	94.5	21.3	21.3	21.3	21.3
Actuated g/C Ratio	0.08	0.70	0.70	0.06	0.68	0.68	0.15	0.15	0.15	0.15
v/c Ratio	0.40	0.59	0.08	0.26	0.71	0.01	0.71	0.54	0.31	0.01
Control Delay	67.9	16.2	5.0	61.0	26.3	0.0	73.5	29.6	57.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	16.2	5.0	61.0	26.3	0.0	73.5	29.6	57.1	0.0
LOS	E	B	A	E	C	A	E	C	E	A
Approach Delay		17.3			26.8			49.7		51.6
Approach LOS		B			C			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 24.9

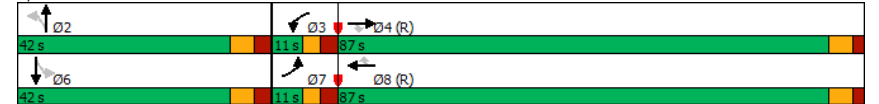
Intersection LOS: C

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1488	83	29	1715	9	147	174	38	4
v/c Ratio	0.40	0.59	0.08	0.26	0.71	0.01	0.71	0.54	0.31	0.01
Control Delay	67.9	16.2	5.0	61.0	26.3	0.0	73.5	29.6	57.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	16.2	5.0	61.0	26.3	0.0	73.5	29.6	57.1	0.0
Queue Length 50th (m)	13.3	118.1	3.8	8.3	235.5	0.0	41.2	20.3	10.0	0.0
Queue Length 95th (m)	m28.1	240.4	11.6	m14.8	198.2	m0.0	62.0	42.7	20.7	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	134	2523	1099	110	2414	1017	353	477	209	463
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.59	0.08	0.26	0.71	0.01	0.42	0.36	0.18	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↗	↘	↙	↗	↘	↙	↗		↙	↗	
Traffic Volume (vph)	53	1488	83	29	1715	9	147	0	174	38	0	4
Future Volume (vph)	53	1488	83	29	1715	9	147	0	174	38	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.94	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1527	1750	3579	1470	1731	1578		1747	1565	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00		0.44	1.00	
Satd. Flow (perm)	1750	3579	1527	1750	3579	1470	1376	1578		816	1565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1488	83	29	1715	9	147	0	174	38	0	4
RTOR Reduction (vph)	0	0	24	0	0	3	0	82	0	0	3	0
Lane Group Flow (vph)	53	1488	59	29	1715	6	147	92	0	38	1	0
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.5	95.3	95.3	5.4	92.2	92.2	20.3	20.3		20.3	20.3	
Effective Green, g (s)	9.5	96.3	96.3	6.4	93.2	93.2	21.3	21.3		21.3	21.3	
Actuated g/C Ratio	0.07	0.69	0.69	0.05	0.67	0.67	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	2461	1050	80	2382	978	209	240		124	238	
v/s Ratio Prot	c0.03	c0.42		0.02	c0.48			0.06			0.00	
v/s Ratio Perm			0.04			0.00	c0.11			0.05		
v/c Ratio	0.45	0.60	0.06	0.36	0.72	0.01	0.70	0.38		0.31	0.00	
Uniform Delay, d1	62.7	11.7	7.1	64.8	15.0	7.9	56.4	53.4		52.8	50.3	
Progression Factor	0.99	1.20	1.90	0.90	1.48	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	1.0	0.1	2.4	1.6	0.0	10.2	1.0		1.4	0.0	
Delay (s)	64.4	15.0	13.6	61.0	23.9	7.9	66.6	54.4		54.2	50.3	
Level of Service	E	B	B	E	C	A	E	D		D	D	
Approach Delay (s)		16.5			24.4			60.0			53.8	
Approach LOS		B			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			24.4		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					16.0		
Intersection Capacity Utilization			82.2%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.45	0.93		0.70	0.69
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	703	1628	3579	2364	1079
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		64			12	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↖	↗	←	↖	↗	Ø2
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø2
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑	
Traffic Volume (vph)	1475	208	73	1266	491	336	
Future Volume (vph)	1475	208	73	1266	491	336	
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov	
Protected Phases	4		3	8	5	3	2
Permitted Phases		4				2	
Detector Phase	4	4	3	8	5	3	
Switch Phase							
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	12.0	24.0	12.0	12.0	34.0
Total Split (s)	83.0	83.0	23.0	106.0	34.0	23.0	34.0
Total Split (%)	59.3%	59.3%	16.4%	75.7%	24.3%	16.4%	24%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	6.0	6.0	
Lag/Lag	Lag	Lag	Lead			Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	C-Min	C-Min	None	C-Min	None	None	None
Act Effct Green (s)	83.2	83.2	14.3	103.5	25.5	39.8	
Actuated g/C Ratio	0.59	0.59	0.10	0.74	0.18	0.28	
v/c Ratio	0.69	0.47	0.41	0.48	0.79	0.92	
Control Delay	11.4	8.0	65.7	5.1	64.7	75.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.4	8.0	65.7	5.1	64.7	75.2	
LOS	B	A	E	A	E	E	
Approach Delay	11.0			8.4	69.0		
Approach LOS	B			A	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 22.5

Intersection LOS: C

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E

Ø2	Ø3	Ø4 (R)
34 s	23 s	83 s
Ø5	Ø8 (R)	
34 s	106 s	

Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1475	208	73	1266	491	336
v/c Ratio	0.69	0.47	0.41	0.48	0.79	0.92
Control Delay	11.4	8.0	65.7	5.1	64.7	75.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	8.0	65.7	5.1	64.7	75.2
Queue Length 50th (m)	39.5	1.7	22.1	40.6	70.8	79.5
Queue Length 95th (m)	81.7	20.2	m31.3	40.3	89.9	#120.8
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2135	445	215	2648	682	398
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.47	0.34	0.48	0.72	0.84

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1475	208	73	1266	491	336
Future Volume (vph)	1475	208	73	1266	491	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.45	1.00	1.00	1.00	0.80
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	703	1750	3579	3395	1254
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	703	1750	3579	3395	1254
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1475	208	73	1266	491	336
RTOR Reduction (vph)	0	26	0	0	0	9
Lane Group Flow (vph)	1475	182	73	1266	491	327
Confl. Peds. (#/hr)	182	182		212	209	
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	5	3
Permitted Phases		4				2
Actuated Green, G (s)	82.2	82.2	13.3	102.5	24.5	37.8
Effective Green, g (s)	83.2	83.2	14.3	103.5	25.5	39.8
Actuated g/C Ratio	0.59	0.59	0.10	0.74	0.18	0.28
Clearance Time (s)	6.0	6.0	7.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2126	417	178	2645	618	410
v/s Ratio Prot	c0.41		0.04	0.35	0.14	c0.08
v/s Ratio Perm		0.26				0.18
v/c Ratio	0.69	0.44	0.41	0.48	0.79	0.80
Uniform Delay, d1	19.6	15.6	58.9	7.4	54.7	46.4
Progression Factor	0.47	0.41	1.04	0.60	1.00	1.00
Incremental Delay, d2	1.6	2.8	1.2	0.5	7.0	10.4
Delay (s)	10.8	9.1	62.5	4.9	61.7	56.8
Level of Service	B	A	E	A	E	E
Approach Delay (s)	10.6			8.0	59.7	
Approach LOS	B			A	E	

Intersection Summary

HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.48	0.93	0.98		0.99	0.97		0.99	0.99	
Frt			0.850		0.982			0.873			0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3456	0	1750	1603	0	1750	1687	0
Flt Permitted	0.950			0.950			0.570			0.151		
Satd. Flow (perm)	1710	3579	757	1629	3456	0	1042	1603	0	276	1687	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		13			98			56	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	197	1433	201	63	1067	147	54	116	56
Future Volume (vph)	197	1433	201	63	1067	147	54	116	56
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	45.0	9.0	45.0
Total Split (s)	19.0	75.0	75.0	11.0	67.0	9.0	45.0	9.0	45.0
Total Split (%)	13.6%	53.6%	53.6%	7.9%	47.9%	6.4%	32.1%	6.4%	32.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	22.4	73.1	73.1	9.9	60.6	41.5	29.1	40.4	28.5
Actuated g/C Ratio	0.16	0.52	0.52	0.07	0.43	0.30	0.21	0.29	0.20
v/c Ratio	0.70	0.77	0.45	0.51	0.80	0.41	0.87	0.67	0.37
Control Delay	76.9	25.9	12.1	74.6	46.2	39.5	58.5	56.5	29.6
Queue Delay	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	76.9	25.9	12.1	74.6	46.5	39.5	58.5	56.5	29.6
LOS	E	C	B	E	D	D	E	E	C
Approach Delay		29.9			47.9		53.0		41.6
Approach LOS		C			D		D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 39.6

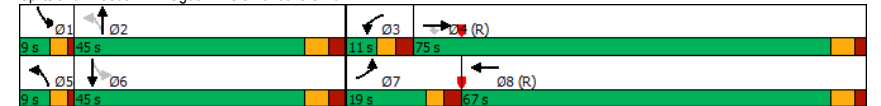
Intersection LOS: D

Intersection Capacity Utilization 95.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	1433	201	63	1210	147	355	116	144
v/c Ratio	0.70	0.77	0.45	0.51	0.80	0.41	0.87	0.67	0.37
Control Delay	76.9	25.9	12.1	74.6	46.2	39.5	58.5	56.5	29.6
Queue Delay	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	76.9	25.9	12.1	74.6	46.5	39.5	58.5	56.5	29.6
Queue Length 50th (m)	57.3	84.7	3.2	18.0	189.3	31.4	75.0	24.3	21.6
Queue Length 95th (m)	m#115.9	161.2	m#26.8	m#42.7	210.0	47.2	105.8	#47.0	39.0
Internal Link Dist (m)		78.3			60.4		118.3		222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	280	1881	449	124	1549	356	517	172	510
Starvation Cap Reductn	0	34	0	0	54	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.78	0.45	0.51	0.81	0.41	0.69	0.67	0.28

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	197	1433	201	63	1067	143	147	54	301	116	56	88
Future Volume (vph)	197	1433	201	63	1067	143	147	54	301	116	56	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.48	1.00	0.98		1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.87		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	757	1750	3457		1743	1602		1748	1688	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.57	1.00		0.15	1.00	
Satd. Flow (perm)	1750	3579	757	1750	3457		1045	1602		277	1688	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	1433	201	63	1067	143	147	54	301	116	56	88
RTOR Reduction (vph)	0	0	52	0	7	0	0	78	0	0	45	0
Lane Group Flow (vph)	197	1433	149	63	1203	0	147	277	0	116	99	0
Confl. Peds. (#/hr)	26		114	114		26	9		18	18		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	21.4	72.1	72.1	8.9	59.6		36.5	28.1		35.5	27.6	
Effective Green, g (s)	22.4	73.1	73.1	9.9	60.6		38.5	29.1		37.5	28.6	
Actuated g/C Ratio	0.16	0.52	0.52	0.07	0.43		0.28	0.21		0.27	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	280	1868	395	123	1496		334	332		167	344	
v/s Ratio Prot	c0.11	c0.40		0.04	c0.35		0.03	c0.17		c0.04	0.06	
v/s Ratio Perm			0.20				0.09			0.14		
v/c Ratio	0.70	0.77	0.38	0.51	0.80		0.44	0.84		0.69	0.29	
Uniform Delay, d1	55.7	26.7	19.9	62.7	34.5		40.3	53.2		41.9	47.1	
Progression Factor	1.21	0.85	0.96	0.99	1.21		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	2.1	1.9	3.2	4.3		0.9	16.4		11.8	0.5	
Delay (s)	72.8	24.8	21.0	65.1	46.1		41.2	69.6		53.8	47.6	
Level of Service	E	C	C	E	D		D	E		D	D	
Approach Delay (s)		29.5			47.1			61.3			50.3	
Approach LOS		C			D			E			D	

Intersection Summary

HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	↖	→	↗	↙	←	↖	↙	↗	↘	↖	↘	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖		↖	↖			↖↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.42	0.93	1.00			0.99			1.00	
Frt			0.850					0.850			0.961	
Flt Protected				0.950			0.950				0.966	
Satd. Flow (prot)	1842	3579	1566	1750	3578	0	1750	1580	0	0	1748	0
Flt Permitted				0.950			0.753				0.765	
Satd. Flow (perm)	1842	3579	665	1626	3578	0	1387	1580	0	0	1384	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160					86			86	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↗	↖	←	↖	↗	↘	↖	↘	↗	↘	↗	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10	
Lane Configurations	↖↖	↖	↖	↖↖	↖	↖	↖	↖↖					
Traffic Volume (vph)	1495	338	143	982	307	0	5	0					
Future Volume (vph)	1495	338	143	982	307	0	5	0					
Turn Type	NA	custom	Prot	NA	Perm	NA	Perm	NA					
Protected Phases	4 9	9	3	8 10		5		2	4	7	8	10	
Permitted Phases		4			5		2						
Detector Phase	4 9	9	3	8 10	5	5	2	2					
Switch Phase													
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)		11.0	11.0		44.0	44.0	44.0	44.0	24.0	11.0	20.0	24.0	
Total Split (s)		24.0	16.0		44.0	44.0	44.0	44.0	56.0	11.0	61.0	24.0	
Total Split (%)		17.1%	11.4%		31.4%	31.4%	31.4%	31.4%	40%	8%	44%	17%	
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0	
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0		-1.0					
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0					
Lead/Lag			Lead						Lag	Lead	Lag		
Lead-Lag Optimize?			Yes						Yes	Yes	Yes		
Recall Mode		None	None		None	None	None	None	C-Max	None	C-Max	None	
Act Effect Green (s)	78.8	68.8	15.6	99.4	35.6	35.6		35.6					
Actuated g/C Ratio	0.56	0.49	0.11	0.71	0.25	0.25		0.25					
v/c Ratio	0.74	0.67	0.73	0.39	0.87	0.83		0.02					
Control Delay	14.4	9.0	86.5	3.1	74.2	54.0		0.1					
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0		0.0					
Total Delay	14.7	9.0	86.5	3.1	74.2	54.0		0.1					
LOS	B	A	F	A	E	D		A					
Approach Delay	13.7			13.7		62.9		0.1					
Approach LOS	B			B		E		A					

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 23.0

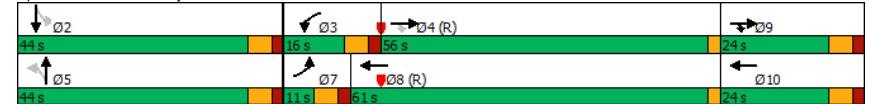
Intersection LOS: C

Intersection Capacity Utilization 85.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	→	↘	↙	←	↖	↑	↓
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1495	338	143	984	307	388	7
v/c Ratio	0.74	0.67	0.73	0.39	0.87	0.83	0.02
Control Delay	14.4	9.0	86.5	3.1	74.2	54.0	0.1
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	9.0	86.5	3.1	74.2	54.0	0.1
Queue Length 50th (m)	64.4	5.3	34.1	9.2	83.7	83.5	0.0
Queue Length 95th (m)	55.7	10.9	#91.0	22.2	#129.9	125.0	0.0
Internal Link Dist (m)	114.1			171.3		111.3	167.6
Turn Bay Length (m)		50.0	25.0		60.0		
Base Capacity (vph)	2118	544	195	2644	388	504	449
Starvation Cap Reductn	167	0	0	322	0	0	0
Spillback Cap Reductn	0	0	0	199	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.62	0.73	0.42	0.79	0.77	0.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	↖	→	↘	↙	←	↖	↘	↑	↘	↙	↓	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↗	↖	↖↗	↗	↖	↖	↗	↖	↖↗	↗
Traffic Volume (vph)	0	1495	338	143	982	2	307	0	388	5	0	2
Future Volume (vph)	0	1495	338	143	982	2	307	0	388	5	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		0.0	5.0	5.0	0.0		5.0	5.0			5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.54	1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)		3579	850	1750	3577		1750	1580			1748	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00			0.77	
Satd. Flow (perm)		3579	850	1750	3577		1387	1580			1385	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1495	338	143	982	2	307	0	388	5	0	2
RTOR Reduction (vph)	0	0	77	0	0	0	0	64	0	0	5	0
Lane Group Flow (vph)	0	1495	261	143	984	0	307	324	0	0	2	0
Confl. Peds. (#/hr)	16		214	214		16			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			5			2	
Permitted Phases			4					5		2		
Actuated Green, G (s)		72.8	70.8	14.6	93.4		34.6	34.6			34.6	
Effective Green, g (s)		74.8	72.8	15.6	95.4		35.6	35.6			35.6	
Actuated g/C Ratio		0.53	0.52	0.11	0.68		0.25	0.25			0.25	
Clearance Time (s)			6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)			3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		1912	442	195	2437		352	401			352	
v/s Ratio Prot		c0.42	0.06	c0.08	0.28			0.20				
v/s Ratio Perm			0.24				c0.22				0.00	
v/c Ratio		0.78	0.59	0.73	0.40		0.87	0.81			0.01	
Uniform Delay, d1		26.1	23.3	60.2	9.8		50.0	49.0			39.0	
Progression Factor		0.55	0.29	1.13	0.31		1.00	1.00			1.00	
Incremental Delay, d2		1.4	1.4	12.2	0.1		20.4	11.3			0.0	
Delay (s)		15.6	8.2	80.2	3.1		70.4	60.3			39.0	
Level of Service		B	A	F	A		E	E			D	
Approach Delay (s)		14.3			12.9		64.8				39.0	
Approach LOS		B			B		E				D	
Intersection Summary												
HCM 2000 Control Delay			23.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			85.3%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00						0.84	
Frt					0.992						0.942	
Flt Protected	0.950										0.972	
Satd. Flow (prot)	1750	3579	1842	1842	3538	0	1879	1921	0	0	1600	0
Flt Permitted	0.950										0.823	
Satd. Flow (perm)	1734	3579	1842	1842	3538	0	1879	1921	0	0	1226	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6						86	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Group	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↰	↱	↱	↰	↱						
Traffic Volume (vph)	133	1759	1104	44	0						
Future Volume (vph)	133	1759	1104	44	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	24.0	11.0	11.0
Total Split (s)	23.0			44.0	44.0	44.0	17.0	50.0	44.0	29.0	29.0
Total Split (%)	16.4%			31.4%	31.4%	31%	12%	36%	31%	21%	21%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Min	None	None
Act Effct Green (s)	16.9	123.4	101.5		9.6						
Actuated g/C Ratio	0.12	0.88	0.72		0.07						
v/c Ratio	0.63	0.56	0.45		0.47						
Control Delay	60.5	2.2	8.6		19.2						
Queue Delay	0.0	0.3	0.0		0.0						
Total Delay	60.5	2.5	8.6		19.2						
LOS	E	A	A		B						
Approach Delay		6.5	8.6		19.2						
Approach LOS		A	A		B						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.6

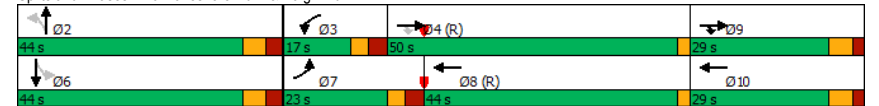
Intersection LOS: A

Intersection Capacity Utilization 96.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	SBT
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	133	1759	1165	77
v/c Ratio	0.63	0.56	0.45	0.47
Control Delay	60.5	2.2	8.6	19.2
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	60.5	2.5	8.6	19.2
Queue Length 50th (m)	38.3	24.2	54.6	0.0
Queue Length 95th (m)	m54.0	55.2	76.4	13.8
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	240	3153	2566	395
Starvation Cap Reductn	0	644	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.70	0.45	0.19

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	133	1759	0	0	1104	61	0	0	0	44	0	33
Future Volume (vph)	133	1759	0	0	1104	61	0	0	0	44	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0						6.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.93	
Flpb, ped/bikes	1.00	1.00			1.00						0.91	
Flt Protected	0.95	1.00			1.00						0.97	
Satd. Flow (prot)	1750	3579			3538						1449	
Flt Permitted	0.95	1.00			1.00						0.82	
Satd. Flow (perm)	1750	3579			3538						1226	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	133	1759	0	0	1104	61	0	0	0	44	0	33
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	72	0
Lane Group Flow (vph)	133	1759	0	0	1163	0	0	0	0	0	5	0
Confl. Peds. (#/hr)	10		139	139		10	141		146	146		141
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4	9	3	8	10		2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	15.9	118.4			96.5						8.6	
Effective Green, g (s)	16.9	119.4			97.5						9.6	
Actuated g/C Ratio	0.12	0.85			0.70						0.07	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	211	3052			2463						84	
v/s Ratio Prot	0.08	c0.49			0.33							
v/s Ratio Perm											c0.00	
v/c Ratio	0.63	0.58			0.47						0.06	
Uniform Delay, d1	58.6	3.0			9.6						61.0	
Progression Factor	0.88	0.83			0.96						1.00	
Incremental Delay, d2	4.2	0.2			0.1						0.3	
Delay (s)	55.8	2.7			9.3						61.3	
Level of Service	E	A			A						E	
Approach Delay (s)	6.4				9.3		0.0				61.3	
Approach LOS	A				A		A				E	
Intersection Summary												
HCM 2000 Control Delay		8.8			HCM 2000 Level of Service		A					
HCM 2000 Volume to Capacity ratio		0.56										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)		17.0					
Intersection Capacity Utilization		96.0%			ICU Level of Service		F					
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱↱		↰	↱↱	↱		↱↱		↰	↱↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99		0.93		1.00			1.00	0.99
Frt		0.999				0.850						0.850
Flt Protected	0.950			0.950			0.950				0.953	
Satd. Flow (prot)	1750	3573	0	1750	3579	1566	0	1789	0	0	1795	1566
Flt Permitted	0.950			0.950			0.500				0.728	
Satd. Flow (perm)	1710	3573	0	1739	3579	1448	0	940	0	0	1370	1544
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		1				125						23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱↱	↰	↱↱	↱		↱↱	↰	↱↱	↱
Traffic Volume (vph)	596	1160	1	643	222	1	0	158	1	469
Future Volume (vph)	596	1160	1	643	222	1	0	158	1	469
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	58.0	84.0	11.0	37.0	37.0	45.0	45.0	45.0	45.0	58.0
Total Split (%)	41.4%	60.0%	7.9%	26.4%	26.4%	32.1%	32.1%	32.1%	32.1%	41.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0		6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes	
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	54.1	104.0	6.7	47.3	47.3	22.6		22.6	22.6	77.7
Actuated g/C Ratio	0.39	0.74	0.05	0.34	0.34		0.16		0.16	0.56
v/c Ratio	0.88	0.44	0.01	0.53	0.39		0.01		0.72	0.54
Control Delay	44.2	4.6	64.0	41.9	19.9		45.0		73.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	44.2	4.6	64.0	41.9	19.9		45.0		73.0	17.5
LOS	D	A	E	D	B		D		E	B
Approach Delay		18.0		36.3			45.0		31.6	
Approach LOS		B		D			D		C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 25.5

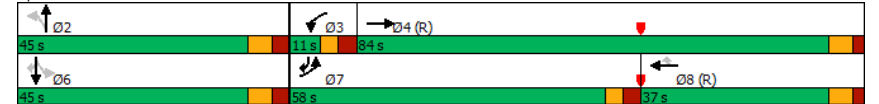
Intersection LOS: C

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	596	1171	1	643	222	1	159	469
v/c Ratio	0.88	0.44	0.01	0.53	0.39	0.01	0.72	0.54
Control Delay	44.2	4.6	64.0	41.9	19.9	45.0	73.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	4.6	64.0	41.9	19.9	45.0	73.0	17.5
Queue Length 50th (m)	126.4	4.3	0.3	80.6	20.4	0.3	44.5	70.4
Queue Length 95th (m)	223.4	137.7	2.3	117.1	51.6	1.9	66.0	71.4
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	701	2654	83	1209	572	261	381	897
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	0.85	0.44	0.01	0.53	0.39	0.00	0.42	0.52
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	596	1160	11	1	643	222	1	0	0	158	1	469
Future Volume (vph)	596	1160	11	1	643	222	1	0	0	158	1	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.93		1.00			1.00	1.00
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			0.95	1.00
Satd. Flow (prot)	1750	3572		1750	3579	1448		1786			1792	1559
Satd. Flow (perm)	1750	3572		1750	3579	1448		940			1369	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	596	1160	11	1	643	222	1	0	0	158	1	469
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	0	0	0	10
Lane Group Flow (vph)	596	1171	0	1	643	139	0	1	0	0	159	459
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	53.1	98.2		1.2	46.3	46.3		21.6			21.6	74.7
Effective Green, g (s)	54.1	99.2		2.2	47.3	47.3		22.6			22.6	76.7
Actuated g/C Ratio	0.39	0.71		0.02	0.34	0.34		0.16			0.16	0.55
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	676	2531		27	1209	489		151			220	854
v/s Ratio Prot	c0.34	0.33		0.00	c0.18						c0.12	0.21
v/s Ratio Perm						0.10		0.00				0.09
v/c Ratio	0.88	0.46		0.04	0.53	0.28		0.01			0.72	0.54
Uniform Delay, d1	40.0	8.8		67.9	37.4	34.0		49.3			55.7	20.3
Progression Factor	0.77	0.51		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	11.3	0.5		0.6	1.7	1.5		0.0			11.1	0.7
Delay (s)	42.1	5.0		68.4	39.1	35.4		49.3			66.8	20.9
Level of Service	D	A		E	D	D		D			E	C
Approach Delay (s)		17.5			38.2			49.3			32.6	
Approach LOS		B			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		25.9			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.72										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		73.9%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3B

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3B

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	6	1576	2	8	1846	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1576	2	8	1846	2	0	0	8	5	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1576	2	8	1846	2	0	0	8	5	0	5
Pedestrians										5		8
Lane Width (m)										3.6		3.7
Walking Speed (m/s)										1.2		1.2
Percent Blockage										0		1
Right turn flare (veh)												
Median type	TWTLT			TWTLT								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.66			0.83			0.74	0.74	0.83	0.74	0.74	0.66
vC, conflicting volume	1856			1583			2538	3466	794	2679	3466	932
vC1, stage 1 conf vol							1594	1594		1871	1871	
vC2, stage 2 conf vol							944	1872		808	1595	
vCu, unblocked vol	1268			1296			1363	2609	348	1552	2609	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	99	95	100	99
cM capacity (veh/h)	357			439			135	112	537	108	113	711
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	1051	527	8	1231	617	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	357	1700	1700	439	1700	1700	1700	537	187			
Volume to Capacity	0.02	0.62	0.31	0.02	0.72	0.36	0.00	0.01	0.05			
Queue Length 95th (m)	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.4	1.3			
Control Delay (s)	15.3	0.0	0.0	13.3	0.0	0.0	0.0	11.8	25.3			
Lane LOS	C			B			A	B	D			
Approach Delay (s)	0.1			0.1			11.8		25.3			
Approach LOS							B		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				62.9%			ICU Level of Service		B			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↱
Traffic Volume (veh/h)	0	1615	1848	14	0	7
Future Volume (Veh/h)	0	1615	1848	14	0	7
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1615	1848	14	0	7
Pedestrians		2	6		12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.67				0.76	0.67
vC, conflicting volume	1874				2680	945
vC1, stage 1 conf vol					1867	
vC2, stage 2 conf vol					814	
vCu, unblocked vol	1327				1584	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	344				139	722
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	808	808	1232	630	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	14	7
cSH	1700	1700	1700	1700	1700	722
Volume to Capacity	0.00	0.47	0.47	0.72	0.37	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.0
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			62.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1694	1737	2	0	5
Future Volume (Veh/h)	0	1694	1737	2	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1694	1737	2	0	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.85				0.84	0.85
vC, conflicting volume	1747				2593	878
vC1, stage 1 conf vol					1746	
vC2, stage 2 conf vol					847	
vCu, unblocked vol	1527				1720	505
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	365				136	433
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	847	847	1158	581	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	2	5	
cSH	1700	1700	1700	1700	433	
Volume to Capacity	0.50	0.50	0.68	0.34	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	13.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			58.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 3B

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱↰		↰	↱↰			↱↰			↱↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3568	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 3B

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱↰		↰	↱↰			↱↰			↱↰	
Lane Configurations	↰	↱↰		↰	↱↰			↱↰			↱↰	
Traffic Volume (veh/h)	0	1701	0	0	1708	29	0	0	0	0	0	34
Future Volume (Veh/h)	0	1701	0	0	1708	29	0	0	0	0	0	34
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1701	0	0	1708	29	0	0	0	0	0	34
Pedestrians		1			2			82			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			7			1	
Right turn flare (veh)												
Median type	TWLT			TWLT								
Median storage (veh)	2			2								
Upstream signal (m)	306			65								
pX, platoon unblocked	0.85			0.75			0.83	0.83	0.75	0.83	0.83	0.85
Hourly flow rate (vph)	0	1701	0	0	1708	29	0	0	0	0	0	34
vC, conflicting volume	1749			1783			2672	3532	934	2587	3518	882
vC1, stage 1 conf vol							1783	1783		1734	1734	
vC2, stage 2 conf vol							889	1749		852	1783	
vCu, unblocked vol	1535			1384			1807	2848	257	1704	2831	519
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	92
cM capacity (veh/h)	363			344			103	102	523	102	103	424
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1134	567	0	1139	598	0	34				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	29	0	34				
cSH	1700	1700	1700	1700	1700	1700	1700	424				
Volume to Capacity	0.00	0.67	0.33	0.00	0.67	0.35	0.00	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	14.2				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				58.8%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1825	1334	7	0	6
Future Volume (Veh/h)	0	1825	1334	7	0	6
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1825	1334	7	0	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.71				0.85	0.71
vC, conflicting volume	1352				2263	684
vC1, stage 1 conf vol					1348	
vC2, stage 2 conf vol					914	
vCu, unblocked vol	692				624	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	636				319	766
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	912	912	889	452	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	7	6	
cSH	1700	1700	1700	1700	766	
Volume to Capacity	0.54	0.54	0.52	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.7	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			53.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1820	1213	1	0	5
Future Volume (Veh/h)	0	1820	1213	1	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1820	1213	1	0	5
Pedestrians		3	3		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.70				0.85	0.70
vC, conflicting volume	1229				2142	625
vC1, stage 1 conf vol					1228	
vC2, stage 2 conf vol					913	
vCu, unblocked vol	487				423	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	746				402	753
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	910	910	809	405	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	1	5	
cSH	1700	1700	1700	1700	753	
Volume to Capacity	0.54	0.54	0.48	0.24	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.8	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.8	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			53.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1843	1217	14	0	8
Future Volume (Veh/h)	0	1843	1217	14	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1843	1217	14	0	8
Pedestrians		4	4		20	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.88				0.73	0.88
vC, conflicting volume	1251				2170	640
vC1, stage 1 conf vol					1244	
vC2, stage 2 conf vol					926	
vCu, unblocked vol	1013				1133	318
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	589				264	585
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	922	922	811	420	8	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	14	8	
cSH	1700	1700	1700	1700	585	
Volume to Capacity	0.54	0.54	0.48	0.25	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.2	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			54.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1807	1140	15	0	20
Future Volume (Veh/h)	0	1807	1140	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1807	1140	15	0	20
Pedestrians		5	5		30	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.83	
vC, conflicting volume	1185				2086	612
vC1, stage 1 conf vol					1178	
vC2, stage 2 conf vol					908	
vCu, unblocked vol	1185				1904	612
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	571				218	423
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	904	904	760	395	20	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	15	20	
cSH	1700	1700	1700	1700	423	
Volume to Capacity	0.53	0.53	0.45	0.23	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	13.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 3B
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1736	1122	31	0	38
Future Volume (Veh/h)	0	1736	1122	31	0	38
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1736	1122	31	0	38
Pedestrians		6	6		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1168				2026	598
vC1, stage 1 conf vol					1152	
vC2, stage 2 conf vol					874	
vCu, unblocked vol	860				1863	193
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	657				241	686
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	868	868	748	405	38	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	31	38	
cSH	1700	1700	1700	1700	686	
Volume to Capacity	0.51	0.51	0.44	0.24	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			59.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 3B
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 3B
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	14	211	110	0	57	55
Future Volume (Veh/h)	14	211	110	0	57	55
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	211	110	0	57	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	279	110			110	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	279	110			110	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	78			96	
cM capacity (veh/h)	683	943			1480	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	14	211	110	57	55	
Volume Left	14	0	0	57	0	
Volume Right	0	211	0	0	0	
cSH	683	943	1700	1480	1700	
Volume to Capacity	0.02	0.22	0.06	0.04	0.03	
Queue Length 95th (m)	0.5	6.8	0.0	1.0	0.0	
Control Delay (s)	10.4	9.9	0.0	7.5	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.9		0.0	3.8		
Approach LOS	A					
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			25.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.856			0.976			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1577	0	1750	1798	0	1750	1825	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1577	0	1750	1798	0	1750	1825	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 3B
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	62	0	0	16	11	288	11	476	90	54	213	14
Future Volume (Veh/h)	62	0	0	16	11	288	11	476	90	54	213	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	62	0	0	16	11	288	11	476	90	54	213	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	1120	916	220	864	878	521	227			566		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1102	889	220	835	849	476	227			523		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	24	100	100	94	96	49	99			95		
cM capacity (veh/h)	81	253	820	262	267	563	1341			998		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	62	0	16	299	11	566	54	227				
Volume Left	62	0	16	0	11	0	54	0				
Volume Right	0	0	0	288	0	90	0	14				
cSH	81	1700	262	541	1341	1700	998	1700				
Volume to Capacity	0.76	0.00	0.06	0.55	0.01	0.33	0.05	0.13				
Queue Length 95th (m)	30.0	0.0	1.6	26.7	0.2	0.0	1.4	0.0				
Control Delay (s)	129.6	0.0	19.7	19.6	7.7	0.0	8.8	0.0				
Lane LOS	F	A	C	C	A		A					
Approach Delay (s)	129.6		19.6		0.1		1.7					
Approach LOS	F		C									
Intersection Summary												
Average Delay			12.0									
Intersection Capacity Utilization			69.0%			ICU Level of Service				C		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 3B
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1822	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1822	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 3B
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	259	16	91	436	442	38
Future Volume (Veh/h)	259	16	91	436	442	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	259	16	91	436	442	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1079	461	480			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1079	461	480			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	97	92			
cM capacity (veh/h)	221	600	1082			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	259	16	91	436	480	
Volume Left	259	0	91	0	0	
Volume Right	0	16	0	0	38	
cSH	221	600	1082	1700	1700	
Volume to Capacity	1.17	0.03	0.08	0.26	0.28	
Queue Length 95th (m)	99.8	0.7	2.2	0.0	0.0	
Control Delay (s)	159.5	11.2	8.6	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	150.9		1.5		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			33.0			
Intersection Capacity Utilization			55.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 3B

Afternoon Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↖↖		↖	↖↖	↖		↖↖		↖	↖↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.97	1.00		0.99		0.92		0.99		1.00	1.00	0.94
Frt						0.850		0.966				0.850
Flt Protected	0.950			0.950				0.988		0.950	0.950	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1795	0	1662	1700	1566
Flt Permitted	0.950			0.213				0.833		0.950	0.750	
Satd. Flow (perm)	3304	3578	0	388	3579	1434	0	1505	0	1660	1338	1474
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						186		3				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 3B

Afternoon Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR		
Lane Configurations	↖↖	↖↖	↖	↖↖	↖		↖↖	↖	↖↖	↖		
Traffic Volume (vph)	406	1127	1	1098	656	3	6	1063	0	536		
Future Volume (vph)	406	1127	1	1098	656	3	6	1063	0	536		
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov		
Protected Phases	7	4		8	1		2	1	6	7		
Permitted Phases			8		8	2				6		
Detector Phase	7	4	8	8	1	2	2	1	6	7		
Switch Phase												
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0		
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0		
Total Split (s)	24.0	76.0	52.0	52.0	53.0	11.0	11.0	53.0	64.0	24.0		
Total Split (%)	17.1%	54.3%	37.1%	37.1%	37.9%	7.9%	7.9%	37.9%	45.7%	17.1%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None		
Act Effct Green (s)	18.9	71.0	47.1	47.1	101.7	6.0	54.6	54.6	77.9			
Actuated g/C Ratio	0.14	0.51	0.34	0.34	0.73		0.04	0.39	0.39	0.56		
v/c Ratio	0.89	0.62	0.01	0.91	0.57		0.18	0.82	0.80	0.64		
Control Delay	80.9	26.7	47.0	56.4	5.2		59.9	50.9	49.5	21.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay	80.9	26.7	47.0	56.4	5.2		59.9	50.9	49.5	21.6		
LOS	F	C	D	E	A		E	D	D	C		
Approach Delay		41.1		37.2			59.9		40.6			
Approach LOS		D		D			E		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 39.6

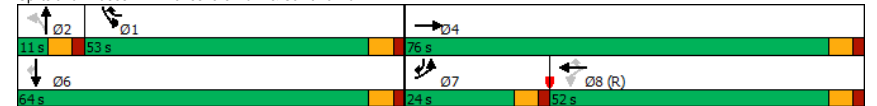
Intersection LOS: D

Intersection Capacity Utilization 90.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	1128	1	1098	656	12	531	532	536
v/c Ratio	0.89	0.62	0.01	0.91	0.57	0.18	0.82	0.80	0.64
Control Delay	80.9	26.7	47.0	56.4	5.2	59.9	50.9	49.5	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.9	26.7	47.0	56.4	5.2	59.9	50.9	49.5	21.6
Queue Length 50th (m)	60.7	121.4	0.1	140.6	0.0	2.6	136.9	135.7	87.9
Queue Length 95th (m)	#89.3	144.6	m0.4	#199.6	104.5	9.9	#233.0	#229.4	123.0
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	35.0		60.0		70.0		115.0		
Base Capacity (vph)	460	1814	130	1203	1144	67	648	662	843
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.62	0.01	0.91	0.57	0.18	0.82	0.80	0.64

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	406	1127	1	1	1098	656	3	6	3	1063	0	536
Future Volume (vph)	406	1127	1	1	1098	656	3	6	3	1063	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Frbp, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	3395	3578		1731	3579	1507		1779		1662	1697	1496
Flt Permitted	0.95	1.00		0.21	1.00	1.00		0.83		0.95	0.75	1.00
Satd. Flow (perm)	3395	3578		388	3579	1507		1501		1662	1339	1496
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	1127	1	1	1098	656	3	6	3	1063	0	536
RTOR Reduction (vph)	0	0	0	0	0	56	0	3	0	0	0	10
Lane Group Flow (vph)	406	1128	0	1	1098	600	0	9	0	531	532	526
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	17.9	66.4		42.5	42.5	96.1		2.0		53.6	61.6	79.5
Effective Green, g (s)	18.9	67.4		43.5	43.5	98.1		3.0		54.6	62.6	81.5
Actuated g/C Ratio	0.13	0.48		0.31	0.31	0.70		0.02		0.39	0.45	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	458	1722		120	1112	1055		32		648	738	924
v/s Ratio Prot	c0.12	0.32			c0.31	0.22				c0.32	0.28	0.08
v/s Ratio Perm				0.00		0.18		0.01			c0.04	0.28
v/c Ratio	0.89	0.66		0.01	0.99	0.57		0.28		0.82	0.72	0.57
Uniform Delay, d1	59.5	27.5		33.3	48.0	10.4		67.4		38.3	31.6	18.3
Progression Factor	1.00	1.00		1.51	1.05	0.85		1.00		1.00	1.00	1.00
Incremental Delay, d2	18.3	2.0		0.1	20.4	0.5		4.8		8.0	3.5	0.8
Delay (s)	77.8	29.5		50.4	70.9	9.4		72.3		46.3	35.1	19.1
Level of Service	E	C		D	E	A		E		D	D	B
Approach Delay (s)	42.2				47.9		72.3		33.4			
Approach LOS	D				D		E		C			

Intersection Summary

HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.88	0.99		0.85	0.99				0.97	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1601	0	1750	1559	0
Flt Permitted	0.950			0.950			0.754			0.719		
Satd. Flow (perm)	1731	3579	1384	1738	3579	1334	1369	1601	0	1324	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		74			77	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	84	1905	146	82	1795	86	84	0	30	0
Future Volume (vph)	84	1905	146	82	1795	86	84	0	30	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	16.2	93.2	93.2	15.8	92.8	92.8	15.0	15.0	15.0	15.0
Actuated g/C Ratio	0.12	0.67	0.67	0.11	0.66	0.66	0.11	0.11	0.11	0.11
v/c Ratio	0.41	0.80	0.15	0.42	0.76	0.09	0.58	0.24	0.21	0.03
Control Delay	61.5	25.3	6.9	58.1	20.5	4.5	73.8	9.2	58.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	25.3	6.9	58.1	20.5	4.5	73.8	9.2	58.5	0.2
LOS	E	C	A	E	C	A	E	A	E	A
Approach Delay		25.5			21.3			47.5		48.8
Approach LOS		C			C			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 24.5

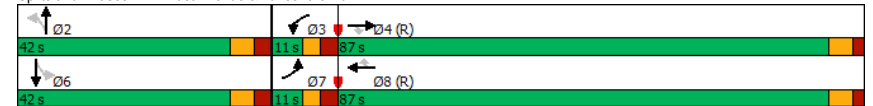
Intersection LOS: C

Intersection Capacity Utilization 85.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	1905	146	82	1795	86	84	58	30	6
v/c Ratio	0.41	0.80	0.15	0.42	0.76	0.09	0.58	0.24	0.21	0.03
Control Delay	61.5	25.3	6.9	58.1	20.5	4.5	73.8	9.2	58.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	25.3	6.9	58.1	20.5	4.5	73.8	9.2	58.5	0.2
Queue Length 50th (m)	21.6	270.4	11.3	21.1	156.1	2.2	23.7	0.0	8.1	0.0
Queue Length 95th (m)	m32.0	327.6	m21.9	m42.8	163.0	m7.6	40.4	9.2	18.0	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	20.0		45.0	
Base Capacity (vph)	203	2382	947	197	2372	910	352	466	340	458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.80	0.15	0.42	0.76	0.09	0.24	0.12	0.09	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	84	1905	146	82	1795	86	84	0	58	30	0	6
Future Volume (vph)	84	1905	146	82	1795	86	84	0	58	30	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Flt. ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Flt. Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1384	1750	3579	1334	1725	1601		1750	1559	
Flt. Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	1750	3579	1384	1750	3579	1334	1369	1601		1325	1559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1905	146	82	1795	86	84	0	58	30	0	6
RTOR Reduction (vph)	0	0	26	0	0	26	0	52	0	0	5	0
Lane Group Flow (vph)	84	1905	120	82	1795	60	84	6	0	30	1	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2				6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	15.2	92.2	92.2	14.8	91.8	91.8	14.0	14.0		14.0	14.0	
Effective Green, g (s)	16.2	93.2	93.2	15.8	92.8	92.8	15.0	15.0		15.0	15.0	
Actuated g/C Ratio	0.12	0.67	0.67	0.11	0.66	0.66	0.11	0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	202	2382	921	197	2372	884	146	171		141	167	
v/s Ratio Prot	c0.05	c0.53		0.05	0.50		0.00			0.00		
v/s Ratio Perm			0.09			0.04	c0.06			0.02		
v/c Ratio	0.42	0.80	0.13	0.42	0.76	0.07	0.58	0.04		0.21	0.00	
Uniform Delay, d1	57.5	16.7	8.6	57.8	16.0	8.3	59.5	56.0		57.1	55.8	
Progression Factor	0.98	1.28	1.38	0.91	1.08	1.64	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	2.2	0.2	1.2	1.9	0.1	5.4	0.1		0.8	0.0	
Delay (s)	57.6	23.5	12.0	53.7	19.2	13.8	64.9	56.1		57.9	55.8	
Level of Service	E	C	B	D	B	B	E	E		E	E	
Approach Delay (s)		24.1			20.4		61.3				57.5	
Approach LOS		C			C		E				E	
Intersection Summary												
HCM 2000 Control Delay			23.9									
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			140.0							16.0		
Intersection Capacity Utilization			85.7%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.35	0.93		0.65	0.65
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	551	1634	3579	2221	1016
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		70			2	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	→	↖	↗	←	↖	↗	Ø2	Ø4	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑				
Traffic Volume (vph)	1634	312	291	1663	386	192				
Future Volume (vph)	1634	312	291	1663	386	192				
Turn Type	NA	custom	Prot	NA	Prot	pm+ov				
Protected Phases	4 9	9	3	8 10	5	3	2	4	8	10
Permitted Phases		4				2				
Detector Phase	4 9	9	3	8 10	5	3				
Switch Phase										
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	8.0	8.0	5.0
Minimum Split (s)		11.0	12.0		12.0	12.0	34.0	24.0	24.0	24.0
Total Split (s)		24.0	33.0		34.0	33.0	34.0	49.0	82.0	24.0
Total Split (%)		17.1%	23.6%		24.3%	23.6%	24%	35%	59%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)		2.0	3.0		3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0				
Total Lost Time (s)		5.0	6.0		6.0	6.0				
Lead/Lag		Lead			Lead			Lag		
Lead-Lag Optimize?		Yes			Yes			Yes		
Recall Mode		None	None		None	None	None	C-Min	C-Min	None
Act Effct Green (s)	77.1	68.1	27.8	110.9	22.1	49.9				
Actuated g/C Ratio	0.55	0.49	0.20	0.79	0.16	0.36				
v/c Ratio	0.83	0.72	0.84	0.59	0.72	0.41				
Control Delay	18.2	24.1	80.1	3.6	63.8	33.1				
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0				
Total Delay	18.2	24.1	80.1	3.7	63.8	33.1				
LOS	B	C	F	A	E	C				
Approach Delay	19.2			15.1	53.6					
Approach LOS	B			B	D					

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E

Ø2	Ø3	Ø4 (R)	Ø9
34 s	33 s	49 s	24 s
Ø5	Ø8 (R)		Ø10
34 s	62 s		24 s

Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1634	312	291	1663	386	192
v/c Ratio	0.83	0.72	0.84	0.59	0.72	0.41
Control Delay	18.2	24.1	80.1	3.6	63.8	33.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	18.2	24.1	80.1	3.7	63.8	33.1
Queue Length 50th (m)	41.5	12.0	90.3	39.3	55.8	36.2
Queue Length 95th (m)	161.1	m52.0	m100.1	m51.9	70.9	54.2
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1988	444	359	2835	679	483
Starvation Cap Reductn	0	0	0	268	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.70	0.81	0.65	0.57	0.40

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1634	312	291	1663	386	192
Future Volume (vph)	1634	312	291	1663	386	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	1.0	5.0	6.0	1.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.52	1.00	1.00	1.00	0.84
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	808	1750	3579	3395	1322
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	808	1750	3579	3395	1322
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1634	312	291	1663	386	192
RTOR Reduction (vph)	0	34	0	0	0	1
Lane Group Flow (vph)	1634	278	291	1663	386	191
Confl. Peds. (#/hr)	310	310	353	340		
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	4 9	9	3	8 10	5	3
Permitted Phases		4				2
Actuated Green, G (s)	72.1	70.1	26.8	105.9	21.1	47.9
Effective Green, g (s)	73.1	72.1	27.8	106.9	22.1	49.9
Actuated g/C Ratio	0.52	0.51	0.20	0.76	0.16	0.36
Clearance Time (s)	6.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1868	416	347	2732	535	527
v/s Ratio Prot	c0.46	0.09	c0.17	0.46	c0.11	0.07
v/s Ratio Perm		0.26				0.07
v/c Ratio	0.87	0.67	0.84	0.61	0.72	0.36
Uniform Delay, d1	29.4	25.1	53.9	7.3	56.0	33.3
Progression Factor	0.56	0.65	1.31	0.52	1.00	1.00
Incremental Delay, d2	3.1	2.5	8.0	0.2	4.8	0.4
Delay (s)	19.6	18.9	78.5	4.0	60.8	33.7
Level of Service	B	B	E	A	E	C
Approach Delay (s)	19.5			15.1	51.8	
Approach LOS	B			B	D	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics

4: Ogden Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	30.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.40	0.91	0.99		0.99	0.98		0.99	0.99	
Frt			0.850		0.991			0.893			0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3513	0	1750	1651	0	1750	1716	0
Flt Permitted	0.950			0.950			0.482			0.201		
Satd. Flow (perm)	1731	3579	626	1600	3513	0	882	1651	0	366	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		7			89			41	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings

4: Ogden Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱			
Traffic Volume (vph)	102	1392	322	261	1709	174	72	144	86			
Future Volume (vph)	102	1392	322	261	1709	174	72	144	86			
Turn Type	Prot	NA	custom	Prot	NA	pm+pt	NA	pm+pt	NA			
Protected Phases	7	4 9		3	8 10	5	2	1	6	4	8	10
Permitted Phases			4			2		6				
Detector Phase	7	4 9	9	3	8 10	5	2	1	6			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	8.0	5.0	8.0	8.0	8.0	5.0
Minimum Split (s)	11.0		11.0	11.0		9.0	45.0	9.0	45.0	24.0	24.0	24.0
Total Split (s)	11.0		24.0	25.0		9.0	46.0	11.0	48.0	34.0	48.0	24.0
Total Split (%)	7.9%		17.1%	17.9%		6.4%	32.9%	7.9%	34.3%	24%	34%	17%
Yellow Time (s)	3.0		4.0	3.0		3.0	4.0	3.0	4.0	2.0	2.0	4.0
All-Red Time (s)	3.0		2.0	3.0		1.0	3.0	1.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		3.0	6.0	3.0	6.0			
Lead/Lag	Lead		Lead	Lead		Lead	Lag	Lead	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	19.0	65.4	56.4	30.8	77.2	29.8	20.8	33.8	22.8			
Actuated g/C Ratio	0.14	0.47	0.40	0.22	0.55	0.21	0.15	0.24	0.16			
v/c Ratio	0.43	0.83	0.68	0.68	0.94	0.78	0.78	0.86	0.58			
Control Delay	53.3	34.8	27.4	72.2	29.5	69.6	52.5	85.1	47.9			
Queue Delay	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0			
Total Delay	53.3	34.8	27.4	72.2	33.1	69.6	52.5	85.1	47.9			
LOS	D	C	C	E	C	E	D	F	D			
Approach Delay		34.5			38.0		59.5		64.3			
Approach LOS		C			D		E		E			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 40.4

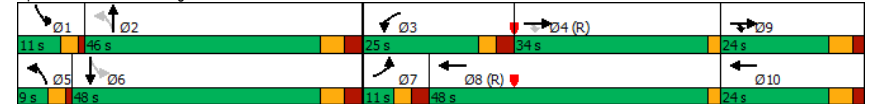
Intersection LOS: D

Intersection Capacity Utilization 102.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1392	322	261	1820	174	250	144	182
v/c Ratio	0.43	0.83	0.68	0.68	0.94	0.78	0.78	0.86	0.58
Control Delay	53.3	34.8	27.4	72.2	29.5	69.6	52.5	85.1	47.9
Queue Delay	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0
Total Delay	53.3	34.8	27.4	72.2	33.1	69.6	52.5	85.1	47.9
Queue Length 50th (m)	30.0	116.6	32.4	0.0	241.3	42.6	46.3	34.6	38.4
Queue Length 95th (m)	m38.9	#251.5	m47.8	m108.7	#337.3	60.0	72.9	#59.9	59.7
Internal Link Dist (m)		78.3			60.4		118.3		222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0			
Base Capacity (vph)	237	1671	472	385	1939	224	535	167	543
Starvation Cap Reductn	0	0	0	0	77	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.83	0.68	0.68	0.98	0.78	0.47	0.86	0.34

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1392	322	261	1709	111	174	72	178	144	86	96
Future Volume (vph)	102	1392	322	261	1709	111	174	72	178	144	86	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.59	1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	921	1750	3513		1745	1652		1747	1716	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.48	1.00		0.20	1.00	
Satd. Flow (perm)	1750	3579	921	1750	3513		886	1652		369	1716	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	102	1392	322	261	1709	111	174	72	178	144	86	96
RTOR Reduction (vph)	0	0	89	0	3	0	0	76	0	0	34	0
Lane Group Flow (vph)	102	1392	233	261	1817	0	174	174	0	144	148	0
Confl. Peds. (#/hr)	29		206	206		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	custom	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4 9	9	3	8 10		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	18.0	60.4	58.4	29.8	72.2		24.8	19.8		28.8	21.8	
Effective Green, g (s)	19.0	61.4	60.4	30.8	73.2		26.8	20.8		30.8	22.8	
Actuated g/C Ratio	0.14	0.44	0.43	0.22	0.52		0.19	0.15		0.22	0.16	
Clearance Time (s)	6.0		6.0	6.0			4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	1569	397	385	1836		206	245		159	279	
v/s Ratio Prot	0.06	0.39	0.08	c0.15	c0.52		0.04	0.11		c0.05	0.09	
v/s Ratio Perm			0.17				0.13			c0.15		
v/c Ratio	0.43	0.89	0.59	0.68	0.99		0.84	0.71		0.91	0.53	
Uniform Delay, d1	55.5	36.1	30.3	50.1	33.0		54.3	56.7		50.0	53.7	
Progression Factor	0.87	0.93	1.09	1.29	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	4.2	1.4	3.2	14.8		25.8	9.3		44.5	1.8	
Delay (s)	49.2	37.7	34.4	68.0	38.3		80.1	66.1		94.5	55.5	
Level of Service	D	D	C	E	D		F	E		F	E	
Approach Delay (s)		37.7			42.0			71.8			72.7	
Approach LOS		D			D			E			E	

Intersection Summary

HCM 2000 Control Delay 45.2 HCM 2000 Level of Service D

HCM 2000 Volume to Capacity ratio 0.96

Actuated Cycle Length (s) 140.0 Sum of lost time (s) 20.0

Intersection Capacity Utilization 102.8% ICU Level of Service G

Analysis Period (min) 15

c Critical Lane Group

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.32	0.89	1.00			0.99			1.00	
Frt			0.850					0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1750	3579	1566	1750	3578	0	1750	1580	0	0	1789	0
Flt Permitted	0.950			0.950			0.757				0.360	
Satd. Flow (perm)	1733	3579	497	1561	3578	0	1394	1580	0	0	678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			193				246					
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.1			195.3			135.3			191.6	
Travel Time (s)		9.9			14.1			9.7			13.8	

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔			
Traffic Volume (vph)	1	1320	427	290	1761	325	0	1	0			
Future Volume (vph)	1	1320	427	290	1761	325	0	1	0			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9		3	8 10		5		2	4	8	10
Permitted Phases			4			5		2				
Detector Phase	7	4 9	9	3	8 10	5	5	2	2			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	20.0	24.0
Total Split (s)	11.0		32.0	29.0		44.0	44.0	44.0	44.0	35.0	53.0	32.0
Total Split (%)	7.9%		22.9%	20.7%		31.4%	31.4%	31.4%	31.4%	25%	38%	23%
Yellow Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	2.0		2.0	2.0		2.0	2.0	2.0	2.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0		5.0			
Lead/Lag	Lead			Lead						Lag	Lag	
Lead-Lag Optimize?	Yes			Yes						Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Max	C-Max	None
Act Effect Green (s)	6.2	67.1	58.1	25.7	95.6	36.2	36.2		36.2			
Actuated g/C Ratio	0.04	0.48	0.42	0.18	0.68	0.26	0.26		0.26			
v/c Ratio	0.01	0.77	0.85	0.90	0.72	0.90	0.47		0.01			
Control Delay	77.0	18.7	23.2	91.8	11.1	78.3	9.9		37.0			
Queue Delay	0.0	0.3	0.0	0.0	0.4	0.0	0.0		0.0			
Total Delay	77.0	19.0	23.2	91.8	11.5	78.3	9.9		37.0			
LOS	E	B	C	F	B	E	A		D			
Approach Delay		20.0			22.9		46.7		37.0			
Approach LOS		C			C		D		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.0

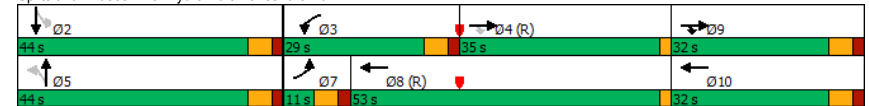
Intersection LOS: C

Intersection Capacity Utilization 82.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1	1320	427	290	1764	325	279	1
v/c Ratio	0.01	0.77	0.85	0.90	0.72	0.90	0.47	0.01
Control Delay	77.0	18.7	23.2	91.8	11.1	78.3	9.9	37.0
Queue Delay	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	77.0	19.0	23.2	91.8	11.5	78.3	9.9	37.0
Queue Length 50th (m)	0.3	53.0	36.6	79.7	59.6	89.5	7.1	0.2
Queue Length 95th (m)	m0.2	67.8	m46.1 m	#127.1	64.3	#141.4	31.7	1.7
Internal Link Dist (m)		114.1			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	77	1780	530	321	2508	388	617	188
Starvation Cap Reductn	0	101	0	0	189	0	0	0
Spillback Cap Reductn	0	0	0	0	297	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.79	0.81	0.90	0.80	0.84	0.45	0.01

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	1	1320	427	290	1761	3	325	0	279	1	0	0
Future Volume (vph)	1	1320	427	290	1761	3	325	0	279	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		5.0	5.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00				
Flt Protected	1.00	1.00	0.64	1.00	1.00		1.00	0.99				
Flt Permitted	1.00	1.00	1.00	1.00	1.00		1.00	1.00				
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1750	3579	1003	1750	3577		1750	1580				
Satd. Flow (perm)	0.95	1.00	1.00	0.95	1.00		0.76	1.00				
Satd. Flow (perm)	1750	3579	1003	1750	3577		1395	1580				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	1320	427	290	1761	3	325	0	279	1	0	0
RTOR Reduction (vph)	0	0	107	0	0	0	0	182	0	0	0	0
Lane Group Flow (vph)	1	1320	320	290	1764	0	325	97	0	0	1	0
Confl. Peds. (#/hr)	29		355	355		29			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4	9	3	8	10		5			2	
Permitted Phases			4					5		2		
Actuated Green, G (s)	1.0	62.1	60.1	24.7	85.8		35.2	35.2			35.2	
Effective Green, g (s)	2.0	63.1	62.1	25.7	86.8		36.2	36.2			36.2	
Actuated g/C Ratio	0.01	0.45	0.44	0.18	0.62		0.26	0.26			0.26	
Clearance Time (s)	6.0		6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	25	1613	444	321	2217		360	408			175	
v/s Ratio Prot	0.00	c0.37	0.15	c0.17	c0.49			0.06				
v/s Ratio Perm			0.17				c0.23				0.00	
v/c Ratio	0.04	0.82	0.72	0.90	0.80		0.90	0.24			0.01	
Uniform Delay, d1	68.1	33.5	31.8	55.9	19.9		50.2	41.0			38.5	
Progression Factor	1.19	0.54	0.50	1.29	0.64		1.00	1.00			1.00	
Incremental Delay, d2	0.4	2.0	3.4	18.7	1.3		24.9	0.3			0.0	
Delay (s)	81.2	20.1	19.4	90.9	14.1		75.1	41.3			38.6	
Level of Service	F	C	B	F	B		E	D			D	
Approach Delay (s)		19.9			24.9			59.5			38.6	
Approach LOS		B			C			E			D	

Intersection Summary

HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				1.00						0.75	
Frt					0.993						0.890	
Flt Protected	0.950										0.991	
Satd. Flow (prot)	1750	3579	1842	1842	3546	0	1879	1921	0	0	1309	0
Flt Permitted	0.950										0.935	
Satd. Flow (perm)	1720	3579	1842	1842	3546	0	1879	1921	0	0	1175	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6						140	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	SBL	SBT	Ø2	Ø3	Ø4	Ø8	Ø9	Ø10
Lane Configurations	↰	↱	↱	↰	↱						
Traffic Volume (vph)	113	1466	1877	31	0						
Future Volume (vph)	113	1466	1877	31	0						
Turn Type	Prot	NA	NA	Perm	NA						
Protected Phases	7	4 9	8 10		6	2	3	4	8	9	10
Permitted Phases				6							
Detector Phase	7	4 9	8 10	6	6						
Switch Phase											
Minimum Initial (s)	5.0			8.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	11.0			44.0	44.0	44.0	11.0	24.0	12.0	12.0	24.0
Total Split (s)	12.0			48.0	48.0	48.0	25.0	42.0	55.0	25.0	25.0
Total Split (%)	8.6%			34.3%	34.3%	34%	18%	30%	39%	18%	18%
Yellow Time (s)	3.0			4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0
All-Red Time (s)	3.0			3.0	3.0	3.0	3.0	0.0	0.0	3.0	2.0
Lost Time Adjust (s)	-1.0				-1.0						
Total Lost Time (s)	5.0				6.0						
Lead/Lag	Lead						Lead	Lag	Lag		
Lead-Lag Optimize?	Yes						Yes	Yes	Yes		
Recall Mode	None			None	None	None	None	C-Min	C-Max	None	None
Act Effect Green (s)	20.6	120.2	94.6		12.8						
Actuated g/C Ratio	0.15	0.86	0.68		0.09						
v/c Ratio	0.44	0.48	0.82		0.72						
Control Delay	53.6	3.6	20.7		31.2						
Queue Delay	0.0	0.2	0.0		0.0						
Total Delay	53.6	3.8	20.7		31.2						
LOS	D	A	C		C						
Approach Delay		7.4	20.7		31.2						
Approach LOS		A	C		C						

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 15.5

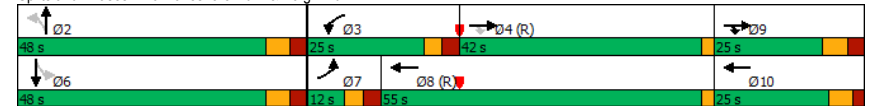
Intersection LOS: B

Intersection Capacity Utilization 104.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	SBT
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	113	1466	1968	168
v/c Ratio	0.44	0.48	0.82	0.72
Control Delay	53.6	3.6	20.7	31.2
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	53.6	3.8	20.7	31.2
Queue Length 50th (m)	34.4	41.3	172.1	7.9
Queue Length 95th (m)	m48.4	66.6	m220.1	31.9
Internal Link Dist (m)		171.3	98.1	859.5
Turn Bay Length (m)	50.0			
Base Capacity (vph)	257	3071	2397	450
Starvation Cap Reductn	0	648	0	0
Spillback Cap Reductn	0	0	9	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.61	0.82	0.37
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	113	1466	0	0	1877	91	0	0	0	31	0	137
Future Volume (vph)	113	1466	0	0	1877	91	0	0	0	31	0	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0			1.0							6.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							0.79
Flpb, ped/bikes	1.00	1.00			1.00							0.95
Flt Protected	0.95	1.00			1.00							0.99
Satd. Flow (prot)	1750	3579			3547							1246
Flt Permitted	0.95	1.00			1.00							0.94
Satd. Flow (perm)	1750	3579			3547							1175
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	113	1466	0	0	1877	91	0	0	0	31	0	137
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	127	0
Lane Group Flow (vph)	113	1466	0	0	1966	0	0	0	0	0	41	0
Confl. Peds. (#/hr)	26		223	223		26	223		230	230		223
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm			Perm	NA	
Protected Phases	7	4	9	3	8	10		2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	19.6	114.2			89.6						11.8	
Effective Green, g (s)	20.6	115.2			90.6						12.8	
Actuated g/C Ratio	0.15	0.82			0.65						0.09	
Clearance Time (s)	6.0										7.0	
Vehicle Extension (s)	3.0										3.0	
Lane Grp Cap (vph)	257	2945			2295						107	
v/s Ratio Prot	0.06	c0.41			c0.55							
v/s Ratio Perm											c0.03	
v/c Ratio	0.44	0.50			0.86						0.38	
Uniform Delay, d1	54.4	3.7			19.6						59.9	
Progression Factor	0.89	1.17			1.10						1.00	
Incremental Delay, d2	0.9	0.1			1.3						2.3	
Delay (s)	49.6	4.5			22.9						62.1	
Level of Service	D	A			C						E	
Approach Delay (s)	7.7				22.9			0.0			62.1	
Approach LOS	A				C			A			E	
Intersection Summary												
HCM 2000 Control Delay			18.2		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				18.0			
Intersection Capacity Utilization			104.5%		ICU Level of Service				G			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.98		0.87		0.99				0.97
Frt		0.999				0.850		0.951				0.850
Flt Protected	0.950			0.950				0.982			0.953	
Satd. Flow (prot)	1750	3572	0	1750	3579	1566	0	1759	0	0	1795	1566
Flt Permitted	0.950			0.950				0.899			0.721	
Satd. Flow (perm)	1704	3572	0	1720	3579	1363	0	1602	0	0	1358	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125			4			23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↕	↔	↔	↕	↔	↕	↔
Traffic Volume (vph)	409	1016	3	1051	244	4	3	255	3	898
Future Volume (vph)	409	1016	3	1051	244	4	3	255	3	898
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	50.0	84.0	11.0	45.0	45.0	45.0	45.0	45.0	45.0	50.0
Total Split (%)	35.7%	60.0%	7.9%	32.1%	32.1%	32.1%	32.1%	32.1%	32.1%	35.7%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effect Green (s)	49.5	94.9	6.6	42.6	42.6		31.9	31.9	31.9	82.4
Actuated g/C Ratio	0.35	0.68	0.05	0.30	0.30		0.23	0.23	0.23	0.59
v/c Ratio	0.66	0.42	0.04	0.97	0.49		0.03	0.83	0.98	
Control Delay	37.1	16.6	65.0	68.3	23.2		30.1	73.4	50.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	37.1	16.6	65.0	68.3	23.2		30.1	73.4	50.5	
LOS	D	B	E	E	C		C	E	D	
Approach Delay		22.5		59.8			30.1	55.6		
Approach LOS		C		E			C	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 44.7

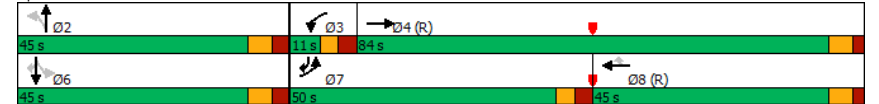
Intersection LOS: D

Intersection Capacity Utilization 106.7%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	409	1026	3	1051	244	11	258	898
v/c Ratio	0.66	0.42	0.04	0.97	0.49	0.03	0.83	0.98
Control Delay	37.1	16.6	65.0	68.3	23.2	30.1	73.4	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	16.6	65.0	68.3	23.2	30.1	73.4	50.5
Queue Length 50th (m)	102.4	120.5	0.9	~171.7	28.3	1.6	71.6	200.1
Queue Length 95th (m)	161.4	136.4	4.3	#215.6	56.7	6.7	100.7	#337.4
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	618	2421	82	1088	501	449	378	918
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.42	0.04	0.97	0.49	0.02	0.68	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	409	1016	10	3	1051	244	4	3	4	255	3	898
Future Volume (vph)	409	1016	10	3	1051	244	4	3	4	255	3	898
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.87		1.00			1.00	0.99
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1750	3570		1750	3579	1363		1750			1795	1544
Satd. Flow (perm)	1750	3570		1750	3579	1363		1602			1358	1544
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	409	1016	10	3	1051	244	4	3	4	255	3	898
RTOR Reduction (vph)	0	0	0	0	0	87	0	3	0	0	0	10
Lane Group Flow (vph)	409	1026	0	3	1051	157	0	8	0	0	258	888
Confl. Peds. (#/hr)	24		15	15		24	21					21
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	48.5	89.1		1.0	41.6	41.6		30.9			30.9	79.4
Effective Green, g (s)	49.5	90.1		2.0	42.6	42.6		31.9			31.9	81.4
Actuated g/C Ratio	0.35	0.64		0.01	0.30	0.30		0.23			0.23	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	618	2297		25	1089	414		365			309	897
v/s Ratio Prot	0.23	0.29		0.00	c0.29						c0.35	
v/s Ratio Perm						0.12		0.00			0.19	0.23
v/c Ratio	0.66	0.45		0.12	0.97	0.38		0.02			0.83	0.99
Uniform Delay, d1	38.2	12.5		68.1	48.0	38.3		41.9			51.5	28.9
Progression Factor	0.81	1.39		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.4	0.6		2.1	20.1	2.6		0.0			17.4	27.6
Delay (s)	33.5	18.0		70.3	68.0	40.9		42.0			68.9	56.5
Level of Service	C	B		E	E	D		D			E	E
Approach Delay (s)		22.4			62.9			42.0			59.3	
Approach LOS		C			E			D			E	

Intersection Summary

HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998			0.850			0.938	
Frt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Frt Permitted	0.950			0.950			0.950				0.974	
Satd. Flow (perm)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	5	2033	4	3	1974	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	2033	4	3	1974	20	3	0	3	7	0	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	2033	4	3	1974	20	3	0	3	7	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)		2			2							
Upstream signal (m)		137			226							
pX, platoon unblocked	0.63			0.76			0.75	0.75	0.76	0.75	0.75	0.63
vC, conflicting volume	2017			2061			3069	4092	1044	3044	4084	1021
vC1, stage 1 conf vol							2069	2069		2013	2013	
vC2, stage 2 conf vol							1000	2023		1030	2071	
vCu, unblocked vol	1431			1768			1658	3031	434	1624	3020	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	100	99	92	100	99
cM capacity (veh/h)	289			260			61	71	426	84	72	666
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	1355	682	3	1316	678	3	3	13			
Volume Left	5	0	0	3	0	0	3	0	7			
Volume Right	0	0	4	0	0	20	0	3	6			
cSH	289	1700	1700	260	1700	1700	61	426	141			
Volume to Capacity	0.02	0.80	0.40	0.01	0.77	0.40	0.05	0.01	0.09			
Queue Length 95th (m)	0.4	0.0	0.0	0.3	0.0	0.0	1.2	0.2	2.4			
Control Delay (s)	17.7	0.0	0.0	19.0	0.0	0.0	67.0	13.5	33.1			
Lane LOS	C			C			F	B	D			
Approach Delay (s)	0.0			0.0			40.2		33.1			
Approach LOS							E		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				70.3%			ICU Level of Service		C			
Analysis Period (min)				15								

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱			↰
Traffic Volume (veh/h)	0	2160	1826	47	0	13
Future Volume (Veh/h)	0	2160	1826	47	0	13
Sign Control	Free	Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2160	1826	47	0	13
Pedestrians		2			30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.64				0.76	0.64
vC, conflicting volume	1903				2960	968
vC1, stage 1 conf vol					1880	
vC2, stage 2 conf vol					1080	
vCu, unblocked vol	1278				1538	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	335				141	673
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	1080	1080	1217	656	13
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	47	13
cSH	1700	1700	1700	1700	1700	673
Volume to Capacity	0.00	0.64	0.64	0.72	0.39	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.5
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			70.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1951	1994	20	0	6
Future Volume (Veh/h)	0	1951	1994	20	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1951	1994	20	0	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.77				0.71	0.77
vC, conflicting volume	2037				3004	1031
vC1, stage 1 conf vol					2027	
vC2, stage 2 conf vol					976	
vCu, unblocked vol	1746				1529	436
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	268				94	428
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	976	976	1329	685	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	6	
cSH	1700	1700	1700	1700	428	
Volume to Capacity	0.57	0.57	0.78	0.40	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	13.5	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.5	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			66.1%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 3B

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	0	1962	0	0	1982	48	0	0	0	0	0	31
Future Volume (Veh/h)	0	1962	0	0	1982	48	0	0	0	0	0	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1962	0	0	1982	48	0	0	0	0	0	31
Pedestrians		1			1			143			28	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			12			2	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage (veh)		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.78			0.55			0.65	0.65	0.55	0.65	0.65	0.78
vC, conflicting volume	2058			2105			3128	4163	1125	3016	4139	1044
vC1, stage 1 conf vol							2105	2105		2034	2034	
vC2, stage 2 conf vol							1023	2058		982	2105	
vCu, unblocked vol	1799			1362			1714	3296	0	1543	3260	507
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	92
cM capacity (veh/h)	260			240			74	69	523	65	70	391
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1308	654	0	1321	709	0	31				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	48	0	31				
cSH	1700	1700	1700	1700	1700	1700	1700	391				
Volume to Capacity	0.00	0.77	0.38	0.00	0.78	0.42	0.00	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0				
Lane LOS							A	C				
Approach Delay (s)	0.0			0.0			0.0	15.0				
Approach LOS							A	C				
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			66.4%			ICU Level of Service			C			
Analysis Period (min)			15									

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1844	1930	24	0	9
Future Volume (Veh/h)	0	1844	1930	24	0	9
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1844	1930	24	0	9
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.50				0.70	0.50
vC, conflicting volume	1977				2889	1002
vC1, stage 1 conf vol					1965	
vC2, stage 2 conf vol					924	
vCu, unblocked vol	941				208	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	353				583	528
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	922	922	1287	667	9	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	24	9	
cSH	1700	1700	1700	1700	528	
Volume to Capacity	0.54	0.54	0.76	0.39	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	11.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.1%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1857	1943	8	0	4
Future Volume (Veh/h)	0	1857	1943	8	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1857	1943	8	0	4
Pedestrians		3	3		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.49				0.70	0.49
vC, conflicting volume	1978				2906	1006
vC1, stage 1 conf vol					1974	
vC2, stage 2 conf vol					932	
vCu, unblocked vol	911				145	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	356				574	518
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	928	928	1295	656	4	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	8	4	
cSH	1700	1700	1700	1700	518	
Volume to Capacity	0.55	0.55	0.76	0.39	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	12.0	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.0	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.0%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1739	2059	20	0	10
Future Volume (Veh/h)	0	1739	2059	20	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1739	2059	20	0	10
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.61				0.79	0.61
vC, conflicting volume	2106				2970	1072
vC1, stage 1 conf vol					2096	
vC2, stage 2 conf vol					874	
vCu, unblocked vol	1522				880	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	257				112	639
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	870	870	1373	706	10	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	10	
cSH	1700	1700	1700	1700	639	
Volume to Capacity	0.51	0.51	0.81	0.42	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.7	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.7	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			69.1%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1507	1972	17	0	11
Future Volume (Veh/h)	0	1507	1972	17	0	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1507	1972	17	0	11
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWTL	TWTL			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.87	
vC, conflicting volume					2765	1026
vC1, stage 1 conf vol					2006	
vC2, stage 2 conf vol					758	
vCu, unblocked vol		2015			2729	1026
tC, single (s)		4.1			6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)		2.2			3.5	3.3
p0 queue free %		100			100	95
cM capacity (veh/h)		273			85	226
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	754	754	1315	674	11	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	17	11	
cSH	1700	1700	1700	1700	226	
Volume to Capacity	0.44	0.44	0.77	0.40	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	21.7	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		21.7	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			65.1%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1460	1950	51	0	32
Future Volume (Veh/h)	0	1460	1950	51	0	32
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1460	1950	51	0	32
Pedestrians		6	6		24	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	2025				2736	1030
vC1, stage 1 conf vol					2000	
vC2, stage 2 conf vol					736	
vCu, unblocked vol	1627				2628	226
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	275				100	538
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	730	730	1300	701	32	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	51	32	
cSH	1700	1700	1700	1700	538	
Volume to Capacity	0.43	0.43	0.76	0.41	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.5	
Control Delay (s)	0.0	0.0	0.0	0.0	12.1	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			66.2%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
101: East Avenue & Street L

Scenario 3B
Afternoon Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 3B
Afternoon Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	30	88	55	0	153	75
Future Volume (Veh/h)	30	88	55	0	153	75
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	88	55	0	153	75
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	436	55			55	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	55			55	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	91			90	
cM capacity (veh/h)	521	1012			1550	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	30	88	55	153	75	
Volume Left	30	0	0	153	0	
Volume Right	0	88	0	0	0	
cSH	521	1012	1700	1550	1700	
Volume to Capacity	0.06	0.09	0.03	0.10	0.04	
Queue Length 95th (m)	1.5	2.3	0.0	2.6	0.0	
Control Delay (s)	12.3	8.9	0.0	7.6	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.8		0.0	5.1		
Approach LOS	A					
Intersection Summary						
Average Delay			5.8			
Intersection Capacity Utilization			25.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.857			0.967			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1750	1579	0	1750	1781	0	1750	1802	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1750	1579	0	1750	1781	0	1750	1802	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 3B
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	23	0	0	33	9	188	9	366	104	125	408	70
Future Volume (Veh/h)	23	0	0	33	9	188	9	366	104	125	408	70
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	0	0	33	9	188	9	366	104	125	408	70
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.97	0.97		0.97	0.97	0.97				0.97		
vC, conflicting volume	1270	1181	443	1094	1164	418	478			470		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1262	1171	443	1081	1153	383	478			437		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	100	100	81	95	71	99			89		
cM capacity (veh/h)	88	164	615	172	168	644	1084			1088		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	23	0	33	197	9	470	125	478				
Volume Left	23	0	33	0	9	0	125	0				
Volume Right	0	0	0	188	0	104	0	70				
cSH	88	1700	172	570	1084	1700	1088	1700				
Volume to Capacity	0.26	0.00	0.19	0.35	0.01	0.28	0.11	0.28				
Queue Length 95th (m)	7.6	0.0	5.5	12.3	0.2	0.0	3.1	0.0				
Control Delay (s)	60.2	0.0	30.9	14.6	8.3	0.0	8.7	0.0				
Lane LOS	F	A	D	B	A		A					
Approach Delay (s)	60.2		17.0		0.2		1.8					
Approach LOS	F		C									
Intersection Summary												
Average Delay			4.8									
Intersection Capacity Utilization			61.3%		ICU Level of Service					B		
Analysis Period (min)			15									

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 3B
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.982	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1809	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1809	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 3B
Afternoon Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	200	33	96	404	622	94
Future Volume (Veh/h)	200	33	96	404	622	94
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	200	33	96	404	622	94
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	1265	669	716			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1265	669	716			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	93	89			
cM capacity (veh/h)	167	458	885			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	200	33	96	404	716	
Volume Left	200	0	96	0	0	
Volume Right	0	33	0	0	94	
cSH	167	458	885	1700	1700	
Volume to Capacity	1.20	0.07	0.11	0.24	0.42	
Queue Length 95th (m)	88.0	1.9	2.9	0.0	0.0	
Control Delay (s)	189.0	13.5	9.6	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	164.1		1.8		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			27.0			
Intersection Capacity Utilization			64.8%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	70.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	1.00		0.99		0.95		0.99				0.96
Frt						0.850		0.932				0.850
Flt Protected	0.950			0.950				0.976		0.950	0.953	
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1713	0	1662	1705	1566
Flt Permitted	0.950			0.381						0.950	0.727	
Satd. Flow (perm)	3342	3578	0	697	3579	1493	0	1740	0	1662	1301	1499
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						226		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰		↰↱	↰	↰↱	↰
Traffic Volume (vph)	462	710	1	953	988	1	0	733	3	507
Future Volume (vph)	462	710	1	953	988	1	0	733	3	507
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	27.0	80.0	53.0	53.0	49.0	11.0	11.0	49.0	60.0	27.0
Total Split (%)	19.3%	57.1%	37.9%	37.9%	35.0%	7.9%	7.9%	35.0%	42.9%	19.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	21.6	75.0	48.4	48.4	101.2		6.0	52.8	52.8	76.6
Actuated g/C Ratio	0.15	0.54	0.35	0.35	0.72		0.04	0.38	0.38	0.55
v/c Ratio	0.88	0.37	0.00	0.77	0.85		0.01	0.58	0.58	0.60
Control Delay	76.7	19.5	42.0	48.5	17.0		0.0	40.4	40.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	76.7	19.5	42.0	48.5	17.0		0.0	40.4	40.0	21.0
LOS	E	B	D	D	B		A	D	D	C
Approach Delay		42.0		32.4					32.4	
Approach LOS		D		C					C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 35.0

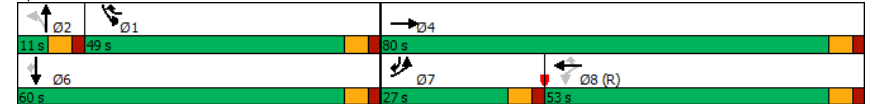
Intersection LOS: C

Intersection Capacity Utilization 93.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	462	712	1	953	988	2	366	370	507
v/c Ratio	0.88	0.37	0.00	0.77	0.85	0.01	0.58	0.58	0.60
Control Delay	76.7	19.5	42.0	48.5	17.0	0.0	40.4	40.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	19.5	42.0	48.5	17.0	0.0	40.4	40.0	21.0
Queue Length 50th (m)	68.6	61.3	0.1	95.7	48.4	0.0	86.8	87.3	82.4
Queue Length 95th (m)	#96.7	76.1	m0.3	134.3	#266.8	0.0	139.2	139.4	115.6
Internal Link Dist (m)	297.4		113.2		71.8		931.9		
Turn Bay Length (m)	70.0		60.0		70.0		115.0		
Base Capacity (vph)	533	1916	240	1236	1168	186	626	642	845
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.37	0.00	0.77	0.85	0.01	0.58	0.58	0.60

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	462	710	2	1	953	988	1	0	1	733	3	507
Future Volume (vph)	462	710	2	1	953	988	1	0	1	733	3	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	0.97
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	3395	3577		1737	3579	1533		1698		1662	1705	1516
Satd. Flow (perm)	3395	3577		697	3579	1533		1740		1662	1301	1516
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	462	710	2	1	953	988	1	0	1	733	3	507
RTOR Reduction (vph)	0	0	0	0	0	70	0	2	0	0	0	10
Lane Group Flow (vph)	462	712	0	1	953	918	0	0	0	366	370	497
Confl. Peds. (#/hr)	27		9	9		27	24					24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	20.6	69.2		42.6	42.6	94.4		1.0		51.8	58.8	79.4
Effective Green, g (s)	21.6	70.2		43.6	43.6	96.4		2.0		52.8	59.8	81.4
Actuated g/C Ratio	0.15	0.50		0.31	0.31	0.69		0.01		0.38	0.43	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	523	1793		217	1114	1055		24		626	708	935
v/s Ratio Prot	c0.14	0.20			0.27	c0.33				0.22	0.20	c0.08
v/s Ratio Perm				0.00		0.27		0.00			0.03	0.25
v/c Ratio	0.88	0.40		0.00	0.86	0.87		0.00		0.58	0.52	0.53
Uniform Delay, d1	58.0	21.7		33.2	45.2	16.9		68.0		34.8	29.6	17.8
Progression Factor	1.00	1.00		1.37	1.10	1.30		1.00		1.00	1.00	1.00
Incremental Delay, d2	16.1	0.7		0.0	5.6	5.2		0.0		1.4	0.7	0.6
Delay (s)	74.1	22.4		45.4	55.3	27.3		68.0		36.2	30.3	18.3
Level of Service	E	C		D	E	C		E		D	C	B
Approach Delay (s)	42.7			41.0			68.0			27.2		
Approach LOS	D			D			E			C		

Intersection Summary

HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↘	↩	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	40.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.94	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1578	0	1750	1565	0
Flt Permitted	0.950			0.950			0.755			0.554		
Satd. Flow (perm)	1745	3579	1527	1749	3579	1470	1376	1578	0	1019	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78		111			75	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↩	↗	↘	↩	↗	↘	↩	↗	↩	↗
Traffic Volume (vph)	53	1338	46	10	1909	9	136	0	38	0
Future Volume (vph)	53	1338	46	10	1909	9	136	0	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	11.0	106.0	106.0	7.4	95.3	95.3	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.08	0.76	0.76	0.05	0.68	0.68	0.14	0.14	0.14	0.14
v/c Ratio	0.39	0.49	0.04	0.11	0.78	0.01	0.69	0.41	0.26	0.01
Control Delay	64.8	13.7	3.6	57.6	24.8	0.0	73.6	16.6	55.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	13.7	3.6	57.6	24.8	0.0	73.6	16.6	55.3	0.0
LOS	E	B	A	E	C	A	E	B	E	A
Approach Delay		15.2			24.8			45.4		50.0
Approach LOS		B			C			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 22.9

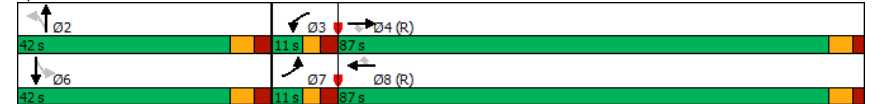
Intersection LOS: C

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	←	→	↙	↘	←	↙	↘	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1338	46	10	1909	9	136	133	38	4
v/c Ratio	0.39	0.49	0.04	0.11	0.78	0.01	0.69	0.41	0.26	0.01
Control Delay	64.8	13.7	3.6	57.6	24.8	0.0	73.6	16.6	55.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	13.7	3.6	57.6	24.8	0.0	73.6	16.6	55.3	0.0
Queue Length 50th (m)	15.4	102.3	1.1	2.6	204.1	0.0	38.2	5.7	10.0	0.0
Queue Length 95th (m)	m27.0	211.1	m5.6	m4.8	241.8	m0.0	58.4	24.1	20.5	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	40.0		45.0	
Base Capacity (vph)	137	2711	1175	92	2436	1025	353	488	262	458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.49	0.04	0.11	0.78	0.01	0.39	0.27	0.15	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	←	→	↙	↘	←	↙	↘	↑	↗	↓	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↘	↖	↖↗	↘	↖	↖↗	↘	↖	↖↗	↘
Traffic Volume (vph)	53	1338	46	10	1909	9	136	0	133	38	0	4
Future Volume (vph)	53	1338	46	10	1909	9	136	0	133	38	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.94	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1527	1750	3579	1470	1731	1578		1747	1565	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00		0.55	1.00	
Satd. Flow (perm)	1750	3579	1527	1750	3579	1470	1376	1578		1018	1565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1338	46	10	1909	9	136	0	133	38	0	4
RTOR Reduction (vph)	0	0	13	0	0	3	0	95	0	0	3	0
Lane Group Flow (vph)	53	1338	33	10	1909	6	136	38	0	38	1	0
Confl. Peds. (#/hr)	9		1	1		9	9		2	2		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2				6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.7	100.2	100.2	1.6	93.1	93.1	19.2	19.2		19.2	19.2	
Effective Green, g (s)	9.7	101.2	101.2	2.6	94.1	94.1	20.2	20.2		20.2	20.2	
Actuated g/C Ratio	0.07	0.72	0.72	0.02	0.67	0.67	0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	121	2587	1103	32	2405	988	198	227		146	225	
v/s Ratio Prot	c0.03	c0.37		0.01	c0.53		0.02				0.00	
v/s Ratio Perm			0.02			0.00	c0.10			0.04		
v/c Ratio	0.44	0.52	0.03	0.31	0.79	0.01	0.69	0.17		0.26	0.00	
Uniform Delay, d1	62.5	8.6	5.5	67.8	16.1	7.6	56.9	52.5		53.3	51.3	
Progression Factor	0.95	1.62	6.74	0.89	1.25	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.7	0.0	4.6	2.3	0.0	9.5	0.4		1.0	0.0	
Delay (s)	61.7	14.6	37.1	64.7	22.5	7.6	66.4	52.9		54.2	51.3	
Level of Service	E	B	D	E	C	A	E	D		D	D	
Approach Delay (s)		17.1			22.7			59.7			53.9	
Approach LOS		B			C			E			D	
Intersection Summary												
HCM 2000 Control Delay		23.5			HCM 2000 Level of Service		C					
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)		16.0					
Intersection Capacity Utilization		87.0%			ICU Level of Service		E					
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		70.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.36	0.90		0.65	0.65
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	563	1581	3579	2219	1011
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		45			8	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↖	↗	←	↖	↗	Ø2
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø2
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑	
Traffic Volume (vph)	1356	135	34	1428	503	336	
Future Volume (vph)	1356	135	34	1428	503	336	
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov	
Protected Phases	4		3	8	5	3	2
Permitted Phases		4				2	
Detector Phase	4	4	3	8	5	3	
Switch Phase							
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	12.0	24.0	12.0	12.0	34.0
Total Split (s)	83.0	83.0	23.0	106.0	34.0	23.0	34.0
Total Split (%)	59.3%	59.3%	16.4%	75.7%	24.3%	16.4%	24%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	6.0	6.0	
Lag/Lead	Lag	Lag	Lead			Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	C-Min	C-Min	None	C-Min	None	None	None
Act Effct Green (s)	81.8	81.8	14.9	102.7	26.3	41.2	
Actuated g/C Ratio	0.58	0.58	0.11	0.73	0.19	0.29	
v/c Ratio	0.65	0.39	0.18	0.54	0.79	0.93	
Control Delay	9.4	6.1	58.4	6.2	63.5	77.7	
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	
Total Delay	9.4	6.1	58.4	6.2	63.5	77.7	
LOS	A	A	E	A	E	E	
Approach Delay	9.1			7.4	69.2		
Approach LOS	A			A	E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 21.7

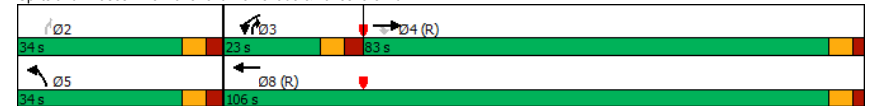
Intersection LOS: C

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E



Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1356	135	34	1428	503	336
v/c Ratio	0.65	0.39	0.18	0.54	0.79	0.93
Control Delay	9.4	6.1	58.4	6.2	63.5	77.7
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	9.4	6.1	58.4	6.2	63.5	77.7
Queue Length 50th (m)	43.8	2.0	9.8	61.8	72.5	79.7
Queue Length 95th (m)	49.1	7.1	m13.9	68.6	90.3	#118.8
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		70.0	
Base Capacity (vph)	2112	350	214	2642	695	387
Starvation Cap Reductn	0	0	0	184	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.39	0.16	0.58	0.72	0.87

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1356	135	34	1428	503	336
Future Volume (vph)	1356	135	34	1428	503	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.36	1.00	1.00	1.00	0.77
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	563	1750	3579	3395	1211
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	563	1750	3579	3395	1211
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1356	135	34	1428	503	336
RTOR Reduction (vph)	0	19	0	0	0	6
Lane Group Flow (vph)	1356	116	34	1428	503	330
Confl. Peds. (#/hr)	300	300		355	352	
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	5	3
Permitted Phases		4				2
Actuated Green, G (s)	80.8	80.8	13.9	101.7	25.3	39.2
Effective Green, g (s)	81.8	81.8	14.9	102.7	26.3	41.2
Actuated g/C Ratio	0.58	0.58	0.11	0.73	0.19	0.29
Clearance Time (s)	6.0	6.0	7.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2091	328	186	2625	637	408
v/s Ratio Prot	c0.38		0.02	0.40	0.15	c0.09
v/s Ratio Perm		0.21				0.19
v/c Ratio	0.65	0.35	0.18	0.54	0.79	0.81
Uniform Delay, d1	19.5	15.3	57.0	8.3	54.2	45.8
Progression Factor	0.39	0.26	1.01	0.64	1.00	1.00
Incremental Delay, d2	1.4	2.7	0.3	0.6	6.5	11.3
Delay (s)	8.9	6.7	58.1	5.8	60.7	57.0
Level of Service	A	A	E	A	E	E
Approach Delay (s)	8.7			7.1	59.2	
Approach LOS	A			A	E	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	85.0		0.0	50.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98		0.42	0.92	0.98		0.99		0.97	0.98	0.98	
Frt			0.850		0.980				0.850		0.887	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3443	0	1750	1883	1566	1750	1647	0
Flt Permitted	0.950			0.950			0.563			0.715		
Satd. Flow (perm)	1716	3579	659	1604	3443	0	1028	1883	1516	1293	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		15				148		87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	197	1386	130	25	1137	200	64	300	120	28
Future Volume (vph)	197	1386	130	25	1137	200	64	300	120	28
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	5.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	45.0	45.0	9.0	45.0
Total Split (s)	19.0	75.0	75.0	11.0	67.0	9.0	45.0	45.0	9.0	45.0
Total Split (%)	13.6%	53.6%	53.6%	7.9%	47.9%	6.4%	32.1%	32.1%	6.4%	32.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effect Green (s)	25.6	85.9	85.9	8.5	64.0	35.6	22.5	22.5	32.5	20.7
Actuated g/C Ratio	0.18	0.61	0.61	0.06	0.46	0.25	0.16	0.16	0.23	0.15
v/c Ratio	0.62	0.63	0.29	0.24	0.83	0.63	0.21	0.82	0.36	0.36
Control Delay	71.7	16.2	6.1	66.6	41.9	53.4	49.9	45.2	43.2	17.8
Queue Delay	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	16.3	6.1	66.6	42.3	53.4	49.9	45.2	43.2	17.8
LOS	E	B	A	E	D	D	D	D	D	B
Approach Delay		21.9			42.7		48.7			30.7
Approach LOS		C			D		D			C

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 33.6

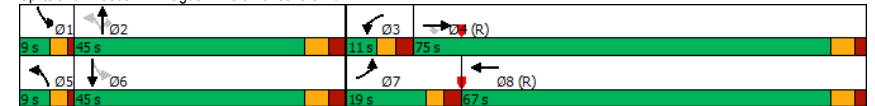
Intersection LOS: C

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	197	1386	130	25	1310	200	64	300	120	115
v/c Ratio	0.62	0.63	0.29	0.24	0.83	0.63	0.21	0.82	0.36	0.36
Control Delay	71.7	16.2	6.1	66.6	41.9	53.4	49.9	45.2	43.2	17.8
Queue Delay	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	16.3	6.1	66.6	42.3	53.4	49.9	45.2	43.2	17.8
Queue Length 50th (m)	56.6	64.6	0.0	7.1	204.4	47.9	16.5	44.7	27.4	7.1
Queue Length 95th (m)	m#92.1	162.1	m15.4	m15.6	225.6	67.4	28.2	73.9	42.0	23.1
Internal Link Dist (m)		78.3			60.4		118.3			222.5
Turn Bay Length (m)	28.0		25.0	85.0		50.0		30.0		
Base Capacity (vph)	319	2195	446	106	1583	316	524	529	329	521
Starvation Cap Reductn	0	69	0	0	48	0	0	0	0	0
Spillback Cap Reductn	0	89	0	0	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.66	0.29	0.24	0.85	0.63	0.12	0.57	0.36	0.22

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	197	1386	130	25	1137	173	200	64	300	120	28	87
Future Volume (vph)	197	1386	130	25	1137	173	200	64	300	120	28	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.42	1.00	0.98		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3579	659	1750	3443		1742	1883	1516	1728	1646	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.56	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1750	3579	659	1750	3443		1033	1883	1516	1301	1646	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	1386	130	25	1137	173	200	64	300	120	28	87
RTOR Reduction (vph)	0	0	44	0	8	0	0	0	124	0	74	0
Lane Group Flow (vph)	197	1386	86	25	1302	0	200	64	176	120	41	0
Confl. Peds. (#/hr)	26		183	183		26	9		18	18		9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	24.6	82.4	82.4	5.2	63.0		31.2	21.5	21.5	27.6	19.7	
Effective Green, g (s)	25.6	83.4	83.4	6.2	64.0		33.2	22.5	22.5	29.6	20.7	
Actuated g/C Ratio	0.18	0.60	0.60	0.04	0.46		0.24	0.16	0.16	0.21	0.15	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	320	2132	392	77	1573		299	302	243	302	243	
v/s Ratio Prot	c0.11	c0.39		0.01	c0.38		c0.05	0.03		0.03	0.02	
v/s Ratio Perm			0.13				0.11		c0.12	0.06		
v/c Ratio	0.62	0.65	0.22	0.32	0.83		0.67	0.21	0.72	0.40	0.17	
Uniform Delay, d1	52.7	18.7	13.2	64.9	33.2		47.0	51.0	55.8	46.8	52.1	
Progression Factor	1.22	0.78	1.05	1.00	1.11		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	1.1	0.9	2.2	4.7		5.6	0.4	10.2	0.9	0.3	
Delay (s)	67.0	15.6	14.8	67.0	41.4		52.6	51.4	66.0	47.6	52.5	
Level of Service	E	B	B	E	D		D	D	E	D	D	
Approach Delay (s)		21.5			41.9			59.6			50.0	
Approach LOS		C			D			E			D	

Intersection Summary

HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	↖	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	
Grade (%)		0%			0%			0%			0%		
Storage Length (m)	25.0		50.0	25.0		0.0	85.0		0.0	0.0		0.0	
Storage Lanes	1		1	1		0	1		0	0		0	
Taper Length (m)	7.5			7.5			30.0			0.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor			0.32	0.93	1.00			0.99			1.00		
Frt			0.850					0.850			0.961		
Flt Protected				0.950			0.950				0.966		
Satd. Flow (prot)	1842	3579	1566	1750	3578	0	1750	1580	0	0	1748	0	
Flt Permitted				0.950			0.753				0.745		
Satd. Flow (perm)	1842	3579	499	1623	3578	0	1387	1580	0	0	1348	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			80					86			86		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		138.1			195.3			135.3			191.6		
Travel Time (s)		9.9			14.1			9.7			13.8		

Intersection Summary

Area Type: Other

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗	↘	↖	↙	↗	↘	↖	↙	↗	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø7	Ø8	Ø10								
Lane Configurations	↗	↘	↖	↗	↖	↗	↖	↗												
Traffic Volume (vph)	1607	182	54	1048	303	0	5	0												
Future Volume (vph)	1607	182	54	1048	303	0	5	0												
Turn Type	NA	custom	Prot	NA	Perm	NA	Perm	NA												
Protected Phases	4 9	9	3	8 10		5		2	4	7	8	10								
Permitted Phases		4			5		2													
Detector Phase	4 9	9	3	8 10	5	5	2	2												
Switch Phase																				
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0								
Minimum Split (s)		11.0	11.0		44.0	44.0	44.0	44.0	24.0	11.0	20.0	24.0								
Total Split (s)		24.0	16.0		44.0	44.0	44.0	44.0	56.0	11.0	61.0	24.0								
Total Split (%)		17.1%	11.4%		31.4%	31.4%	31.4%	31.4%	40%	8%	44%	17%								
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0								
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0								
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0		-1.0												
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0												
Lead/Lag			Lead						Lag	Lead	Lag									
Lead-Lag Optimize?			Yes						Yes	Yes	Yes									
Recall Mode		None	None		None	None	None	None	C-Max	None	C-Max	None								
Act Effect Green (s)	87.6	77.6	9.7	100.0	35.0	35.0		35.0												
Actuated g/C Ratio	0.63	0.55	0.07	0.71	0.25	0.25		0.25												
v/c Ratio	0.72	0.42	0.45	0.41	0.87	0.85		0.02												
Control Delay	13.6	6.4	81.7	7.4	75.0	56.6		0.1												
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0		0.0												
Total Delay	13.8	6.4	81.7	7.5	75.0	56.6		0.1												
LOS	B	A	F	A	E	E		A												
Approach Delay	13.0			11.1		64.6		0.1												
Approach LOS	B			B		E		A												

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 22.4

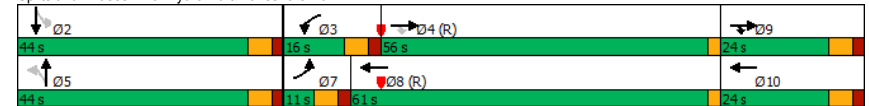
Intersection LOS: C

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↑	↓
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1607	182	54	1050	303	393	7
v/c Ratio	0.72	0.42	0.45	0.41	0.87	0.85	0.02
Control Delay	13.6	6.4	81.7	7.4	75.0	56.6	0.1
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	6.4	81.7	7.5	75.0	56.6	0.1
Queue Length 50th (m)	149.4	3.0	16.7	34.2	82.7	85.6	0.0
Queue Length 95th (m)	72.2	8.9	m31.6	51.0	#126.9	127.1	0.0
Internal Link Dist (m)	114.1			171.3		111.3	167.6
Turn Bay Length (m)		50.0	25.0		85.0		
Base Capacity (vph)	2322	466	137	2638	386	502	437
Starvation Cap Reductn	156	0	0	221	0	0	0
Spillback Cap Reductn	7	0	0	268	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.39	0.39	0.44	0.78	0.78	0.02

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	↖	→	↘	↙	←	↖	↘	↑	↘	↙	↓	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↗	↖	↖↗	↗	↖	↖	↗	↖	↖↗	↗
Traffic Volume (vph)	0	1607	182	54	1048	2	303	0	393	5	0	2
Future Volume (vph)	0	1607	182	54	1048	2	303	0	393	5	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		0.0	5.0	5.0	0.0		5.0	5.0			5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.45	1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)		3579	708	1750	3577		1750	1580			1748	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00			0.74	
Satd. Flow (perm)		3579	708	1750	3577		1387	1580			1348	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1607	182	54	1048	2	303	0	393	5	0	2
RTOR Reduction (vph)	0	0	34	0	0	0	0	65	0	0	5	0
Lane Group Flow (vph)	0	1607	148	54	1050	0	303	329	0	0	2	0
Confl. Peds. (#/hr)	16		353	353		16			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			5			2	
Permitted Phases			4					5		2		
Actuated Green, G (s)		80.4	78.4	7.6	94.0		34.0	34.0			34.0	
Effective Green, g (s)		82.4	80.4	8.6	96.0		35.0	35.0			35.0	
Actuated g/C Ratio		0.59	0.57	0.06	0.69		0.25	0.25			0.25	
Clearance Time (s)			6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)			3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)		2106	406	107	2452		346	395			337	
v/s Ratio Prot		c0.45	0.04	0.03	c0.29			0.21				
v/s Ratio Perm			0.17				c0.22				0.00	
v/c Ratio		0.76	0.36	0.50	0.43		0.88	0.83			0.01	
Uniform Delay, d1		21.5	16.0	63.6	9.8		50.4	49.7			39.4	
Progression Factor		0.60	0.32	1.15	0.81		1.00	1.00			1.00	
Incremental Delay, d2		1.4	0.4	3.3	0.1		21.1	13.9			0.0	
Delay (s)		14.2	5.6	76.2	8.0		71.5	63.6			39.4	
Level of Service		B	A	E	A		E	E			D	
Approach Delay (s)		13.3			11.4			67.0			39.4	
Approach LOS		B			B			E			D	
Intersection Summary												
HCM 2000 Control Delay			23.2									
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0						15.0			
Intersection Capacity Utilization			77.1%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	45.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.37	0.93	1.00		0.78	0.75			0.85	
Frt			0.850		0.991			0.868			0.959	
Flt Protected	0.950			0.950			0.950				0.978	
Satd. Flow (prot)	1750	3579	1566	1750	3532	0	1750	1231	0	0	1623	0
Flt Permitted	0.950			0.950			0.670				0.552	
Satd. Flow (perm)	1729	3579	584	1629	3532	0	962	1231	0	0	845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		7			163			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

Timings
6: Lakeshore Rd E & Haig Blvd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔↔			
Traffic Volume (vph)	127	1576	306	186	920	162	28	45	26			
Future Volume (vph)	127	1576	306	186	920	162	28	45	26			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9		3	8 10		2		6	4	8	10
Permitted Phases			4			2		6				
Detector Phase	7	4 9	9	3	8 10	2	2	6	6			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		8.0	8.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	24.0	11.0
Total Split (s)	23.0		29.0	17.0		44.0	44.0	44.0	44.0	50.0	44.0	29.0
Total Split (%)	16.4%		20.7%	12.1%		31.4%	31.4%	31.4%	31.4%	36%	31%	21%
Yellow Time (s)	3.0		4.0	3.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	3.0		2.0	3.0		3.0	3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0			
Total Lost Time (s)	5.0		5.0	5.0		6.0	6.0		6.0			
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	15.6	77.4	68.4	21.8	83.7	28.7	28.7	28.7	28.7			
Actuated g/C Ratio	0.11	0.55	0.49	0.16	0.60	0.20	0.20		0.20			
v/c Ratio	0.65	0.80	0.65	0.68	0.46	0.82	0.61		0.55			
Control Delay	73.6	17.7	17.6	67.8	14.1	82.7	21.6		52.0			
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0		0.0			
Total Delay	73.6	18.3	17.6	67.8	14.1	82.7	21.6		52.0			
LOS	E	B	B	E	B	F	C		D			
Approach Delay		21.6			22.7		46.7		52.0			
Approach LOS		C			C		D		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 25.5

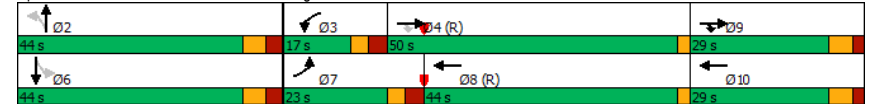
Intersection LOS: C

Intersection Capacity Utilization 114.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues
6: Lakeshore Rd E & Haig Blvd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	127	1576	306	186	981	162	232	102
v/c Ratio	0.65	0.80	0.65	0.68	0.46	0.82	0.61	0.55
Control Delay	73.6	17.7	17.6	67.8	14.1	82.7	21.6	52.0
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	18.3	17.6	67.8	14.1	82.7	21.6	52.0
Queue Length 50th (m)	37.5	62.5	12.5	55.4	55.2	45.3	17.1	22.8
Queue Length 95th (m)	m54.0	98.5	m37.4	#119.9	78.8	68.6	43.4	40.2
Internal Link Dist (m)		171.3			98.1		99.3	859.5
Turn Bay Length (m)	50.0		50.0	100.0		45.0		
Base Capacity (vph)	227	2063	507	273	2114	261	452	240
Starvation Cap Reductn	0	176	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.84	0.60	0.68	0.46	0.62	0.51	0.42

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
6: Lakeshore Rd E & Haig Blvd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	127	1576	306	186	920	61	162	28	204	45	26	31
Future Volume (vph)	127	1576	306	186	920	61	162	28	204	45	26	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		6.0	6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.55	1.00	1.00		1.00	0.75			0.92	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.78	1.00			0.92	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.87			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1750	3579	866	1750	3531		1369	1231			1501	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.67	1.00			0.55	
Satd. Flow (perm)	1750	3579	866	1750	3531		966	1231			846	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	1576	306	186	920	61	162	28	204	45	26	31
RTOR Reduction (vph)	0	0	40	0	3	0	0	130	0	0	12	0
Lane Group Flow (vph)	127	1576	266	186	978	0	162	102	0	0	90	0
Confl. Peds. (#/hr)	10		235	235		10	237		242	242		237
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	14.6	72.5	70.5	20.8	78.7		27.7	27.7			27.7	
Effective Green, g (s)	15.6	73.5	72.5	21.8	79.7		28.7	28.7			28.7	
Actuated g/C Ratio	0.11	0.52	0.52	0.16	0.57		0.20	0.20			0.20	
Clearance Time (s)	6.0		6.0	6.0			7.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	195	1878	448	272	2010		198	252			173	
v/s Ratio Prot	0.07	c0.44	0.09	c0.11	0.28			0.08				
v/s Ratio Perm			0.22				c0.17				0.11	
v/c Ratio	0.65	0.84	0.59	0.68	0.49		0.82	0.41			0.52	
Uniform Delay, d1	59.6	28.2	23.5	55.8	18.0		53.2	48.3			49.5	
Progression Factor	1.05	0.60	0.57	0.99	0.78		1.00	1.00			1.00	
Incremental Delay, d2	5.3	2.4	1.5	6.1	0.2		22.4	1.1			2.8	
Delay (s)	67.9	19.4	14.8	61.3	14.2		75.5	49.3			52.3	
Level of Service	E	B	B	E	B		E	D			D	
Approach Delay (s)		21.8			21.7			60.1			52.3	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay 26.7 HCM 2000 Level of Service C

HCM 2000 Volume to Capacity ratio 0.81

Actuated Cycle Length (s) 140.0 Sum of lost time (s) 17.0

Intersection Capacity Utilization 114.0% ICU Level of Service H

Analysis Period (min) 15

c Critical Lane Group

Lanes and Geometrics
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	165.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99		0.93		1.00			1.00	0.99
Frt		0.998				0.850						0.850
Flt Protected	0.950			0.950			0.950				0.953	
Satd. Flow (prot)	1750	3570	0	1750	3579	1566	0	1789	0	0	1795	1566
Flt Permitted	0.950			0.950			0.500				0.728	
Satd. Flow (perm)	1710	3570	0	1738	3579	1448	0	940	0	0	1370	1544
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125						23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.5			399.1			93.6			292.8	
Travel Time (s)		9.5			28.7			6.7			21.1	

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	652	1088	1	644	222	1	0	158	1	471
Future Volume (vph)	652	1088	1	644	222	1	0	158	1	471
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	58.0	84.0	11.0	37.0	37.0	45.0	45.0	45.0	45.0	58.0
Total Split (%)	41.4%	60.0%	7.9%	26.4%	26.4%	32.1%	32.1%	32.1%	32.1%	41.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0		6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes	
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	60.3	104.0	6.7	41.1	41.1	22.6	22.6	22.6	22.6	83.9
Actuated g/C Ratio	0.43	0.74	0.05	0.29	0.29		0.16		0.16	0.60
v/c Ratio	0.87	0.41	0.01	0.61	0.43		0.01		0.72	0.50
Control Delay	30.9	15.4	64.0	47.4	21.9		45.0		73.0	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	30.9	15.4	64.0	47.4	21.9		45.0		73.0	14.1
LOS	C	B	E	D	C		D		E	B
Approach Delay		21.2		40.9			45.0		28.9	
Approach LOS		C		D			D		C	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.0

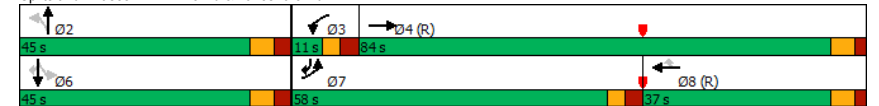
Intersection LOS: C

Intersection Capacity Utilization 77.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	652	1099	1	644	222	1	159	471
v/c Ratio	0.87	0.41	0.01	0.61	0.43	0.01	0.72	0.50
Control Delay	30.9	15.4	64.0	47.4	21.9	45.0	73.0	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	15.4	64.0	47.4	21.9	45.0	73.0	14.1
Queue Length 50th (m)	164.5	96.6	0.3	85.4	21.7	0.3	44.5	63.7
Queue Length 95th (m)	#244.3	186.5	2.3	117.1	51.6	1.9	66.0	71.6
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	165.0		25.0		30.0			
Base Capacity (vph)	753	2651	83	1051	513	261	381	943
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	0.87	0.41	0.01	0.61	0.43	0.00	0.42	0.50

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	652	1088	11	1	644	222	1	0	0	158	1	471
Future Volume (vph)	652	1088	11	1	644	222	1	0	0	158	1	471
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			0.95	1.00
Satd. Flow (prot)	1750	3571		1750	3579	1448		1786			1792	1560
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.50			0.73	1.00
Satd. Flow (perm)	1750	3571		1750	3579	1448		940			1369	1560
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	652	1088	11	1	644	222	1	0	0	158	1	471
RTOR Reduction (vph)	0	0	0	0	0	88	0	0	0	0	0	9
Lane Group Flow (vph)	652	1099	0	1	644	134	0	1	0	0	159	462
Confl. Peds. (#/hr)	12		7	7		12	2		1	1		2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	59.3	98.2		1.2	40.1	40.1		21.6			21.6	80.9
Effective Green, g (s)	60.3	99.2		2.2	41.1	41.1		22.6			22.6	82.9
Actuated g/C Ratio	0.43	0.71		0.02	0.29	0.29		0.16			0.16	0.59
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	753	2530		27	1050	425		151			220	923
v/s Ratio Prot	c0.37	0.31		0.00	c0.18							0.22
v/s Ratio Perm					0.09		0.00				c0.12	0.08
v/c Ratio	0.87	0.43		0.04	0.61	0.31		0.01			0.72	0.50
Uniform Delay, d1	36.2	8.6		67.9	42.6	38.5		49.3			55.7	16.5
Progression Factor	0.59	1.88		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	7.3	0.4		0.6	2.7	1.9		0.0			11.1	0.4
Delay (s)	28.5	16.6		68.4	45.3	40.4		49.3			66.8	17.0
Level of Service	C	B		E	D	D		D			E	B
Approach Delay (s)		21.0			44.1			49.3			29.6	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 4

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱			↱↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt							0.850				0.932	
Frt Protected	0.950			0.950							0.976	
Satd. Flow (prot)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Frt Permitted	0.950			0.950							0.976	
Satd. Flow (perm)	1750	3579	0	1750	3579	0	1879	1601	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 4

Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1388	2	8	2030	2	0	0	8	5	0	5
Future Volume (Veh/h)	6	1388	2	8	2030	2	0	0	8	5	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1388	2	8	2030	2	0	0	8	5	0	5
Pedestrians	5								8			
Lane Width (m)									3.7			
Walking Speed (m/s)									1.2			
Percent Blockage									1			
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	137			226								
pX, platoon unblocked	0.56			0.88			0.62	0.62	0.88	0.62	0.62	0.56
vC, conflicting volume	2040			1395			2442	3462	700	2769	3462	1024
vC1, stage 1 conf vol							1406	1406	2055		2055	
vC2, stage 2 conf vol							1036	2056	714		1407	
vCu, unblocked vol	1296			1174			1234	2869	384	1758	2869	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5	6.5		5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	99	94	100	99
cM capacity (veh/h)	297			517			167	101	538	88	104	607
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	6	925	465	8	1353	679	0	8	10			
Volume Left	6	0	0	8	0	0	0	0	5			
Volume Right	0	0	2	0	0	2	0	8	5			
cSH	297	1700	1700	517	1700	1700	1700	538	153			
Volume to Capacity	0.02	0.54	0.27	0.02	0.80	0.40	0.04	0.01	0.07			
Queue Length 95th (m)	0.5	0.0	0.0	0.4	0.0	0.0	0.0	0.4	1.7			
Control Delay (s)	17.4	0.0	0.0	12.1	0.0	0.0	0.0	11.8	30.1			
Lane LOS	C			B			A	B	D			
Approach Delay (s)	0.1			0.0			11.8		30.1			
Approach LOS							B		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				68.0%	ICU Level of Service						C	
Analysis Period (min)	15											

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	1842	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		112.9	113.2		78.5	
Travel Time (s)		8.1	8.2		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Traffic Volume (veh/h)	0	1427	2032	14	0	7
Future Volume (Veh/h)	0	1427	2032	14	0	7
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1427	2032	14	0	7
Pedestrians		2	6		12	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.59				0.65	0.59
vC, conflicting volume	2058				2770	1037
vC1, stage 1 conf vol					2051	
vC2, stage 2 conf vol					720	
vCu, unblocked vol	1395				1828	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	282				111	629
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	714	714	1355	691	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	14	7
cSH	1700	1700	1700	1700	1700	629
Volume to Capacity	0.00	0.42	0.42	0.80	0.41	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.8
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			67.3%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1502	1912	2	0	5
Future Volume (Veh/h)	0	1502	1912	2	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1502	1912	2	0	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		102	269			
pX, platoon unblocked	0.81				0.89	0.81
vC, conflicting volume	1922				2672	965
vC1, stage 1 conf vol					1921	
vC2, stage 2 conf vol					751	
vCu, unblocked vol	1667				1769	484
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	307				109	425
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	751	751	1275	639	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	2	5	
cSH	1700	1700	1700	1700	425	
Volume to Capacity	0.44	0.44	0.75	0.38	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	13.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			62.9%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics

24: Alexandra Ave & Lakeshore Rd E

Scenario 4

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱			↰↱			↰↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3571	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3571	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis

24: Alexandra Ave & Lakeshore Rd E

Scenario 4

Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	0	1509	0	0	1883	29	0	0	0	0	0	34
Future Volume (Veh/h)	0	1509	0	0	1883	29	0	0	0	0	0	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1509	0	0	1883	29	0	0	0	0	0	34
Pedestrians		1			2			132			12	
Lane Width (m)		3.6			3.6			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			11			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage (veh)		2			2							
Upstream signal (m)		306			65							
pX, platoon unblocked	0.82			0.82			0.91	0.91	0.82	0.91	0.91	0.82
vC, conflicting volume	1924			1641			2618	3565	888	2666	3550	969
vC1, stage 1 conf vol							1641	1641		1910	1910	
vC2, stage 2 conf vol							976	1924		756	1641	
vCu, unblocked vol	1684			1341			1683	2727	423	1737	2711	516
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	92
cM capacity (veh/h)	304			370			113	96	424	79	97	407
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1006	503	0	1255	657	0	34				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	29	0	34				
cSH	1700	1700	1700	1700	1700	1700	1700	407				
Volume to Capacity	0.00	0.59	0.30	0.00	0.74	0.39	0.00	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6				
Lane LOS							A	B				
Approach Delay (s)	0.0				0.0			0.0	14.6			
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				63.6%		ICU Level of Service			B			
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1706	1457	7	0	6
Future Volume (Veh/h)	0	1706	1457	7	0	6
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1706	1457	7	0	6
Pedestrians		2	2		11	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	61		212			
pX, platoon unblocked	0.68				0.81	0.68
vC, conflicting volume	1475				2326	745
vC1, stage 1 conf vol					1472	
vC2, stage 2 conf vol					855	
vCu, unblocked vol	773				744	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	569				277	735
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	853	853	971	493	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	7	6	
cSH	1700	1700	1700	1700	735	
Volume to Capacity	0.50	0.50	0.57	0.29	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	9.9	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.9	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			50.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 4
Morning Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3500	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3500	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 4
Morning Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1701	1353	1	0	5
Future Volume (Veh/h)	0	1701	1353	1	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1701	1353	1	0	5
Pedestrians		3	3		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		170	102			
pX, platoon unblocked	0.68				0.81	0.68
vC, conflicting volume	1369				2222	695
vC1, stage 1 conf vol					1368	
vC2, stage 2 conf vol					854	
vCu, unblocked vol	588				567	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	657				338	723
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	850	850	902	452	5	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	1	5	
cSH	1700	1700	1700	1700	723	
Volume to Capacity	0.50	0.50	0.53	0.27	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	10.0	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.0	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			50.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1799	1292	14	0	8
Future Volume (Veh/h)	0	1799	1292	14	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1799	1292	14	0	8
Pedestrians		4	4		20	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.87				0.80	0.87
vC, conflicting volume	1326				2222	677
vC1, stage 1 conf vol					1319	
vC2, stage 2 conf vol					904	
vCu, unblocked vol	1073				1298	326
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	552				241	570
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	900	900	861	445	8	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	14	8	
cSH	1700	1700	1700	1700	570	
Volume to Capacity	0.53	0.53	0.51	0.26	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1781	1143	15	0	20
Future Volume (Veh/h)	0	1781	1143	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1781	1143	15	0	20
Pedestrians		5	5		30	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.61	
vC, conflicting volume	1188				2076	614
vC1, stage 1 conf vol					1180	
vC2, stage 2 conf vol					896	
vCu, unblocked vol	1188				1497	614
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	569				229	423
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	890	890	762	396	20	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	15	20	
cSH	1700	1700	1700	1700	423	
Volume to Capacity	0.52	0.52	0.45	0.23	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	
Control Delay (s)	0.0	0.0	0.0	0.0	13.9	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			59.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1720	1125	31	0	38
Future Volume (Veh/h)	0	1720	1125	31	0	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1720	1125	31	0	38
Pedestrians		6	6		15	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)			131			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	1171				2022	599
vC1, stage 1 conf vol					1156	
vC2, stage 2 conf vol					866	
vCu, unblocked vol	838				1843	162
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	662				244	711
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	860	860	750	406	38	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	31	38	
cSH	1700	1700	1700	1700	711	
Volume to Capacity	0.51	0.51	0.44	0.24	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			58.8%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
45: East Avenue & SW1

Scenario 4
Morning Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%	0%	0%	0%	0%	0%
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	1	0	0	0	0	0
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Frt Protected						
Satd. Flow (prot)	1842	0	1842	0	0	1842
Frt Permitted						
Satd. Flow (perm)	1842	0	1842	0	0	1842
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	47.9	51.6	66.7	66.7	66.7	66.7
Travel Time (s)	3.4	3.7	4.8	4.8	4.8	4.8

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
45: East Avenue & SW1

Scenario 4
Morning Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)					290	
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics
101: East Avenue & Street L

Scenario 4
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
101: East Avenue & Street L

Scenario 4
Morning Peak Hour

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖		↖	↗
Traffic Volume (veh/h)	8	174	95	0	30	26
Future Volume (Veh/h)	8	174	95	0	30	26
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	174	95	0	30	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage (veh)						
Upstream signal (m)						132
pX, platoon unblocked						
vC, conflicting volume	181	95			95	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	95			95	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	82			98	
cM capacity (veh/h)	792	962			1499	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	8	174	95	30	26	
Volume Left	8	0	0	30	0	
Volume Right	0	174	0	0	0	
cSH	792	962	1700	1499	1700	
Volume to Capacity	0.01	0.18	0.06	0.02	0.02	
Queue Length 95th (m)	0.2	5.3	0.0	0.5	0.0	
Control Delay (s)	9.6	9.6	0.0	7.5	0.0	
Lane LOS	A	A		A		
Approach Delay (s)	9.6		0.0	4.0		
Approach LOS	A					
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			22.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
102: Lakefront Promenade & Street L

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.856			0.973			0.971	
Frt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1662	1498	0	1750	1792	0	1750	1789	0
Frt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1662	1498	0	1750	1792	0	1750	1789	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
102: Lakefront Promenade & Street L

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	50	0	0	9	11	284	11	505	111	43	101	24
Future Volume (Veh/h)	50	0	0	9	11	284	11	505	111	43	101	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	50	0	0	9	11	284	11	505	111	43	101	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								102			130	
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1016	837	113	770	794	560	125			616		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	984	794	113	722	748	500	125			559		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	100	97	96	47	99			95		
cM capacity (veh/h)	94	285	940	308	304	536	1462			951		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	50	0	6	298	11	616	43	125				
Volume Left	50	0	6	3	11	0	43	0				
Volume Right	0	0	0	284	0	111	0	24				
cSH	94	1700	308	518	1462	1700	951	1700				
Volume to Capacity	0.53	0.00	0.02	0.58	0.01	0.36	0.05	0.07				
Queue Length 95th (m)	19.1	0.0	0.5	28.8	0.2	0.0	1.1	0.0				
Control Delay (s)	80.6	0.0	16.9	21.0	7.5	0.0	9.0	0.0				
Lane LOS	F	A	C	C	A		A					
Approach Delay (s)	80.6		20.9		0.1		2.3					
Approach LOS	F		C									
Intersection Summary												
Average Delay				9.4								
Intersection Capacity Utilization			58.4%		ICU Level of Service					B		
Analysis Period (min)			15									

Lanes and Geometrics
103: Ogden Ave & Street L

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%		0%		0%		0%		0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.982		0.902		0.957		0.985					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1809	0	1750	1662	0	1750	1763	0	1750	1814	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1809	0	1750	1662	0	1750	1763	0	1750	1814	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.4			82.6			89.6			142.3	
Travel Time (s)		4.0			5.9			6.5			10.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
103: Ogden Ave & Street L

Scenario 4
Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	60	8	10	64	120	140	303	120	31	136	15
Future Volume (Veh/h)	141	60	8	10	64	120	140	303	120	31	136	15
Sign Control	Stop				Stop		Free				Free	
Grade	0%				0%		0%				0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	141	60	8	10	64	120	140	303	120	31	136	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									None		None	
Median storage veh												
Upstream signal (m)											142	
pX, platoon unblocked												
vC, conflicting volume	940	908	144	879	856	363	151			423		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	940	908	144	879	856	363	151			423		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	5	75	99	95	75	82	90			97		
cM capacity (veh/h)	148	241	904	195	259	682	1430			1136		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	141	68	10	184	140	423	31	151				
Volume Left	141	0	10	0	140	0	31	0				
Volume Right	0	8	0	120	0	120	0	15				
cSH	148	264	195	435	1430	1700	1136	1700				
Volume to Capacity	0.95	0.26	0.05	0.42	0.10	0.25	0.03	0.09				
Queue Length 95th (m)	54.9	8.0	1.3	16.5	2.6	0.0	0.7	0.0				
Control Delay (s)	121.7	23.3	24.4	19.2	7.8	0.0	8.3	0.0				
Lane LOS	F	C	C	C	A	A	A	A				
Approach Delay (s)	89.7		19.5		1.9		1.4					
Approach LOS	F		C									
Intersection Summary												
Average Delay	20.8											
Intersection Capacity Utilization	58.5%			ICU Level of Service				B				
Analysis Period (min)	15											

Lanes and Geometrics
104: Hydro Rd & Street L

Scenario 4
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1822	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1822	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
104: Hydro Rd & Street L

Scenario 4
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	249	9	115	447	215	20
Future Volume (Veh/h)	249	9	115	447	215	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	9	115	447	215	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					135	
pX, platoon unblocked						
vC, conflicting volume	902	225	235			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	902	225	235			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	12	99	91			
cM capacity (veh/h)	282	814	1332			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	249	9	115	447	235	
Volume Left	249	0	115	0	0	
Volume Right	0	9	0	0	20	
cSH	282	814	1332	1700	1700	
Volume to Capacity	0.88	0.01	0.09	0.26	0.14	
Queue Length 95th (m)	62.7	0.3	2.3	0.0	0.0	
Control Delay (s)	67.7	9.5	8.0	0.0	0.0	
Lane LOS	F	A	A			
Approach Delay (s)	65.6		1.6		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			16.9			
Intersection Capacity Utilization			44.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
105: East Avenue & Rangeview Rd

Scenario 4
Morning Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group						
Lane Configurations	↰	↱	↰		↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected					0.950	
Satd. Flow (prot)	1842	1566	1842	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	198.1		66.7		91.1	
Travel Time (s)	14.3		4.8		6.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
105: East Avenue & Rangeview Rd

Scenario 4
Morning Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement						
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (veh/h)	0	83	12	0	23	11
Future Volume (Veh/h)	0	83	12	0	23	11
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	83	12	0	23	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						223
pX, platoon unblocked						
vC, conflicting volume	69	12			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69	12			12	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	922	1069			1607	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	0	83	12	23	11	
Volume Left	0	0	0	23	0	
Volume Right	0	83	0	0	0	
cSH	1700	1069	1700	1607	1700	
Volume to Capacity	0.00	0.08	0.01	0.01	0.01	
Queue Length 95th (m)	0.0	2.0	0.0	0.3	0.0	
Control Delay (s)	0.0	8.7	0.0	7.3	0.0	
Lane LOS	A	A		A		
Approach Delay (s)	8.7		0.0	4.9		
Approach LOS	A					
Intersection Summary						
Average Delay			6.9			
Intersection Capacity Utilization			15.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics

106: Lakefront Promenade & Rangeview Rd

Scenario 4

Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.850			0.857			0.966			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1566	0	1750	1579	0	1750	1779	0	1750	1827	0
Flt Permitted	0.435			0.748			0.699			0.466		
Satd. Flow (perm)	801	1566	0	1378	1579	0	1288	1779	0	858	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		903			231			30			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.1			140.0			142.6			101.7	
Travel Time (s)		12.5			10.1			10.3			7.3	

Intersection Summary

Area Type: Other

Timings

106: Lakefront Promenade & Rangeview Rd

Scenario 4

Morning Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	15	0	9	11	23	381	21	84
Future Volume (vph)	15	0	9	11	23	381	21	84
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	50.0	50.0	50.0	50.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Lead/Lag

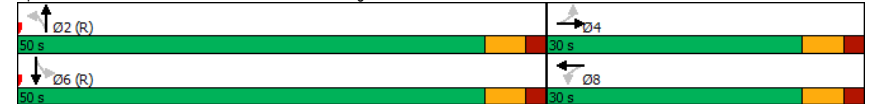
Lead-Lag Optimize?

Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2	9.2	9.2	9.2	60.8	60.8	60.8	60.8
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.76	0.76	0.76	0.76
v/c Ratio	0.16	0.01	0.06	0.63	0.02	0.36	0.03	0.06
Control Delay	33.9	0.0	29.8	13.1	3.2	4.3	3.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	0.0	29.8	13.1	3.2	4.3	3.3	3.0
LOS	C	A	C	B	A	A	A	A
Approach Delay		17.5		13.7		4.2		3.0
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 7.1
 Intersection Capacity Utilization 50.0%
 Analysis Period (min) 15

Splits and Phases: 106: Lakefront Promenade & Rangeview Rd



Queues
106: Lakefront Promenade & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	14	9	242	23	492	21	89
v/c Ratio	0.16	0.01	0.06	0.63	0.02	0.36	0.03	0.06
Control Delay	33.9	0.0	29.8	13.1	3.2	4.3	3.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	0.0	29.8	13.1	3.2	4.3	3.3	3.0
Queue Length 50th (m)	2.3	0.0	1.3	1.6	0.6	16.3	0.6	2.3
Queue Length 95th (m)	7.3	0.0	5.1	20.5	3.0	41.9	3.0	7.9
Internal Link Dist (m)		150.1		116.0		118.6		77.7
Turn Bay Length (m)	15.0		15.0		15.0		15.0	
Base Capacity (vph)	250	1110	430	652	979	1359	652	1390
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.02	0.37	0.02	0.36	0.03	0.06
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
106: Lakefront Promenade & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	15	0	14	9	11	231	23	381	111	21	84	5
Future Volume (vph)	15	0	14	9	11	231	23	381	111	21	84	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1566		1750	1578		1750	1780		1750	1827	
Flt Permitted	0.43	1.00		0.75	1.00		0.70	1.00		0.47	1.00	
Satd. Flow (perm)	801	1566		1379	1578		1288	1780		858	1827	
Peak-hour factor, PHF	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Adj. Flow (vph)	15	0	14	9	11	231	23	381	111	21	84	5
RTOR Reduction (vph)	0	12	0	0	204	0	0	7	0	0	1	0
Lane Group Flow (vph)	15	2	0	9	38	0	23	485	0	21	88	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)	8.2	8.2		8.2	8.2		59.8	59.8		59.8	59.8	
Effective Green, g (s)	9.2	9.2		9.2	9.2		60.8	60.8		60.8	60.8	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.76	0.76		0.76	0.76	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	180		158	181		978	1352		652	1388	
v/s Ratio Prot		0.00			c0.02			c0.27			0.05	
v/s Ratio Perm	0.02			0.01			0.02			0.02		
v/c Ratio	0.16	0.01		0.06	0.21		0.02	0.36		0.03	0.06	
Uniform Delay, d1	31.9	31.4		31.5	32.1		2.3	3.2		2.4	2.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.0		0.2	0.6		0.0	0.7		0.1	0.1	
Delay (s)	32.8	31.4		31.7	32.7		2.4	3.9		2.5	2.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		32.1			32.6			3.8			2.5	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay				12.6			HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio				0.34								
Actuated Cycle Length (s)				80.0			Sum of lost time (s)			10.0		
Intersection Capacity Utilization				50.0%			ICU Level of Service			A		
Analysis Period (min)				15								

c Critical Lane Group

Lanes and Geometrics
107: Ogden Ave & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.982			0.918			0.965			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1809	0	1750	1691	0	1750	1778	0	1750	1816	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1809	0	1750	1691	0	1750	1778	0	1750	1816	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			124.7			104.4			89.6	
Travel Time (s)		4.1			9.0			7.5			6.5	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
107: Ogden Ave & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	89	60		8	11	64	78	140	397	120	18	124
Future Volume (vph)	89	60		8	11	64	78	140	397	120	18	124
Peak Hour Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	60		8	11	64	78	140	397	120	18	124
Direction, Lane #	EB 1	EB 2		WB 1	WB 2		NB 1	NB 2		SB 1	SB 2	
Volume Total (vph)	89	68		11	142		140	517		18	137	
Volume Left (vph)	89	0		11	0		140	0		18	0	
Volume Right (vph)	0	8		0	78		0	120		0	13	
Hadj (s)	0.53	-0.05		0.53	-0.35		0.53	-0.13		0.53	-0.03	
Departure Headway (s)	7.3	6.8		7.4	6.5		6.2	5.6		6.9	6.3	
Degree Utilization, x	0.18	0.13		0.02	0.26		0.24	0.80		0.03	0.24	
Capacity (veh/h)	455	494		454	515		561	632		495	542	
Control Delay (s)	10.8	9.5		9.3	10.5		10.0	25.9		8.9	10.0	
Approach Delay (s)	10.2			10.4			22.6			9.9		
Approach LOS	B			B			C			A		
Intersection Summary												
Delay								17.4				
Level of Service								C				
Intersection Capacity Utilization								57.9%				
ICU Level of Service											B	
Analysis Period (min)								15				

Lanes and Geometrics
108: Hydro Rd & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.992	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1827	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1827	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	108.3			161.7	87.6	
Travel Time (s)	7.8			11.6	6.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
108: Hydro Rd & Rangeview Rd

Scenario 4
Morning Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	207	9	115	355	210	14
Future Volume (Veh/h)	207	9	115	355	210	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	207	9	115	355	210	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					223	
pX, platoon unblocked						
vC, conflicting volume	802	217	224			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	802	217	224			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	36	99	91			
cM capacity (veh/h)	323	823	1345			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	207	9	115	355	224	
Volume Left	207	0	115	0	0	
Volume Right	0	9	0	0	14	
cSH	323	823	1345	1700	1700	
Volume to Capacity	0.64	0.01	0.09	0.21	0.13	
Queue Length 95th (m)	33.3	0.3	2.2	0.0	0.0	
Control Delay (s)	34.1	9.4	7.9	0.0	0.0	
Lane LOS	D	A	A			
Approach Delay (s)	33.0		1.9		0.0	
Approach LOS	D					
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			39.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
201: W1 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.981				0.968	
Flt Protected				0.999	0.963	
Satd. Flow (prot)	1807	0	0	1840	1717	0
Flt Permitted				0.999	0.963	
Satd. Flow (perm)	1807	0	0	1840	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	85.8			54.1	44.2	
Travel Time (s)	6.2			3.9	3.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
201: W1 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (veh/h)	25	4	2	159	23	7
Future Volume (Veh/h)	25	4	2	159	23	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	4	2	159	23	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			29		190	27
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			29		190	27
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	99
cM capacity (veh/h)			1584		798	1048
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	29	161	30			
Volume Left	0	2	23			
Volume Right	4	0	7			
cSH	1700	1584	845			
Volume to Capacity	0.02	0.00	0.04			
Queue Length 95th (m)	0.0	0.0	0.9			
Control Delay (s)	0.0	0.1	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.1	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			20.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
202: Street L & NW1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.994		0.899	
Flt Protected		0.986			0.988	
Satd. Flow (prot)	0	1816	1831	0	1636	0
Flt Permitted		0.986			0.988	
Satd. Flow (perm)	0	1816	1831	0	1636	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		54.1	78.9		54.9	
Travel Time (s)		3.9	5.7		4.0	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
202: Street L & NW1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	9	23	113	5	16	48
Future Volume (Veh/h)	9	23	113	5	16	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	23	113	5	16	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	118				156	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	118				156	116
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	95
cM capacity (veh/h)	1470				830	937
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	32	118	64			
Volume Left	9	0	16			
Volume Right	0	5	48			
cSH	1470	1700	908			
Volume to Capacity	0.01	0.07	0.07			
Queue Length 95th (m)	0.1	0.0	1.8			
Control Delay (s)	2.1	0.0	9.3			
Lane LOS	A		A			
Approach Delay (s)	2.1	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			18.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
203: Street L & NW2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.898	
Flt Protected		0.987			0.988	
Satd. Flow (prot)	0	1818	1824	0	1634	0
Flt Permitted		0.987			0.988	
Satd. Flow (perm)	0	1818	1824	0	1634	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.9	72.0		47.9	
Travel Time (s)		5.7	5.2		3.4	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
203: Street L & NW2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Volume (veh/h)	10	29	64	5	17	53
Future Volume (Veh/h)	10	29	64	5	17	53
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	29	64	5	17	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	69				116	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69				116	66
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	95
cM capacity (veh/h)	1532				875	997
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	39	69	70			
Volume Left	10	0	17			
Volume Right	0	5	53			
cSH	1532	1700	964			
Volume to Capacity	0.01	0.04	0.07			
Queue Length 95th (m)	0.2	0.0	1.9			
Control Delay (s)	1.9	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	1.9	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			19.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
204: W2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.985				0.966	
Flt Protected				0.998	0.964	
Satd. Flow (prot)	1814	0	0	1838	1715	0
Flt Permitted				0.998	0.964	
Satd. Flow (perm)	1814	0	0	1838	1715	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.0			86.0	45.1	
Travel Time (s)	5.2			6.2	3.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
204: W2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↰
Traffic Volume (veh/h)	41	5	2	45	24	8
Future Volume (Veh/h)	41	5	2	45	24	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	5	2	45	24	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			46		92	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			46		92	44
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	99
cM capacity (veh/h)			1562		906	1027
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	46	47	32			
Volume Left	0	2	24			
Volume Right	5	0	8			
cSH	1700	1562	934			
Volume to Capacity	0.03	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.9			
Control Delay (s)	0.0	0.3	9.0			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.3	9.0			
Approach LOS		A				
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		14.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics
205: CENTRE1 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1842	0	0	1842	1842	0
Flt Permitted						
Satd. Flow (perm)	1842	0	0	1842	1842	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.6			51.2	50.3	
Travel Time (s)	5.2			3.7	3.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
205: CENTRE1 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (veh/h)	8	0	0	1	0	0
Future Volume (Veh/h)	8	0	0	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	0	0	1	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			8		9	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		9	8
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1612		1011	1074
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	8	1	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1612	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
206: Street L & N1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	1842	0
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	1842	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		51.2	53.3		72.2	
Travel Time (s)		3.7	3.8		5.2	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
206: Street L & N1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	11	2	0	0	0
Future Volume (Veh/h)	0	11	2	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	11	2	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2				13	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2				13	2
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1620				1006	1082
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	11	2	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1620	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
207: CENTRE2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1842	0	0	1842	1842	0
Flt Permitted						
Satd. Flow (perm)	1842	0	0	1842	1842	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	53.3			45.9	41.1	
Travel Time (s)	3.8			3.3	3.0	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
207: CENTRE2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	6	0	0	1	0	0
Future Volume (Veh/h)	6	0	0	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	0	0	1	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		7	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		7	6
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1615		1014	1077
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	6	1	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1615	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
208: Street L & N2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.932	
Frt Protected		0.998			0.976	
Satd. Flow (prot)	0	1838	1840	0	1676	0
Frt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1838	1840	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		45.9	55.4		50.6	
Travel Time (s)		3.3	4.0		3.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
208: Street L & N2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	8	187	219	1	22	22
Future Volume (Veh/h)	8	187	219	1	22	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	187	219	1	22	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220				422	220
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				422	220
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	97
cM capacity (veh/h)	1349				584	820
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	195	220	44			
Volume Left	8	0	22			
Volume Right	0	1	22			
cSH	1349	1700	683			
Volume to Capacity	0.01	0.13	0.06			
Queue Length 95th (m)	0.1	0.0	1.6			
Control Delay (s)	0.4	0.0	10.6			
Lane LOS	A		B			
Approach Delay (s)	0.4	0.0	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		26.3%		ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics
209: Street L & NE1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1840	1838	0	1676	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1840	1838	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		82.6	37.0		53.2	
Travel Time (s)		5.9	2.7		3.8	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
209: Street L & NE1

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	5	206	177	2	17	17
Future Volume (Veh/h)	5	206	177	2	17	17
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	206	177	2	17	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179				394	178
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179				394	178
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1397				608	865
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	211	179	34			
Volume Left	5	0	17			
Volume Right	0	2	17			
cSH	1397	1700	714			
Volume to Capacity	0.00	0.11	0.05			
Queue Length 95th (m)	0.1	0.0	1.2			
Control Delay (s)	0.2	0.0	10.3			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		24.9%		ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics
210: E2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.932	
Flt Protected				0.999	0.976	
Satd. Flow (prot)	1831	0	0	1840	1676	0
Flt Permitted				0.999	0.976	
Satd. Flow (perm)	1831	0	0	1840	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	37.0			36.0	57.1	
Travel Time (s)	2.7			2.6	4.1	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
210: E2 & Street L

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	213	10	4	148	31	31
Future Volume (Veh/h)	213	10	4	148	31	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	213	10	4	148	31	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			223		374	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			223		374	218
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	96
cM capacity (veh/h)			1346		625	822
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	223	152	62			
Volume Left	0	4	31			
Volume Right	10	0	31			
cSH	1700	1346	710			
Volume to Capacity	0.13	0.00	0.09			
Queue Length 95th (m)	0.0	0.1	2.3			
Control Delay (s)	0.0	0.2	10.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.2	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			22.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
211: Street L & NE2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.932	
Frt Protected		0.999			0.976	
Satd. Flow (prot)	0	1840	1838	0	1676	0
Frt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1840	1838	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		36.0	72.3		51.7	
Travel Time (s)		2.6	5.2		3.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
211: Street L & NE2

Scenario 4
Morning Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	238	133	2	19	19
Future Volume (Veh/h)	6	238	133	2	19	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	238	133	2	19	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	135				384	134
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	135				384	134
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1449				616	915
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	244	135	38			
Volume Left	6	0	19			
Volume Right	0	2	19			
cSH	1449	1700	736			
Volume to Capacity	0.00	0.08	0.05			
Queue Length 95th (m)	0.1	0.0	1.3			
Control Delay (s)	0.2	0.0	10.2			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization		27.4%		ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics
212: SW2 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.947				0.967	
Flt Protected				0.994	0.963	
Satd. Flow (prot)	1744	0	0	1831	1715	0
Flt Permitted				0.994	0.963	
Satd. Flow (perm)	1744	0	0	1831	1715	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	198.1			174.1	45.6	
Travel Time (s)	14.3			12.5	3.3	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
212: SW2 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	14	9	5	35	47	15
Future Volume (Veh/h)	14	9	5	35	47	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	9	5	35	47	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)				174		
pX, platoon unblocked						
vC, conflicting volume			23		64	18
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			23		64	18
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1592		939	1060
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	23	40	62			
Volume Left	0	5	47			
Volume Right	9	0	15			
cSH	1700	1592	966			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (m)	0.0	0.1	1.6			
Control Delay (s)	0.0	0.9	9.0			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.9	9.0			
Approach LOS		A				
Intersection Summary						
Average Delay		4.8				
Intersection Capacity Utilization		16.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics
213: Street G & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.932	
Flt Protected				0.999	0.976	
Satd. Flow (prot)	1827	0	0	1840	1676	0
Flt Permitted				0.999	0.976	
Satd. Flow (perm)	1827	0	0	1840	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.0			85.1	65.2	
Travel Time (s)	10.1			6.1	4.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
213: Street G & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↘	↘
Traffic Volume (veh/h)	124	8	3	226	26	26
Future Volume (Veh/h)	124	8	3	226	26	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	124	8	3	226	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	140					
pX, platoon unblocked						
vC, conflicting volume			132		360	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		360	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	97
cM capacity (veh/h)			1453		637	922

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	132	229	52
Volume Left	0	3	26
Volume Right	8	0	26
cSH	1700	1453	754
Volume to Capacity	0.08	0.00	0.07
Queue Length 95th (m)	0.0	0.0	1.8
Control Delay (s)	0.0	0.1	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.1	10.1
Approach LOS			B

Intersection Summary

Average Delay		1.3	
Intersection Capacity Utilization	24.3%		ICU Level of Service A
Analysis Period (min)		15	

Lanes and Geometrics
214: S2 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1835	0	0	1842	1676	0
Flt Permitted					0.976	
Satd. Flow (perm)	1835	0	0	1842	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	85.1			56.3	43.3	
Travel Time (s)	6.1			4.1	3.1	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
214: S2 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↖	↗
Traffic Volume (veh/h)	146	4	0	218	11	11
Future Volume (Veh/h)	146	4	0	218	11	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	146	4	0	218	11	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	225					
pX, platoon unblocked						
vC, conflicting volume			150		366	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			150		366	148
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	99
cM capacity (veh/h)			1431		634	899
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	150	218	22			
Volume Left	0	0	11			
Volume Right	4	0	11			
cSH	1700	1431	743			
Volume to Capacity	0.09	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.7			
Control Delay (s)	0.0	0.0	10.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			21.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
215: SE1 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.995				0.932	
Flt Protected				0.999	0.976	
Satd. Flow (prot)	1833	0	0	1840	1676	0
Flt Permitted				0.999	0.976	
Satd. Flow (perm)	1833	0	0	1840	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	124.7			108.3	50.2	
Travel Time (s)	9.0			7.8	3.6	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
215: SE1 & Rangeview Rd

Scenario 4
Morning Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↘	↘
Traffic Volume (veh/h)	189	8	3	126	27	27
Future Volume (Veh/h)	189	8	3	126	27	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	189	8	3	126	27	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			197		325	193
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			197		325	193
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	97
cM capacity (veh/h)			1376		668	849
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	197	129	54			
Volume Left	0	3	27			
Volume Right	8	0	27			
cSH	1700	1376	747			
Volume to Capacity	0.12	0.00	0.07			
Queue Length 95th (m)	0.0	0.1	1.9			
Control Delay (s)	0.0	0.2	10.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.2	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			20.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics
217: Street G & S1

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.865						0.899	
Flt Protected		0.950									0.988	
Satd. Flow (prot)	0	1750	0	0	1593	0	0	1842	0	0	1636	0
Flt Permitted		0.950									0.988	
Satd. Flow (perm)	0	1750	0	0	1593	0	0	1842	0	0	1636	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		41.8			34.8			68.9			65.2	
Travel Time (s)		3.0			2.5			5.0			4.7	

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis
217: Street G & S1

Scenario 4
Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	39	0	0	0	0	13	0	0	0	3	0	9
Future Volume (vph)	39	0	0	0	0	13	0	0	0	3	0	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	39	0	0	0	0	13	0	0	0	3	0	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	39	13	0	12								
Volume Left (vph)	39	0	0	3								
Volume Right (vph)	0	13	0	9								
Hadj (s)	0.23	-0.57	0.00	-0.37								
Departure Headway (s)	4.2	3.4	4.0	3.6								
Degree Utilization, x	0.05	0.01	0.00	0.01								
Capacity (veh/h)	855	1048	887	969								
Control Delay (s)	7.4	6.4	7.0	6.7								
Approach Delay (s)	7.4	6.4	0.0	6.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay		7.0										
Level of Service		A										
Intersection Capacity Utilization		18.8%		ICU Level of Service						A		
Analysis Period (min)		15										

Lanes and Geometrics

1: Lakeshore Rd E & Cawthra Rd

Scenario 4

Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔		↔	↔↔	↔		↔↔		↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	70.0		0.0	60.0		70.0	0.0		0.0	115.0		0.0
Storage Lanes	2		0	1		1	0		0	1		1
Taper Length (m)	7.5			7.5			0.0			7.5		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.96	1.00		0.99		0.92	0.99		1.00	1.00	0.94	
Frt						0.850		0.966				0.850
Flt Protected	0.950			0.950			0.988		0.950	0.950		
Satd. Flow (prot)	3395	3578	0	1750	3579	1566	0	1795	0	1662	1700	1566
Flt Permitted	0.950			0.176			0.833		0.950	0.750		
Satd. Flow (perm)	3265	3578	0	321	3579	1434	0	1505	0	1660	1338	1474
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)						186		3				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.4			137.2			95.8			955.9	
Travel Time (s)		23.1			9.9			6.9			68.8	

Intersection Summary

Area Type: Other

Timings

1: Lakeshore Rd E & Cawthra Rd

Scenario 4

Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔	↔		↔↔	↔	↔↔	↔
Traffic Volume (vph)	406	1206	1	839	699	3	6	924	0	536
Future Volume (vph)	406	1206	1	839	699	3	6	924	0	536
Turn Type	Prot	NA	Perm	NA	pm+ov	Perm	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1		2	1	6	7
Permitted Phases			8		8	2				6
Detector Phase	7	4	8	8	1	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	11.0	14.0	38.0	11.0
Total Split (s)	24.0	76.0	52.0	52.0	53.0	11.0	11.0	53.0	64.0	24.0
Total Split (%)	17.1%	54.3%	37.1%	37.1%	37.9%	7.9%	7.9%	37.9%	45.7%	17.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	18.9	71.0	47.1	47.1	101.7	6.0	54.6	54.6	77.9	
Actuated g/C Ratio	0.14	0.51	0.34	0.34	0.73		0.04	0.39	0.39	0.56
v/c Ratio	0.89	0.67	0.01	0.70	0.61		0.18	0.71	0.70	0.64
Control Delay	80.9	27.9	43.0	44.8	6.7		59.9	44.6	43.7	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	80.9	27.9	43.0	44.8	6.7		59.9	44.6	43.7	21.6
LOS	F	C	D	D	A		E	D	D	C
Approach Delay		41.3		27.5			59.9		35.9	
Approach LOS		D		C			E		D	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 35.0

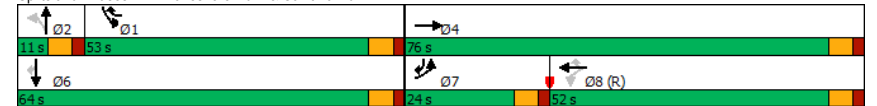
Intersection LOS: D

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Lakeshore Rd E & Cawthra Rd



Queues
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	406	1207	1	839	699	12	462	462	536
v/c Ratio	0.89	0.67	0.01	0.70	0.61	0.18	0.71	0.70	0.64
Control Delay	80.9	27.9	43.0	44.8	6.7	59.9	44.6	43.7	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.9	27.9	43.0	44.8	6.7	59.9	44.6	43.7	21.6
Queue Length 50th (m)	60.7	134.3	0.1	124.3	11.1	2.6	112.2	111.3	87.9
Queue Length 95th (m)	#89.3	159.2	m0.3	104.9	92.3	9.9	#181.3	175.6	123.0
Internal Link Dist (m)		297.4		113.2		71.8		931.9	
Turn Bay Length (m)	70.0		60.0		70.0		115.0		
Base Capacity (vph)	460	1814	107	1203	1144	67	648	662	843
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.67	0.01	0.70	0.61	0.18	0.71	0.70	0.64

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: Lakeshore Rd E & Cawthra Rd

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	406	1206	1	1	839	699	3	6	3	924	0	536
Future Volume (vph)	406	1206	1	1	839	699	3	6	3	924	0	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Frbp, ped/bikes	1.00	1.00		0.99	1.00	1.00		0.99		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	3395	3578		1734	3579	1507		1778		1662	1697	1496
Flt Permitted	0.95	1.00		0.18	1.00	1.00		0.83		0.95	0.75	1.00
Satd. Flow (perm)	3395	3578		321	3579	1507		1500		1662	1339	1496
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	1206	1	1	839	699	3	6	3	924	0	536
RTOR Reduction (vph)	0	0	0	0	0	56	0	3	0	0	0	10
Lane Group Flow (vph)	406	1207	0	1	839	643	0	9	0	462	462	526
Confl. Peds. (#/hr)	56		26	26		56	36		2	2		36
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases				8		8	2					6
Actuated Green, G (s)	17.9	66.4		42.5	42.5	96.1		2.0		53.6	61.6	79.5
Effective Green, g (s)	18.9	67.4		43.5	43.5	98.1		3.0		54.6	62.6	81.5
Actuated g/C Ratio	0.13	0.48		0.31	0.31	0.70		0.02		0.39	0.45	0.58
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	458	1722		99	1112	1055		32		648	738	924
v/s Ratio Prot	c0.12	0.34			c0.23	0.24				c0.28	0.24	0.08
v/s Ratio Perm				0.00		0.19		0.01			c0.04	0.28
v/c Ratio	0.89	0.70		0.01	0.75	0.61		0.28		0.71	0.63	0.57
Uniform Delay, d1	59.5	28.4		33.4	43.4	10.9		67.4		36.1	29.7	18.3
Progression Factor	1.00	1.00		1.38	1.03	1.01		1.00		1.00	1.00	1.00
Incremental Delay, d2	18.3	2.4		0.2	4.0	0.8		4.8		3.7	1.7	0.8
Delay (s)	77.8	30.8		46.1	48.9	11.9		72.3		39.8	31.4	19.1
Level of Service	E	C		D	D	B		E		D	C	B
Approach Delay (s)		42.6			32.1			72.3			29.5	
Approach LOS		D			C			E			C	

Intersection Summary

HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics
2: East Avenue & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	40.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.88	0.99		0.85	0.99				0.97	
Frt			0.850			0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3579	1566	1750	1601	0	1750	1559	0
Flt Permitted	0.950			0.950			0.754			0.740		
Satd. Flow (perm)	1725	3579	1384	1737	3579	1334	1369	1601	0	1363	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			78			76			85
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.2			102.4			132.2			178.2	
Travel Time (s)		8.2			7.4			9.5			12.8	

Intersection Summary

Area Type: Other

Timings
2: East Avenue & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↰	↱
Traffic Volume (vph)	84	1854	137	57	1602	86	63	0	30	0
Future Volume (vph)	84	1854	137	57	1602	86	63	0	30	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		3	8			2		6
Permitted Phases			4			8	2		6	
Detector Phase	7	4	4	3	8	8	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	16.2	102.3	102.3	11.6	97.7	97.7	13.1	13.1	13.1	13.1
Actuated g/C Ratio	0.12	0.73	0.73	0.08	0.70	0.70	0.09	0.09	0.09	0.09
v/c Ratio	0.41	0.71	0.13	0.40	0.64	0.09	0.49	0.12	0.24	0.03
Control Delay	63.9	14.2	3.6	62.9	14.1	3.5	72.5	1.1	61.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	14.2	3.6	62.9	14.1	3.5	72.5	1.1	61.7	0.2
LOS	E	B	A	E	B	A	E	A	E	A
Approach Delay		15.5			15.1			51.1		51.5
Approach LOS		B			B			D		D

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.5

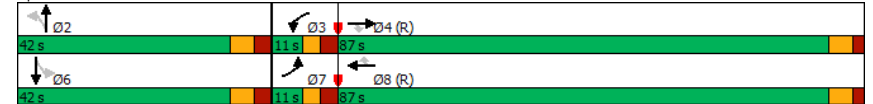
Intersection LOS: B

Intersection Capacity Utilization 83.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: East Avenue & Lakeshore Rd E



Queues
2: East Avenue & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	1854	137	57	1602	86	63	27	30	6
v/c Ratio	0.41	0.71	0.13	0.40	0.64	0.09	0.49	0.12	0.24	0.03
Control Delay	63.9	14.2	3.6	62.9	14.1	3.5	72.5	1.1	61.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	14.2	3.6	62.9	14.1	3.5	72.5	1.1	61.7	0.2
Queue Length 50th (m)	21.4	138.8	6.2	16.0	159.8	0.7	17.8	0.0	8.3	0.0
Queue Length 95th (m)	m33.7	302.7	m15.6	m29.7	148.7	m8.2	32.7	0.0	18.5	0.0
Internal Link Dist (m)		89.2			78.4			108.2		154.2
Turn Bay Length (m)	72.0		45.0	50.0		20.0	40.0		45.0	
Base Capacity (vph)	203	2616	1032	144	2497	954	352	468	350	464
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.71	0.13	0.40	0.64	0.09	0.18	0.06	0.09	0.01
Intersection Summary										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
2: East Avenue & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	84	1854	137	57	1602	86	63	0	27	30	0	6
Future Volume (vph)	84	1854	137	57	1602	86	63	0	27	30	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3579	1384	1750	3579	1334	1725	1601		1750	1559	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.74	1.00	
Satd. Flow (perm)	1750	3579	1384	1750	3579	1334	1369	1601		1362	1559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1854	137	57	1602	86	63	0	27	30	0	6
RTOR Reduction (vph)	0	0	22	0	0	24	0	25	0	0	6	0
Lane Group Flow (vph)	84	1854	115	57	1602	62	63	2	0	30	0	0
Confl. Peds. (#/hr)	28		21	21		28	12					12
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2				6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	15.2	99.9	99.9	10.6	95.3	95.3	10.5	10.5		10.5	10.5	
Effective Green, g (s)	16.2	100.9	100.9	11.6	96.3	96.3	11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.12	0.72	0.72	0.08	0.69	0.69	0.08	0.08		0.08	0.08	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	202	2579	997	145	2461	917	112	131		111	128	
v/s Ratio Prot	c0.05	c0.52		0.03	0.45		0.00				0.00	
v/s Ratio Perm			0.08			0.05	c0.05			0.02		
v/c Ratio	0.42	0.72	0.12	0.39	0.65	0.07	0.56	0.02		0.27	0.00	
Uniform Delay, d1	57.5	11.3	6.0	60.9	12.4	7.2	61.8	59.1		60.3	59.0	
Progression Factor	1.02	1.02	0.94	0.93	0.99	1.41	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.4	0.2	1.5	1.2	0.1	6.3	0.1		1.3	0.0	
Delay (s)	59.8	12.9	5.8	58.0	13.4	10.2	68.2	59.1		61.6	59.0	
Level of Service	E	B	A	E	B	B	E	E		E	E	
Approach Delay (s)		14.3			14.7		65.4				61.2	
Approach LOS		B			B		E				E	
Intersection Summary												
HCM 2000 Control Delay			16.1				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			83.9%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes and Geometrics
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		70.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.20	0.91		0.58	0.57
Frt		0.850			0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1566	1750	3579	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	310	1585	3579	1971	899
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)		78			1	
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			61.2	130.4	
Travel Time (s)	4.7			4.4	9.4	

Intersection Summary

Area Type: Other

Timings
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	→	↖	↗	←	↖	↗	Ø2	Ø4	Ø8	Ø10
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑				
Traffic Volume (vph)	1537	326	309	1418	414	138				
Future Volume (vph)	1537	326	309	1418	414	138				
Turn Type	NA	custom	Prot	NA	Prot	pm+ov				
Protected Phases	4 9	9	3	8 10	5	3	2	4	8	10
Permitted Phases		4			2					
Detector Phase	4 9	9	3	8 10	5	3				
Switch Phase										
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	8.0	8.0	5.0
Minimum Split (s)		11.0	12.0		12.0	12.0	34.0	24.0	24.0	24.0
Total Split (s)		24.0	33.0		34.0	33.0	34.0	49.0	82.0	24.0
Total Split (%)		17.1%	23.6%		24.3%	23.6%	24%	35%	59%	17%
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)		2.0	3.0		3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0				
Total Lost Time (s)		5.0	6.0		6.0	6.0				
Lead/Lag		Lead			Lead			Lag		
Lead-Lag Optimize?		Yes			Yes			Yes		
Recall Mode		None	None		None	None	None	C-Min	C-Min	None
Act Effct Green (s)	75.2	66.2	28.6	109.9	23.1	51.8				
Actuated g/C Ratio	0.54	0.47	0.20	0.78	0.16	0.37				
v/c Ratio	0.80	0.91	0.86	0.50	0.74	0.29				
Control Delay	18.5	48.3	90.6	3.9	63.6	29.7				
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0				
Total Delay	18.5	48.3	90.6	4.0	63.6	29.7				
LOS	B	D	F	A	E	C				
Approach Delay	23.8			19.5	55.2					
Approach LOS	C			B	E					

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 26.2
 Intersection Capacity Utilization 84.7%
 Analysis Period (min) 15

Splits and Phases: 3: Lakefront Promenade & Lakeshore Rd E

Ø2	Ø3	Ø4 (R)	Ø9
34 s	33 s	49 s	24 s
Ø5	Ø8 (R)		Ø10
34 s	62 s		24 s

Queues
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1537	326	309	1418	414	138
v/c Ratio	0.80	0.91	0.86	0.50	0.74	0.29
Control Delay	18.5	48.3	90.6	3.9	63.6	29.7
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	18.5	48.3	90.6	4.0	63.6	29.7
Queue Length 50th (m)	142.2	47.8	93.1	37.7	59.8	24.4
Queue Length 95th (m)	104.9	#108.2 m	#142.3	45.2	75.6	39.6
Internal Link Dist (m)	41.1			37.2	106.4	
Turn Bay Length (m)		25.0	35.0		70.0	
Base Capacity (vph)	1923	359	363	2808	679	474
Starvation Cap Reductn	0	0	0	313	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.91	0.85	0.57	0.61	0.29

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
3: Lakefront Promenade & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↖	↑↑	↖	↑
Traffic Volume (vph)	1537	326	309	1418	414	138
Future Volume (vph)	1537	326	309	1418	414	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	1.0	5.0	6.0	1.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.42	1.00	1.00	1.00	0.81
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	651	1750	3579	3395	1268
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	651	1750	3579	3395	1268
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1537	326	309	1418	414	138
RTOR Reduction (vph)	0	39	0	0	0	1
Lane Group Flow (vph)	1537	287	309	1418	414	137
Confl. Peds. (#/hr)		512	512		598	585
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	4 9	9	3	8 10	5	3
Permitted Phases		4				2
Actuated Green, G (s)	70.3	68.3	27.6	104.9	22.1	49.7
Effective Green, g (s)	71.3	70.3	28.6	105.9	23.1	51.7
Actuated g/C Ratio	0.51	0.50	0.20	0.76	0.17	0.37
Clearance Time (s)		6.0	7.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1822	326	357	2707	560	522
v/s Ratio Prot	c0.43	c0.12	c0.18	c0.40	c0.12	0.05
v/s Ratio Perm		0.32				0.05
v/c Ratio	0.84	0.88	0.87	0.52	0.74	0.26
Uniform Delay, d1	29.6	31.1	53.8	6.9	55.6	30.8
Progression Factor	0.58	0.66	1.40	0.61	1.00	1.00
Incremental Delay, d2	2.7	17.8	13.6	0.1	5.1	0.3
Delay (s)	19.9	38.3	89.1	4.3	60.7	31.1
Level of Service	B	D	F	A	E	C
Approach Delay (s)	23.1			19.5	53.3	
Approach LOS	C			B	D	

Intersection Summary

HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes and Geometrics
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	85.0		0.0	50.0		30.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.29	0.87	0.99		0.99		0.97	0.98	0.99	
Frt			0.850		0.989				0.850		0.917	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3579	1566	1750	3498	0	1750	1902	1566	1750	1707	0
Flt Permitted	0.950			0.950			0.368			0.709		
Satd. Flow (perm)	1726	3579	457	1527	3498	0	674	1902	1520	1285	1707	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156			9			164		45	
Link Speed (k/h)		50				50			50		50	
Link Distance (m)		102.3			84.4			142.3			246.5	
Travel Time (s)		7.4			6.1			10.2			17.7	

Intersection Summary

Area Type: Other

Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4	Ø8
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4	Ø8
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔		
Traffic Volume (vph)	99	1228	339	281	1528	123	74	127	169	80		
Future Volume (vph)	99	1228	339	281	1528	123	74	127	169	80		
Turn Type	Prot	NA	custom	Prot	NA	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	7	4 9	9	3	8 10	5	2		1	6	4	8
Permitted Phases			4			2		2	6			
Detector Phase	7	4 9	9	3	8 10	5	2	2	1	6		
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	11.0		11.0	11.0		9.0	45.0	45.0	9.0	45.0	24.0	24.0
Total Split (s)	13.0		24.0	28.0		9.0	45.0	45.0	9.0	45.0	34.0	49.0
Total Split (%)	9.3%		17.1%	20.0%		6.4%	32.1%	32.1%	6.4%	32.1%	24%	35%
Yellow Time (s)	3.0		4.0	3.0		3.0	4.0	4.0	3.0	4.0	2.0	2.0
All-Red Time (s)	3.0		2.0	3.0		1.0	3.0	3.0	1.0	3.0	0.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		
Total Lost Time (s)	5.0		5.0	5.0		3.0	6.0	6.0	3.0	6.0		
Lead/Lag	Lead		Lead	Lead		Lead	Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None		None	None		None	None	None	None	None	C-Min	C-Min
Act Effect Green (s)	16.6	69.2	60.2	31.7	84.4	27.1	17.7	17.7	27.1	17.7		
Actuated g/C Ratio	0.12	0.49	0.43	0.23	0.60	0.19	0.13	0.13	0.19	0.13		
v/c Ratio	0.48	0.69	0.78	0.71	0.78	0.69	0.31	0.38	0.63	0.71		
Control Delay	50.7	29.2	33.1	68.6	19.3	67.6	57.1	6.0	59.8	57.9		
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0		
Total Delay	50.7	29.2	33.1	68.6	19.7	67.6	57.1	6.0	59.8	57.9		
LOS	D	C	C	E	B	E	E	A	E	E		
Approach Delay		31.3			26.8		41.0			58.8		
Approach LOS		C			C		D			E		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 32.2

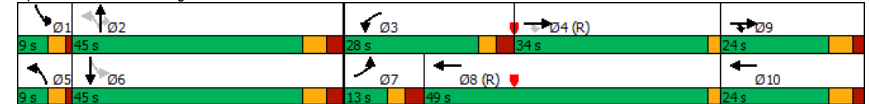
Intersection LOS: C

Intersection Capacity Utilization 94.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Ogden Ave & Lakeshore Rd E



Timings
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues
4: Ogden Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	99	1228	339	281	1654	123	74	127	169	180
v/c Ratio	0.48	0.69	0.78	0.71	0.78	0.69	0.31	0.38	0.63	0.71
Control Delay	50.7	29.2	33.1	68.6	19.3	67.6	57.1	6.0	59.8	57.9
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	29.2	33.1	68.6	19.7	67.6	57.1	6.0	59.8	57.9
Queue Length 50th (m)	29.2	86.0	30.4	83.3	153.0	30.7	19.9	0.0	43.4	38.4
Queue Length 95th (m)	m38.1	129.0	m#68.7	117.9	155.1	47.0	34.0	8.7	62.5	61.7
Internal Link Dist (m)		78.3			60.4		118.3			222.5
Turn Bay Length (m)	28.0		25.0	85.0		50.0		30.0		
Base Capacity (vph)	207	1777	436	396	2119	178	529	541	269	507
Starvation Cap Reductn	0	0	0	0	107	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.69	0.78	0.71	0.82	0.69	0.14	0.23	0.63	0.36
Intersection Summary										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis 4: Ogden Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Traffic Volume (vph)	99	1228	339	281	1528	126	123	74	127	169	80	100
Future Volume (vph)	99	1228	339	281	1528	126	123	74	127	169	80	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Flt pb, ped/bikes	1.00	1.00	0.50	1.00	0.99		1.00	1.00	0.97	1.00	0.99	
Flt pb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Flt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3579	781	1750	3497		1746	1902	1520	1731	1707	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.37	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	1750	3579	781	1750	3497		676	1902	1520	1291	1707	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	99	1228	339	281	1528	126	123	74	127	169	80	100
RTOR Reduction (vph)	0	0	84	0	4	0	0	0	111	0	39	0
Lane Group Flow (vph)	99	1228	255	281	1650	0	123	74	16	169	141	0
Confl. Peds. (#/hr)	29		324	324		29	8		16	16		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Turn Type	Prot	NA	custom	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4 9	9	3	8 10		5	2		1	6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	15.6	64.3	62.3	30.7	79.4		22.0	16.7	16.7	22.0	16.7	
Effective Green, g (s)	16.6	65.3	64.3	31.7	80.4		24.0	17.7	17.7	24.0	17.7	
Actuated g/C Ratio	0.12	0.47	0.46	0.23	0.57		0.17	0.13	0.13	0.17	0.13	
Clearance Time (s)	6.0		6.0	6.0			4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	207	1669	358	396	2008		164	240	192	241	215	
v/s Ratio Prot	0.06	0.34	0.10	0.16	0.47		0.03	0.04		0.03	0.08	
v/s Ratio Perm			0.23				0.09		0.01	0.09		
v/c Ratio	0.48	0.74	0.71	0.71	0.82		0.75	0.31	0.08	0.70	0.65	
Uniform Delay, d1	57.7	30.3	30.4	49.9	24.0		54.1	55.6	54.0	53.8	58.2	
Progression Factor	0.79	0.95	1.01	1.22	0.76		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	1.1	4.3	4.4	2.2		17.4	0.7	0.2	8.9	7.0	
Delay (s)	46.8	30.0	35.0	65.2	20.3		71.5	56.3	54.2	62.6	65.2	
Level of Service	D	C	D	E	C		E	E	D	E	E	
Approach Delay (s)		32.1			26.9			61.2			64.0	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay		34.5			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			20.0				
Intersection Capacity Utilization		94.1%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

Scenario 4
Afternoon Peak Hour

Synchro 11 Report
Page 17

Lanes and Geometrics 5: Hydro Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			30.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.14	0.81	1.00			0.99			1.00	
Flt			0.850					0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1750	3579	1566	1750	3578	0	1750	1580	0	0	1789	0
Flt Permitted	0.950			0.950			0.757				0.538	
Satd. Flow (perm)	1731	3579	213	1426	3578	0	1394	1580	0	0	1012	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			243				245					
Link Speed (k/h)		50			50			50				50
Link Distance (m)		138.1			195.3			135.3				191.6
Travel Time (s)		9.9			14.1			9.7				13.8
Intersection Summary												
Area Type:	Other											

Scenario 4
Afternoon Peak Hour

Synchro 11 Report
Page 18

Timings
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰			
Traffic Volume (vph)	1	1107	450	307	1686	255	0	1	0			
Future Volume (vph)	1	1107	450	307	1686	255	0	1	0			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9	9	3	8 10		5		2	4	8	10
Permitted Phases			4			5		2				
Detector Phase	7	4 9	9	3	8 10	5	5	2	2			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0		11.0	11.0		44.0	44.0	44.0	44.0	24.0	20.0	24.0
Total Split (s)	11.0		32.0	29.0		44.0	44.0	44.0	44.0	35.0	53.0	32.0
Total Split (%)	7.9%		22.9%	20.7%		31.4%	31.4%	31.4%	31.4%	25%	38%	23%
Yellow Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	2.0		2.0	2.0		2.0	2.0	2.0	2.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0			
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0		5.0			
Lead/Lag	Lead		Lead						Lag	Lag		
Lead-Lag Optimize?	Yes		Yes						Yes	Yes		
Recall Mode	None		None	None		None	None	None	None	C-Max	C-Max	None
Act Effct Green (s)	6.5	68.0	25.6	29.7	100.6	31.2	31.2		31.2			
Actuated g/C Ratio	0.05	0.49	0.18	0.21	0.72	0.22	0.22		0.22			
v/c Ratio	0.01	0.64	0.93	0.83	0.66	0.82	0.30		0.00			
Control Delay	72.0	16.4	37.2	79.0	10.6	72.1	1.4		38.0			
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0		0.0			
Total Delay	72.0	16.6	37.2	79.0	10.8	72.1	1.4		38.0			
LOS	E	B	D	E	B	E	A		D			
Approach Delay		22.6			21.3		44.8		38.0			
Approach LOS		C			C		D		D			

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 24.2

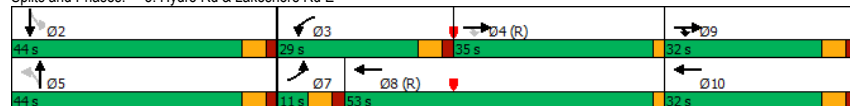
Intersection LOS: C

Intersection Capacity Utilization 76.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Hydro Rd & Lakeshore Rd E



Queues
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1	1107	450	307	1689	255	160	1
v/c Ratio	0.01	0.64	0.93	0.83	0.66	0.82	0.30	0.00
Control Delay	72.0	16.4	37.2	79.0	10.6	72.1	1.4	38.0
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	72.0	16.6	37.2	79.0	10.8	72.1	1.4	38.0
Queue Length 50th (m)	0.3	60.0	39.6	94.9	89.7	70.9	0.0	0.2
Queue Length 95th (m)	m0.2	53.6	#125.1 m#139.4	m98.5	98.3	0.0	1.7	
Internal Link Dist (m)		114.1		171.3		111.3	167.6	
Turn Bay Length (m)	25.0		50.0	25.0		85.0		
Base Capacity (vph)	81	1775	498	371	2606	388	616	281
Starvation Cap Reductn	0	117	0	0	249	0	0	0
Spillback Cap Reductn	0	0	0	0	61	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.67	0.90	0.83	0.72	0.66	0.26	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
5: Hydro Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Traffic Volume (vph)	1	1107	450	307	1686	3	255	0	160	1	0	0
Future Volume (vph)	1	1107	450	307	1686	3	255	0	160	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	5.0	5.0	1.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Flt Protected	1.00	1.00	0.55	1.00	1.00		1.00	0.99			1.00	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Satd. Flow (prot)	1750	3579	867	1750	3577		1750	1580			1788	
Satd. Flow (perm)	1750	3579	867	1750	3577		1395	1580			1012	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	1107	450	307	1686	3	255	0	160	1	0	0
RTOR Reduction (vph)	0	0	133	0	0	0	0	124	0	0	0	0
Lane Group Flow (vph)	1	1107	317	307	1689	0	255	36	0	0	1	0
Confl. Peds. (#/hr)	29		593	593		29			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			5			2	
Permitted Phases			4				5			2		
Actuated Green, G (s)	1.0	63.1	61.1	28.7	90.8		30.2	30.2			30.2	
Effective Green, g (s)	2.0	64.1	63.1	29.7	91.8		31.2	31.2			31.2	
Actuated g/C Ratio	0.01	0.46	0.45	0.21	0.66		0.22	0.22			0.22	
Clearance Time (s)	6.0		6.0	6.0			6.0	6.0			6.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	25	1638	390	371	2345		310	352			225	
v/s Ratio Prot	0.00	0.31	c0.18	c0.18	c0.47			0.02				
v/s Ratio Perm			0.19				c0.18				0.00	
v/c Ratio	0.04	0.68	0.81	0.83	0.72		0.82	0.10			0.00	
Uniform Delay, d1	68.1	29.8	33.3	52.7	15.7		51.8	43.3			42.3	
Progression Factor	1.12	0.55	0.55	1.29	0.78		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.9	9.6	8.8	0.7		16.0	0.1			0.0	
Delay (s)	76.6	17.1	27.8	76.9	13.0		67.7	43.4			42.3	
Level of Service	E	B	C	E	B		E	D			D	
Approach Delay (s)		20.2			22.8			58.3			42.3	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay		25.5			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		76.4%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
6: Lakeshore Rd E & Haig Blvd

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	45.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.5			50.0			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		0.23	0.80	1.00		0.79	0.72			0.74	
Flt Protected	0.950			0.950			0.950				0.993	
Satd. Flow (prot)	1750	3579	1566	1750	3541	0	1750	1181	0	0	1278	0
Flt Permitted	0.950			0.950			0.522				0.863	
Satd. Flow (perm)	1706	3579	365	1395	3541	0	762	1181	0	0	1080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		7			197			99	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			122.1			123.3			883.5	
Travel Time (s)		14.1			8.8			8.9			63.6	

Intersection Summary

Area Type: Other

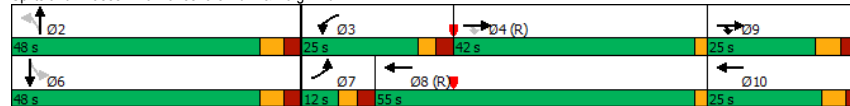
Timings Scenario 4
6: Lakeshore Rd E & Haig Blvd Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø8	Ø10
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱			
Traffic Volume (vph)	78	953	220	146	1584	215	43	31	27			
Future Volume (vph)	78	953	220	146	1584	215	43	31	27			
Turn Type	Prot	NA	custom	Prot	NA	Perm	NA	Perm	NA			
Protected Phases	7	4 9		3	8 10		2		6	4	8	10
Permitted Phases			4			2		6				
Detector Phase	7	4 9	9	3	8 10	2	2	6	6			
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0		8.0	8.0	8.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0		12.0	11.0		44.0	44.0	44.0	44.0	24.0	12.0	24.0
Total Split (s)	12.0		25.0	25.0		48.0	48.0	48.0	48.0	42.0	55.0	25.0
Total Split (%)	8.6%		17.9%	17.9%		34.3%	34.3%	34.3%	34.3%	30%	39%	18%
Yellow Time (s)	3.0		4.0	3.0		4.0	4.0	4.0	4.0	2.0	2.0	4.0
All-Red Time (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0	0.0	0.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0			
Total Lost Time (s)	5.0		6.0	5.0		6.0	6.0		6.0			
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Recall Mode	None		None	None		None	None	None	None	C-Min	C-Max	None
Act Effect Green (s)	7.7	69.8	58.8	17.0	79.2	41.2	41.2		41.2			
Actuated g/C Ratio	0.06	0.50	0.42	0.12	0.57	0.29	0.29		0.29			
v/c Ratio	0.82	0.53	0.53	0.69	0.84	0.96	0.56		0.55			
Control Delay	116.9	15.2	14.1	70.1	25.4	99.5	16.7		27.5			
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0		0.0			
Total Delay	116.9	15.3	14.1	70.1	25.5	99.5	16.7		27.5			
LOS	F	B	B	E	C	F	B		C			
Approach Delay		21.5			29.1		53.1		27.5			
Approach LOS		C			C		D		C			

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 29.6 Intersection LOS: C
 Intersection Capacity Utilization 119.9% ICU Level of Service H
 Analysis Period (min) 15

Splits and Phases: 6: Lakeshore Rd E & Haig Blvd



Queues Scenario 4
6: Lakeshore Rd E & Haig Blvd Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	78	953	220	146	1675	215	274	214
v/c Ratio	0.82	0.53	0.53	0.69	0.84	0.96	0.56	0.55
Control Delay	116.9	15.2	14.1	70.1	25.4	99.5	16.7	27.5
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	116.9	15.3	14.1	70.1	25.5	99.5	16.7	27.5
Queue Length 50th (m)	24.2	34.8	15.5	43.2	176.6	61.3	17.1	27.7
Queue Length 95th (m)	m#51.1	44.6	20.8	m#49.8	m#190.4	#114.1	48.1	55.8
Internal Link Dist (m)		171.3			98.1		99.3	859.5
Turn Bay Length (m)	50.0		50.0	100.0		45.0		
Base Capacity (vph)	95	1785	416	250	2058	230	494	395
Starvation Cap Reductn	0	140	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	20	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.58	0.53	0.58	0.82	0.93	0.55	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: Lakeshore Rd E & Haig Blvd

Scenario 4

Afternoon Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Traffic Volume (vph)	78	953	220	146	1584	91	215	43	231	31	27	156
Future Volume (vph)	78	953	220	146	1584	91	215	43	231	31	27	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	1.0	6.0	5.0	1.0		6.0	6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Flt Protected	1.00	1.00	0.50	1.00	1.00		1.00	0.72			0.76	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		1.00	0.79			0.97	
Flt Protected	1.00	1.00	0.85	1.00	0.99		1.00	0.87			0.90	
Satd. Flow (prot)	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (perm)	1750	3579	785	1750	3541		1388	1180			1242	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	78	953	220	146	1584	91	215	43	231	31	27	156
RTOR Reduction (vph)	0	0	68	0	3	0	0	139	0	0	70	0
Lane Group Flow (vph)	78	953	152	146	1672	0	215	135	0	0	144	0
Confl. Peds. (#/hr)	26		388	388		26	388		395	395		388
Heavy Vehicles (%)	2%	2%	2%	2%	2%		2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4 9	9	3	8 10			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	6.7	63.8	61.8	16.0	74.1		40.2	40.2			40.2	
Effective Green, g (s)	7.7	64.8	63.8	17.0	75.1		41.2	41.2			41.2	
Actuated g/C Ratio	0.06	0.46	0.46	0.12	0.54		0.29	0.29			0.29	
Clearance Time (s)	6.0		7.0	6.0			7.0	7.0			7.0	
Vehicle Extension (s)	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	96	1656	357	212	1899		224	347			317	
v/s Ratio Prot	0.04	0.27	0.07	c0.08	c0.47			0.11				
v/s Ratio Perm			0.13				c0.28				0.13	
v/c Ratio	0.81	0.58	0.43	0.69	0.88		0.96	0.39			0.45	
Uniform Delay, d1	65.4	27.5	25.7	59.0	28.5		48.6	39.4			40.2	
Progression Factor	1.12	0.57	0.58	1.04	0.91		1.00	1.00			1.00	
Incremental Delay, d2	33.3	0.4	0.7	4.7	2.7		48.2	0.7			1.0	
Delay (s)	106.7	16.2	15.5	66.1	28.6		96.8	40.1			41.3	
Level of Service	F	B	B	E	C		F	D			D	
Approach Delay (s)		21.7			31.6			65.0			41.3	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes and Geometrics

7: Dixie Rd & Lakeshore Rd E

Scenario 4

Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱	↰	↰↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	165.0		0.0	25.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		0.98		0.87	0.99					0.97
Flt Protected	0.950			0.950			0.982				0.953	
Satd. Flow (prot)	1750	3567	0	1750	3579	1566	0	1759	0	0	1795	1566
Flt Permitted	0.950			0.950			0.899				0.721	
Satd. Flow (perm)	1697	3567	0	1708	3579	1363	0	1602	0	0	1358	1511
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				125		4				23
Link Speed (k/h)		50			50			50				50
Link Distance (m)		131.5			399.1			93.6				292.8
Travel Time (s)		9.5			28.7			6.7				21.1

Intersection Summary

Area Type: Other

Timings
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↱	↰	↱	↰
Traffic Volume (vph)	422	760	3	943	244	4	3	255	3	860
Future Volume (vph)	422	760	3	943	244	4	3	255	3	860
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	11.0	24.0	24.0	45.0	45.0	45.0	45.0	12.0
Total Split (s)	50.0	84.0	11.0	45.0	45.0	45.0	45.0	45.0	45.0	50.0
Total Split (%)	35.7%	60.0%	7.9%	32.1%	32.1%	32.1%	32.1%	32.1%	32.1%	35.7%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes	
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	47.4	94.9	6.6	44.6	44.6		31.9	31.9	80.4	
Actuated g/C Ratio	0.34	0.68	0.05	0.32	0.32		0.23	0.23	0.57	
v/c Ratio	0.71	0.32	0.04	0.83	0.47		0.03	0.83	0.96	
Control Delay	35.9	23.0	65.0	52.3	22.7		30.1	73.4	47.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	35.9	23.0	65.0	52.3	22.7		30.1	73.4	47.6	
LOS	D	C	E	D	C		C	E	D	
Approach Delay		27.6		46.3			30.1	53.6		
Approach LOS		C		D			C	D		

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 42.2

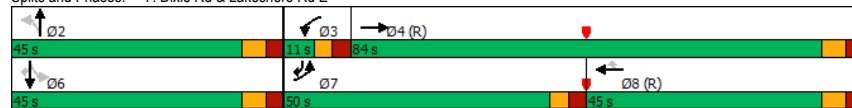
Intersection LOS: D

Intersection Capacity Utilization 101.3%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 7: Dixie Rd & Lakeshore Rd E



Queues
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	422	770	3	943	244	11	258	860
v/c Ratio	0.71	0.32	0.04	0.83	0.47	0.03	0.83	0.96
Control Delay	35.9	23.0	65.0	52.3	22.7	30.1	73.4	47.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	23.0	65.0	52.3	22.7	30.1	73.4	47.6
Queue Length 50th (m)	115.8	94.5	0.9	140.7	28.3	1.6	71.6	181.0
Queue Length 95th (m)	157.9	134.5	4.3	#180.6	56.7	6.7	100.7	#314.1
Internal Link Dist (m)		107.5		375.1		69.6	268.8	
Turn Bay Length (m)	165.0		25.0		30.0			
Base Capacity (vph)	595	2417	82	1141	519	449	378	898
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	0.71	0.32	0.04	0.83	0.47	0.02	0.68	0.96

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
7: Dixie Rd & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Traffic Volume (vph)	422	760	10	3	943	244	4	3	4	255	3	860
Future Volume (vph)	422	760	10	3	943	244	4	3	4	255	3	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		6.0			6.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Flt Protected	1.00	1.00		1.00	1.00	0.87		1.00			1.00	0.99
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)	1750	3567		1750	3579	1363		1602			1358	1544
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	422	760	10	3	943	244	4	3	4	255	3	860
RTOR Reduction (vph)	0	0	0	0	0	85	0	3	0	0	0	10
Lane Group Flow (vph)	422	770	0	3	943	159	0	8	0	0	258	850
Confl. Peds. (#/hr)	24		15	15		24	21				21	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8		2				6	7
Permitted Phases					8		2			6		6
Actuated Green, G (s)	46.4	89.1		1.0	43.7	43.7		30.9			30.9	77.3
Effective Green, g (s)	47.4	90.1		2.0	44.7	44.7		31.9			31.9	79.3
Actuated g/C Ratio	0.34	0.64		0.01	0.32	0.32		0.23			0.23	0.57
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		7.0			7.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	592	2295		25	1142	435		365			309	874
v/s Ratio Prot	0.24	0.22		0.00	0.26						0.33	
v/s Ratio Perm					0.12		0.00			0.19		0.22
v/c Ratio	0.71	0.34		0.12	0.83	0.37	0.02			0.83	0.97	
Uniform Delay, d1	40.4	11.3		68.1	44.0	36.7		41.9			51.5	29.3
Progression Factor	0.72	2.16		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.5	0.3		2.1	6.9	2.4		0.0			17.4	23.8
Delay (s)	32.7	24.8		70.3	50.9	39.1		42.0			68.9	53.1
Level of Service	C	C		E	D	D		D			E	D
Approach Delay (s)		27.6			48.5			42.0			56.7	
Approach LOS		C			D			D			E	
Intersection Summary												
HCM 2000 Control Delay		44.0			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.92										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		101.3%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱	↰		↰↱		↰	↰↱	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		0.0	25.0		0.0	35.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998		0.850				0.938	
Flt Protected	0.950			0.950		0.950					0.974	
Satd. Flow (prot)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Flt Permitted	0.950			0.950		0.950					0.974	
Satd. Flow (perm)	1750	3579	0	1750	3571	0	1750	1601	0	0	1721	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.2			112.9			93.9			87.4	
Travel Time (s)		9.9			8.1			6.8			6.3	
Intersection Summary												
Area Type: Other												

HCM Unsignalized Intersection Capacity Analysis
21: Montbeck Cr/West Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	5	1973	4	3	1760	20	3	0	3	7	0	6
Future Volume (Veh/h)	5	1973	4	3	1760	20	3	0	3	7	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	1973	4	3	1760	20	3	0	3	7	0	6
Pedestrians		1			1			24			23	
Lane Width (m)		3.6			3.6			3.6			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type		TWLT			TWLT							
Median storage (veh)		2			2							
Upstream signal (m)		137			226							
pX, platoon unblocked	0.73			0.74			0.86	0.86	0.74	0.86	0.86	0.73
vC, conflicting volume	1803			2001			2902	3818	1014	2800	3810	914
vC1, stage 1 conf vol							2009	2009		1799	1799	
vC2, stage 2 conf vol							893	1809		1000	2011	
vCu, unblocked vol	1356			1643			1507	2571	302	1387	2562	136
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	100	99	94	100	99
cM capacity (veh/h)	359			281			71	87	500	109	88	633
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	5	1315	662	3	1173	607	3	3	13			
Volume Left	5	0	0	3	0	0	3	0	7			
Volume Right	0	0	4	0	0	20	0	3	6			
cSH	359	1700	1700	281	1700	1700	71	500	176			
Volume to Capacity	0.01	0.77	0.39	0.01	0.69	0.36	0.04	0.01	0.07			
Queue Length 95th (m)	0.3	0.0	0.0	0.3	0.0	0.0	1.0	0.1	1.9			
Control Delay (s)	15.2	0.0	0.0	17.9	0.0	0.0	57.9	12.2	27.0			
Lane LOS	C			C			F	B	D			
Approach Delay (s)	0.0			0.0			35.1		27.0			
Approach LOS							E		D			
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization			68.6%		ICU Level of Service					C		
Analysis Period (min)			15									

Lanes and Geometrics
22: Lakeshore Rd E & Greaves Ave

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%	0%		
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor				0.996	0.865	
Flt Protected						
Satd. Flow (prot)	1842	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	1842	3500	3486	0	0	1593
Link Speed (k/h)	50		50	50		
Link Distance (m)	112.9		113.2	78.5		
Travel Time (s)	8.1		8.2	5.7		
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
22: Lakeshore Rd E & Greaves Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Traffic Volume (veh/h)	0	2100	1612	47	0	13
Future Volume (Veh/h)	0	2100	1612	47	0	13
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2100	1612	47	0	13
Pedestrians	2				30	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	250		113			
pX, platoon unblocked	0.73				0.86	0.73
vC, conflicting volume	1689				2716	862
vC1, stage 1 conf vol					1666	
vC2, stage 2 conf vol					1050	
vCu, unblocked vol	1212				1302	84
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	409				177	685
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	1050	1050	1075	584	13
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	47	13
cSH	1700	1700	1700	1700	1700	685
Volume to Capacity	0.00	0.62	0.62	0.63	0.34	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.4
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.4
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			68.7%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
23: Lakeshore Rd E & Westmount Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		102.4	203.5		79.2	
Travel Time (s)		7.4	14.7		5.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
23: Lakeshore Rd E & Westmount Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1869	1776	20	0	6
Future Volume (Veh/h)	0	1869	1776	20	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1869	1776	20	0	6
Pedestrians		1	1		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	102		269			
pX, platoon unblocked	0.83				0.76	0.83
vC, conflicting volume	1819				2744	922
vC1, stage 1 conf vol					1809	
vC2, stage 2 conf vol					936	
vCu, unblocked vol	1575				1654	493
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	337				125	424
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	934	934	1184	612	6	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	6	
cSH	1700	1700	1700	1700	424	
Volume to Capacity	0.55	0.55	0.70	0.36	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	13.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			62.0%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
24: Alexandra Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↑↑			↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			0.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996						0.865	
Flt Protected												
Satd. Flow (prot)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Flt Permitted												
Satd. Flow (perm)	1842	3579	0	1842	3564	0	0	1921	0	0	1629	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.5			65.1			102.5			233.9	
Travel Time (s)		14.7			4.7			7.4			16.8	
Intersection Summary												
Area Type:	Other											

HCM Unsignalized Intersection Capacity Analysis
24: Alexandra Ave & Lakeshore Rd E

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1880	0	0	1764	48	0	0	0	0	0	31
Future Volume (Veh/h)	0	1880	0	0	1764	48	0	0	0	0	0	31
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1880	0	0	1764	48	0	0	0	0	0	31
Pedestrians	1			1			230			28		
Lane Width (m)	3.6			3.6			3.7			3.7		
Walking Speed (m/s)	1.2			1.2			1.2			1.2		
Percent Blockage	0			0			20			2		
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage (veh)	2			2								
Upstream signal (m)	306			65								
pX, platoon unblocked	0.83			0.64			0.72	0.72	0.64	0.72	0.72	0.83
vC, conflicting volume	1840			2110			3024	3950	1171	2757	3926	935
vC1, stage 1 conf vol							2110	2110		1816	1816	
vC2, stage 2 conf vol							914	1840		941	2110	
vCu, unblocked vol	1611			1609			2005	3287	142	1635	3253	527
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	92
cM capacity (veh/h)	327			206			55	68	455	90	69	404
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	1253	627	0	1176	636	0	31				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	48	0	31				
cSH	1700	1700	1700	1700	1700	1700	1700	404				
Volume to Capacity	0.00	0.74	0.37	0.00	0.69	0.37	0.00	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			0.0	14.7				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				62.0%	ICU Level of Service			B				
Analysis Period (min)				15								

Lanes and Geometrics
25: Lakeshore Rd E & Meredith Ave

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998			0.865		
Fit Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Fit Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		61.2	109.2		86.7	
Travel Time (s)		4.4	7.9		6.2	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
25: Lakeshore Rd E & Meredith Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1694	1703	24	0	9
Future Volume (Veh/h)	0	1694	1703	24	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1694	1703	24	0	9
Pedestrians		2	2		23	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		61	212			
pX, platoon unblocked	0.61				0.80	0.61
vC, conflicting volume	1750				2587	888
vC1, stage 1 conf vol					1738	
vC2, stage 2 conf vol					849	
vCu, unblocked vol	957				364	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	429				551	650
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	847	847	1135	592	9	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	24	9	
cSH	1700	1700	1700	1700	650	
Volume to Capacity	0.50	0.50	0.67	0.35	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			57.9%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		109.2	102.3		77.2	
Travel Time (s)		7.9	7.4		5.6	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
26: Lakeshore Rd E & Edgeleigh Ave

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1707	1716	8	0	4
Future Volume (Veh/h)	0	1707	1716	8	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1707	1716	8	0	4
Pedestrians		3	3		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	170		102			
pX, platoon unblocked	0.61				0.81	0.61
vC, conflicting volume	1751				2604	892
vC1, stage 1 conf vol					1747	
vC2, stage 2 conf vol					856	
vCu, unblocked vol	967				355	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	426				567	650
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	854	854	1144	580	4	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	8	4	
cSH	1700	1700	1700	1700	650	
Volume to Capacity	0.50	0.50	0.67	0.34	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1	
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			57.7%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
27: Lakeshore Rd E & Strathy Ave

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3493	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3493	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.4	138.1		79.4	
Travel Time (s)		6.1	9.9		5.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
27: Lakeshore Rd E & Strathy Ave

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1548	1914	20	0	10
Future Volume (Veh/h)	0	1548	1914	20	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1548	1914	20	0	10
Pedestrians		5	4		27	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.67				0.81	0.67
vC, conflicting volume	1961				2729	999
vC1, stage 1 conf vol					1951	
vC2, stage 2 conf vol					778	
vCu, unblocked vol	1453				1101	21
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	303				121	688
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	774	774	1276	658	10	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	20	10	
cSH	1700	1700	1700	1700	688	
Volume to Capacity	0.46	0.46	0.75	0.39	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	10.3	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			65.1%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes and Geometrics
28: Lakeshore Rd E & Orchard Rd

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↑↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3496	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3496	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.1	369.2		119.7	
Travel Time (s)		8.8	26.6		8.6	
Intersection Summary						
Area Type:		Other				

HCM Unsignalized Intersection Capacity Analysis
28: Lakeshore Rd E & Orchard Rd

Scenario 4
Afternoon Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1218	1826	17	0	11
Future Volume (Veh/h)	0	1218	1826	17	0	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1218	1826	17	0	11
Pedestrians		5	5		26	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)		122				
pX, platoon unblocked					0.80	
vC, conflicting volume	1869				2474	952
vC1, stage 1 conf vol					1860	
vC2, stage 2 conf vol					614	
vCu, unblocked vol	1869				2346	952
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	312				103	253
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	609	609	1217	626	11	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	17	11	
cSH	1700	1700	1700	1700	253	
Volume to Capacity	0.36	0.36	0.72	0.37	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.1	
Control Delay (s)	0.0	0.0	0.0	0.0	19.9	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		19.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			61.0%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
29: Lakeshore Rd E & Fergus Ave

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected						
Satd. Flow (prot)	0	3500	3486	0	0	1593
Flt Permitted						
Satd. Flow (perm)	0	3500	3486	0	0	1593
Link Speed (k/h)		50	50		50	
Link Distance (m)		369.2	131.5		119.4	
Travel Time (s)		26.6	9.5		8.6	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis
29: Lakeshore Rd E & Fergus Ave

Scenario 4
Afternoon Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1217	1804	51	0	32
Future Volume (Veh/h)	0	1217	1804	51	0	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1217	1804	51	0	32
Pedestrians		6	6		24	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		2	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)			131			
pX, platoon unblocked	0.75				0.75	0.75
vC, conflicting volume	1879				2468	958
vC1, stage 1 conf vol					1854	
vC2, stage 2 conf vol					614	
vCu, unblocked vol	1514				2295	293
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	324				123	518
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	608	608	1203	652	32	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	51	32	
cSH	1700	1700	1700	1700	518	
Volume to Capacity	0.36	0.36	0.71	0.38	0.06	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.6	
Control Delay (s)	0.0	0.0	0.0	0.0	12.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			62.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics
45: East Avenue & SW1

Scenario 4
Afternoon Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1842	0	1842	0	0	1842
Flt Permitted						
Satd. Flow (perm)	1842	0	1842	0	0	1842
Link Speed (k/h)	50		50			50
Link Distance (m)	47.9		51.6			66.7
Travel Time (s)	3.4		3.7			4.8
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 45: East Avenue & SW1

Scenario 4
Afternoon Peak Hour

	↖	↗	↖	↗	↖	↗
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖		↖	↖
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)					290	
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics 101: East Avenue & Street L

Scenario 4
Afternoon Peak Hour

	↖	↗	↖	↗	↖	↗
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖	↖		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1842	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1842	0	1750	1842
Link Speed (k/h)	50		50		50	
Link Distance (m)	85.8		91.1		132.2	
Travel Time (s)	6.2		6.6		9.5	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 101: East Avenue & Street L

Scenario 4
Afternoon Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	31	60	29	0	130	65
Future Volume (Veh/h)	31	60	29	0	130	65
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	31	60	29	0	130	65
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)					132	
pX, platoon unblocked						
vC, conflicting volume	354	29			29	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	354	29			29	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	94			92	
cM capacity (veh/h)	591	1046			1584	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	31	60	29	130	65	
Volume Left	31	0	0	130	0	
Volume Right	0	60	0	0	0	
cSH	591	1046	1700	1584	1700	
Volume to Capacity	0.05	0.06	0.02	0.08	0.04	
Queue Length 95th (m)	1.3	1.5	0.0	2.1	0.0	
Control Delay (s)	11.4	8.7	0.0	7.5	0.0	
Lane LOS	B	A		A		
Approach Delay (s)	9.6		0.0	5.0		
Approach LOS	A					
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			23.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 102: Lakefront Promenade & Street L

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt				0.855			0.974				0.984	
Flt Protected	0.950			0.950	0.999		0.950			0.950		
Satd. Flow (prot)	1750	1842	0	1662	1495	0	1750	1794	0	1750	1813	0
Flt Permitted	0.950			0.950	0.999		0.950			0.950		
Satd. Flow (perm)	1750	1842	0	1662	1495	0	1750	1794	0	1750	1813	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.0			72.6			101.7			130.4	
Travel Time (s)		6.2			5.2			7.3			9.4	

Intersection Summary
Area Type: Other

HCM Unsignalized Intersection Capacity Analysis 102: Lakefront Promenade & Street L

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	0	35	2	177	2	356	74	107	472	56
Future Volume (Veh/h)	18	0	0	35	2	177	2	356	74	107	472	56
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	0	0	35	2	177	2	356	74	107	472	56
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (m)	102								130			
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	1252	1148	500	1083	1139	393	528			430		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1247	1140	500	1074	1131	369	528			406		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	100	100	80	99	73	100			91		
cM capacity (veh/h)	99	178	571	179	180	662	1039			1127		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	18	0	23	191	2	430	107	528				
Volume Left	18	0	23	12	2	0	107	0				
Volume Right	0	0	0	177	0	74	0	56				
cSH	99	1700	179	555	1039	1700	1127	1700				
Volume to Capacity	0.18	0.00	0.13	0.34	0.00	0.25	0.09	0.31				
Queue Length 95th (m)	5.0	0.0	3.5	12.2	0.0	0.0	2.5	0.0				
Control Delay (s)	49.3	0.0	28.1	14.8	8.5	0.0	8.5	0.0				
Lane LOS	E	A	D	B	A		A					
Approach Delay (s)	49.3		16.3		0.0		1.4					
Approach LOS	E		C									
Intersection Summary												
Average Delay				4.1								
Intersection Capacity Utilization	54.7%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes and Geometrics 103: Ogden Ave & Street L

Scenario 4
Afternoon Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%			0%			0%		
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.932			0.915			0.958			0.975		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1717	0	1750	1685	0	1750	1765	0	1750	1796	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1717	0	1750	1685	0	1750	1765	0	1750	1796	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	55.4			82.6			89.6			142.3		
Travel Time (s)	4.0			5.9			6.5			10.2		

Intersection Summary

Area Type: Other

HCM Unsignalized Intersection Capacity Analysis 103: Ogden Ave & Street L

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	37	31	33	48	62	98	193	75	91	510	100
Future Volume (Veh/h)	70	37	31	33	48	62	98	193	75	91	510	100
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	70	37	31	33	48	62	98	193	75	91	510	100
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (m)												142
pX, platoon unblocked												
vC, conflicting volume	1217	1206	560	1168	1218	230	610				268	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1217	1206	560	1168	1218	230	610				268	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	28	76	94	71	68	92	90				93	
cM capacity (veh/h)	97	153	528	115	151	809	969				1296	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	70	68	33	110	98	268	91	610				
Volume Left	70	0	33	0	98	0	91	0				
Volume Right	0	31	0	62	0	75	0	100				
cSH	97	227	115	278	969	1700	1296	1700				
Volume to Capacity	0.72	0.30	0.29	0.40	0.10	0.16	0.07	0.36				
Queue Length 95th (m)	29.8	9.7	8.8	14.4	2.7	0.0	1.8	0.0				
Control Delay (s)	106.8	27.5	48.6	26.1	9.1	0.0	8.0	0.0				
Lane LOS	F	D	E	D	A		A					
Approach Delay (s)	67.8		31.3		2.4		1.0					
Approach LOS	F		D									
Intersection Summary												
Average Delay				11.5								
Intersection Capacity Utilization				58.9%	ICU Level of Service			B				
Analysis Period (min)				15								

Lanes and Geometrics 104: Hydro Rd & Street L

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.850	0.985	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1814	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.3			87.6	135.3	
Travel Time (s)	5.2			6.3	9.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 104: Hydro Rd & Street L

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	139	35	84	275	672	84
Future Volume (Veh/h)	139	35	84	275	672	84
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	139	35	84	275	672	84
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (m)				135		
pX, platoon unblocked						
vC, conflicting volume	1157	714	756			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1157	714	756			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	29	92	90			
cM capacity (veh/h)	196	431	855			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	139	35	84	275	756	
Volume Left	139	0	84	0	0	
Volume Right	0	35	0	0	84	
cSH	196	431	855	1700	1700	
Volume to Capacity	0.71	0.08	0.10	0.16	0.44	
Queue Length 95th (m)	36.0	2.1	2.6	0.0	0.0	
Control Delay (s)	58.8	14.1	9.7	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	49.8		2.3		0.0	
Approach LOS	E					
Intersection Summary						
Average Delay			7.4			
Intersection Capacity Utilization			62.8%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes and Geometrics 105: East Avenue & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected					0.950	
Satd. Flow (prot)	1842	1566	1842	0	1750	1842
Flt Permitted					0.950	
Satd. Flow (perm)	1842	1566	1842	0	1750	1842
Link Speed (k/h)	50		50			50
Link Distance (m)	198.1		66.7			91.1
Travel Time (s)	14.3		4.8			6.6
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 105: East Avenue & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	25	4	0	55	41
Future Volume (Veh/h)	0	25	4	0	55	41
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	25	4	0	55	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)					223	
pX, platoon unblocked						
vC, conflicting volume	155	4			4	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	155	4			4	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			97	
cM capacity (veh/h)	808	1080			1618	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	0	25	4	55	41	
Volume Left	0	0	0	55	0	
Volume Right	0	25	0	0	0	
cSH	1700	1080	1700	1618	1700	
Volume to Capacity	0.00	0.02	0.00	0.03	0.02	
Queue Length 95th (m)	0.0	0.6	0.0	0.8	0.0	
Control Delay (s)	0.0	8.4	0.0	7.3	0.0	
Lane LOS	A	A		A		
Approach Delay (s)	8.4		0.0	4.2		
Approach LOS	A					
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 106: Lakefront Promenade & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.850			0.852			0.968				0.998
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1566	0	1750	1569	0	1750	1783	0	1750	1838	0
Flt Permitted	0.513			0.748			0.492			0.555		
Satd. Flow (perm)	945	1566	0	1378	1569	0	906	1783	0	1022	1838	0
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		394			158			28			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.1			140.0			142.6			101.7	
Travel Time (s)		12.5			10.1			10.3			7.3	
Intersection Summary												
Area Type:	Other											

Timings
106: Lakefront Promenade & Rangeview Rd

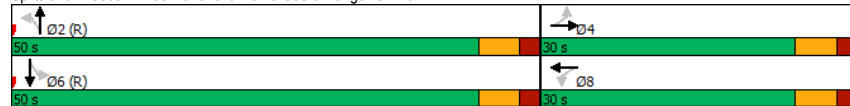
Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	5	0	35	2	4	268	56	443
Future Volume (vph)	5	0	35	2	4	268	56	443
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	50.0	50.0	50.0	50.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	8.9	8.9	8.9	8.9	61.1	61.1	61.1	61.1
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.76	0.76	0.76	0.76
v/c Ratio	0.05	0.03	0.23	0.51	0.01	0.25	0.07	0.32
Control Delay	31.0	0.1	35.0	12.1	3.0	3.3	3.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	0.1	35.0	12.1	3.0	3.3	3.1	3.9
LOS	C	A	D	B	A	A	A	A
Approach Delay		8.2		16.2		3.3		3.8
Approach LOS		A		B		A		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 6.0
Intersection Capacity Utilization 50.3%
Analysis Period (min) 15

Splits and Phases: 106: Lakefront Promenade & Rangeview Rd



Queues
106: Lakefront Promenade & Rangeview Rd

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	14	35	160	4	342	56	450
v/c Ratio	0.05	0.03	0.23	0.51	0.01	0.25	0.07	0.32
Control Delay	31.0	0.1	35.0	12.1	3.0	3.3	3.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	0.1	35.0	12.1	3.0	3.3	3.1	3.9
Queue Length 50th (m)	0.8	0.0	5.2	0.3	0.2	10.6	1.7	16.4
Queue Length 95th (m)	3.8	0.0	13.2	16.5	0.9	23.1	5.3	34.1
Internal Link Dist (m)		150.1		116.0		118.6		77.7
Turn Bay Length (m)	15.0		15.0		15.0		15.0	
Base Capacity (vph)	295	760	430	598	692	1369	781	1405
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.08	0.27	0.01	0.25	0.07	0.32
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
106: Lakefront Promenade & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	5	0	14	35	2	158	4	268	74	56	443	7
Future Volume (vph)	5	0	14	35	2	158	4	268	74	56	443	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1566		1750	1569		1750	1782		1750	1838	
Flt Permitted	0.51	1.00		0.75	1.00		0.49	1.00		0.56	1.00	
Satd. Flow (perm)	945	1566		1379	1569		907	1782		1023	1838	
Peak-hour factor, PHF	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Adj. Flow (vph)	5	0	14	35	2	158	4	268	74	56	443	7
RTOR Reduction (vph)	0	12	0	0	140	0	0	7	0	0	0	0
Lane Group Flow (vph)	5	2	0	35	20	0	4	335	0	56	450	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)	7.9	7.9		7.9	7.9		60.1	60.1		60.1	60.1	
Effective Green, g (s)	8.9	8.9		8.9	8.9		61.1	61.1		61.1	61.1	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.76	0.76		0.76	0.76	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	174		153	174		692	1361		781	1403	
v/s Ratio Prot		0.00			0.01			0.19			0.24	
v/s Ratio Perm	0.01			0.03			0.00			0.05		
v/c Ratio	0.05	0.01		0.23	0.11		0.01	0.25		0.07	0.32	
Uniform Delay, d1	31.8	31.6		32.4	32.0		2.2	2.8		2.4	3.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.8	0.3		0.0	0.4		0.2	0.6	
Delay (s)	32.0	31.6		33.2	32.3		2.3	3.2		2.5	3.6	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		31.7			32.4			3.2			3.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		9.2			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.31										
Actuated Cycle Length (s)		80.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		50.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes and Geometrics
107: Ogden Ave & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.932			0.927			0.967			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	1717	0	1750	1708	0	1750	1781	0	1750	1805	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1750	1717	0	1750	1708	0	1750	1781	0	1750	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			124.7			104.4			89.6	
Travel Time (s)		4.1			9.0			7.5			6.5	
Intersection Summary												
Area Type: Other												

HCM Unsignalized Intersection Capacity Analysis 107: Ogden Ave & Rangeview Rd

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	50	37	31	34	48	46	98	270	75	57	448	69
Future Volume (vph)	50	37	31	34	48	46	98	270	75	57	448	69
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	50	37	31	34	48	46	98	270	75	57	448	69
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	50	68	34	94	98	345	57	517				
Volume Left (vph)	50	0	34	0	98	0	57	0				
Volume Right (vph)	0	31	0	46	0	75	0	69				
Hadj (s)	0.53	-0.29	0.53	-0.31	0.53	-0.12	0.53	-0.06				
Departure Headway (s)	7.8	7.0	7.8	6.9	6.6	5.9	6.4	5.8				
Degree Utilization, x	0.11	0.13	0.07	0.18	0.18	0.57	0.10	0.84				
Capacity (veh/h)	431	477	430	481	527	592	539	605				
Control Delay (s)	10.5	9.8	10.2	10.2	9.8	15.2	9.0	30.7				
Approach Delay (s)	10.1		10.2		14.0		28.5					
Approach LOS	B		B		B		D					
Intersection Summary												
Delay	19.9											
Level of Service	C											
Intersection Capacity Utilization	52.6%			ICU Level of Service				A				
Analysis Period (min)	15											

Lanes and Geometrics 108: Hydro Rd & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)	15.0	0.0	15.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850			0.990		
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1750	1566	1750	1842	1824	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1750	1566	1750	1842	1824	0
Link Speed (k/h)	50		50	50		
Link Distance (m)	108.3		161.7	87.6		
Travel Time (s)	7.8		11.6	6.3		
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 108: Hydro Rd & Rangeview Rd

Scenario 4
Afternoon Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	124	35	84	236	652	54
Future Volume (Veh/h)	124	35	84	236	652	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	124	35	84	236	652	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					223	
pX, platoon unblocked						
vC, conflicting volume	1083	679	706			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1083	679	706			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	43	92	91			
cM capacity (veh/h)	218	452	892			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	124	35	84	236	706	
Volume Left	124	0	84	0	0	
Volume Right	0	35	0	0	54	
cSH	218	452	892	1700	1700	
Volume to Capacity	0.57	0.08	0.09	0.14	0.42	
Queue Length 95th (m)	25.0	2.0	2.5	0.0	0.0	
Control Delay (s)	41.4	13.6	9.5	0.0	0.0	
Lane LOS	E	B	A			
Approach Delay (s)	35.3		2.5		0.0	
Approach LOS	E					
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization			59.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes and Geometrics 201: W1 & Street L

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.979				0.973	
Flt Protected				0.998	0.962	
Satd. Flow (prot)	1803	0	0	1838	1724	0
Flt Permitted				0.998	0.962	
Satd. Flow (perm)	1803	0	0	1838	1724	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	85.8			54.1	44.2	
Travel Time (s)	6.2			3.9	3.2	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 201: W1 & Street L

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	109	20	3	83	8	2
Future Volume (Veh/h)	109	20	3	83	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	109	20	3	83	8	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				129	208	119
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				129	208	119
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	99	100
cM capacity (veh/h)				1457	779	933
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	129	86	10			
Volume Left	0	3	8			
Volume Right	20	0	2			
cSH	1700	1457	805			
Volume to Capacity	0.08	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.3	9.5			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.3	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay				0.5		
Intersection Capacity Utilization				17.0%	ICU Level of Service	A
Analysis Period (min)				15		

Lanes and Geometrics 202: Street L & NW1

Scenario 4
Afternoon Peak Hour

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↗		↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.986			0.899	
Flt Protected		0.982			0.988	
Satd. Flow (prot)	0	1809	1816	0	1636	0
Flt Permitted		0.982			0.988	
Satd. Flow (perm)	0	1809	1816	0	1636	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		54.1	78.9		54.9	
Travel Time (s)		3.9	5.7		4.0	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 202: Street L & NW1

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	42	70	69	8	6	18
Future Volume (Veh/h)	42	70	69	8	6	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	42	70	69	8	6	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	77				227	73
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	77				227	73
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	98
cM capacity (veh/h)	1522				740	989
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	112	77	24			
Volume Left	42	0	6			
Volume Right	0	8	18			
cSH	1522	1700	912			
Volume to Capacity	0.03	0.05	0.03			
Queue Length 95th (m)	0.7	0.0	0.6			
Control Delay (s)	2.9	0.0	9.1			
Lane LOS	A		A			
Approach Delay (s)	2.9	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			22.7%		ICU Level of Service	A
Analysis Period (min)			15			

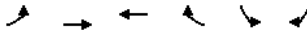
Lanes and Geometrics 203: Street L & NW2

Scenario 4
Afternoon Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.983		0.897	
Flt Protected		0.971			0.988	
Satd. Flow (prot)	0	1789	1811	0	1632	0
Flt Permitted		0.971			0.988	
Satd. Flow (perm)	0	1789	1811	0	1632	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.9	72.0		47.9	
Travel Time (s)		5.7	5.2		3.4	
Intersection Summary						
Area Type:		Other				

HCM Unsignalized Intersection Capacity Analysis 203: Street L & NW2

Scenario 4
Afternoon Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Volume (veh/h)	46	30	57	8	6	19
Future Volume (Veh/h)	46	30	57	8	6	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	46	30	57	8	6	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	65				183	61
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65				183	61
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	98
cM capacity (veh/h)	1537				782	1004
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	76	65	25			
Volume Left	46	0	6			
Volume Right	0	8	19			
cSH	1537	1700	940			
Volume to Capacity	0.03	0.04	0.03			
Queue Length 95th (m)	0.7	0.0	0.7			
Control Delay (s)	4.6	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	4.6	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay		3.4				
Intersection Capacity Utilization		20.8%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes and Geometrics 204: W2 & Street L

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.921				0.966	
Flt Protected				0.997	0.964	
Satd. Flow (prot)	1697	0	0	1837	1715	0
Flt Permitted				0.997	0.964	
Satd. Flow (perm)	1697	0	0	1837	1715	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.0			86.0	45.1	
Travel Time (s)	5.2			6.2	3.2	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 204: W2 & Street L

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	15	21	4	57	9	3
Future Volume (Veh/h)	15	21	4	57	9	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	21	4	57	9	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				36	90	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				36	90	26
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	99	100
cM capacity (veh/h)				1575	908	1050
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	36	61	12			
Volume Left	0	4	9			
Volume Right	21	0	3			
cSH	1700	1575	940			
Volume to Capacity	0.02	0.00	0.01			
Queue Length 95th (m)	0.0	0.1	0.3			
Control Delay (s)	0.0	0.5	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.5	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay				1.3		
Intersection Capacity Utilization				16.3%	ICU Level of Service	A
Analysis Period (min)				15		

Lanes and Geometrics 205: CENTRE1 & Street L

Scenario 4
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1842	0	0	1842	1842	0
Flt Permitted						
Satd. Flow (perm)	1842	0	0	1842	1842	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.6			51.2	50.3	
Travel Time (s)	5.2			3.7	3.6	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 205: CENTRE1 & Street L

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	18	0	0	15	0	0
Future Volume (Veh/h)	18	0	0	15	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	0	0	15	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		33	18
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		33	18
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1599		980	1061
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	18	15	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1599	1700			
Volume to Capacity	0.01	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS				A		
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS				A		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 206: Street L & N1

Scenario 4
Afternoon Peak Hour

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	1842	0
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	1842	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	51.2		53.3		72.2	
Travel Time (s)	3.7		3.8		5.2	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 206: Street L & N1

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↱	↱		↲	↲
Traffic Volume (veh/h)	0	25	21	0	0	0
Future Volume (Veh/h)	0	25	21	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	25	21	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	21				46	21
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	21				46	21
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1595				964	1056
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	25	21	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1595	1700	1700			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics 207: CENTRE2 & Street L

Scenario 4
Afternoon Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↲	↲
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Frt Protected						
Satd. Flow (prot)	1842	0	0	1842	1842	0
Frt Permitted						
Satd. Flow (perm)	1842	0	0	1842	1842	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	53.3			45.9	41.1	
Travel Time (s)	3.8			3.3	3.0	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 207: CENTRE2 & Street L

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	13	0	0	11	0	0
Future Volume (Veh/h)	13	0	0	11	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	0	0	11	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				13	24	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				13	24	13
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	100
cM capacity (veh/h)				1606	992	1067
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	13	11	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1606	1700			
Volume to Capacity	0.01	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS				A		
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS				A		
Intersection Summary						
Average Delay				0.0		
Intersection Capacity Utilization	13.3%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes and Geometrics 208: Street L & N2

Scenario 4
Afternoon Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.991		0.932	
Flt Protected	0.994				0.976	
Satd. Flow (prot)	0	1831	1825	0	1676	0
Flt Permitted	0.994				0.976	
Satd. Flow (perm)	0	1831	1825	0	1676	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	45.9		55.4		50.6	
Travel Time (s)	3.3		4.0		3.6	
Intersection Summary						
Area Type:	Other					

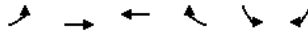
HCM Unsignalized Intersection Capacity Analysis 208: Street L & N2

Scenario 4
Afternoon Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	131	230	16	8	8
Future Volume (Veh/h)	18	131	230	16	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	131	230	16	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	246				405	238
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246				405	238
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1320				594	801
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	149	246	16			
Volume Left	18	0	8			
Volume Right	0	16	8			
cSH	1320	1700	682			
Volume to Capacity	0.01	0.14	0.02			
Queue Length 95th (m)	0.3	0.0	0.6			
Control Delay (s)	1.0	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			32.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 209: Street L & NE1

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988			0.932
Flt Protected			0.997			0.976
Satd. Flow (prot)	0	1837	1820	0	1676	0
Flt Permitted			0.997			0.976
Satd. Flow (perm)	0	1837	1820	0	1676	0
Link Speed (k/h)			50			50
Link Distance (m)			82.6			53.2
Travel Time (s)			5.9			3.8
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 209: Street L & NE1

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↱	↱		↰	↰
Traffic Volume (veh/h)	14	190	136	13	6	6
Future Volume (Veh/h)	14	190	136	13	6	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	190	136	13	6	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149				360	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149				360	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1432				632	905
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	204	149	12			
Volume Left	14	0	6			
Volume Right	0	13	6			
cSH	1432	1700	744			
Volume to Capacity	0.01	0.09	0.02			
Queue Length 95th (m)	0.2	0.0	0.4			
Control Delay (s)	0.6	0.0	9.9			
Lane LOS	A		A			
Approach Delay (s)	0.6	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			31.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics 210: E2 & Street L

Scenario 4
Afternoon Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↰	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.983				0.932	
Flt Protected				0.993	0.976	
Satd. Flow (prot)	1811	0	0	1829	1676	0
Flt Permitted				0.993	0.976	
Satd. Flow (perm)	1811	0	0	1829	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	37.0			36.0	57.1	
Travel Time (s)	2.7			2.6	4.1	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 210: E2 & Street L

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	171	25	23	138	11	11
Future Volume (Veh/h)	171	25	23	138	11	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	171	25	23	138	11	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			196		368	184
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			196		368	184
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		98	99
cM capacity (veh/h)			1377		622	859
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	196	161	22			
Volume Left	0	23	11			
Volume Right	25	0	11			
cSH	1700	1377	721			
Volume to Capacity	0.12	0.02	0.03			
Queue Length 95th (m)	0.0	0.4	0.8			
Control Delay (s)	0.0	1.2	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.2	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			32.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 211: Street L & NE2

Scenario 4
Afternoon Peak Hour

	↗	→	←	↖	↘	↙
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↗		↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	1	0
Taper Length (m)	7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.932	
Flt Protected		0.996			0.976	
Satd. Flow (prot)	0	1835	1822	0	1676	0
Flt Permitted		0.996			0.976	
Satd. Flow (perm)	0	1835	1822	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		36.0	72.3		51.7	
Travel Time (s)		2.6	5.2		3.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 211: Street L & NE2

Scenario 4
Afternoon Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↘		↙	↘
Traffic Volume (veh/h)	16	167	153	14	7	7
Future Volume (Veh/h)	16	167	153	14	7	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	167	153	14	7	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	167				359	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				359	160
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1411				632	885
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	183	167	14			
Volume Left	16	0	7			
Volume Right	0	14	7			
cSH	1411	1700	738			
Volume to Capacity	0.01	0.10	0.02			
Queue Length 95th (m)	0.3	0.0	0.5			
Control Delay (s)	0.7	0.0	10.0			
Lane LOS	A		A			
Approach Delay (s)	0.7	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			31.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics 212: SW2 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↘	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.899				0.969	
Flt Protected				0.976	0.963	
Satd. Flow (prot)	1656	0	0	1798	1719	0
Flt Permitted				0.976	0.963	
Satd. Flow (perm)	1656	0	0	1798	1719	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	198.1			174.1	45.6	
Travel Time (s)	14.3			12.5	3.3	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 212: SW2 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	14	41	7	7	17	5
Future Volume (Veh/h)	14	41	7	7	17	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	41	7	7	17	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)	174					
pX, platoon unblocked						
vC, conflicting volume			55		56	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			55		56	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1550		948	1039
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	55	14	22			
Volume Left	0	7	17			
Volume Right	41	0	5			
cSH	1700	1550	967			
Volume to Capacity	0.03	0.00	0.02			
Queue Length 95th (m)	0.0	0.1	0.6			
Control Delay (s)	0.0	3.7	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.0	3.7	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			16.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 213: Street G & Rangeview Rd

Scenario 4
Afternoon Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.985				0.932	
Flt Protected				0.994	0.976	
Satd. Flow (prot)	1814	0	0	1831	1676	0
Flt Permitted				0.994	0.976	
Satd. Flow (perm)	1814	0	0	1831	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.0			85.1	65.2	
Travel Time (s)	10.1			6.1	4.7	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 213: Street G & Rangeview Rd

Scenario 4
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↗	↘	↘
Traffic Volume (veh/h)	115	14	26	185	9	9
Future Volume (Veh/h)	115	14	26	185	9	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	115	14	26	185	9	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	140					
pX, platoon unblocked						
vC, conflicting volume			129		359	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			129		359	122
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			1457		628	929
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	129	211	18			
Volume Left	0	26	9			
Volume Right	14	0	9			
cSH	1700	1457	750			
Volume to Capacity	0.08	0.02	0.02			
Queue Length 95th (m)	0.0	0.4	0.6			
Control Delay (s)	0.0	1.1	9.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.1	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			31.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes and Geometrics 214: S2 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↗	↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.990				0.932	
Flt Protected				0.998	0.976	
Satd. Flow (prot)	1824	0	0	1838	1676	0
Flt Permitted				0.998	0.976	
Satd. Flow (perm)	1824	0	0	1838	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	85.1			56.3	43.3	
Travel Time (s)	6.1			4.1	3.1	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 214: S2 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	115	9	8	207	4	4
Future Volume (Veh/h)	115	9	8	207	4	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	115	9	8	207	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	225					
pX, platoon unblocked						
vC, conflicting volume			124		342	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		342	120
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	100
cM capacity (veh/h)			1463		650	932
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	124	215	8			
Volume Left	0	8	4			
Volume Right	9	0	4			
cSH	1700	1463	766			
Volume to Capacity	0.07	0.01	0.01			
Queue Length 95th (m)	0.0	0.1	0.3			
Control Delay (s)	0.0	0.3	9.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.3	9.7			
Approach LOS			A			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			27.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes and Geometrics 215: SE1 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	0.0		0.0	0.0
Storage Lanes		0	0		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.983				0.932	
Flt Protected				0.993	0.976	
Satd. Flow (prot)	1811	0	0	1829	1676	0
Flt Permitted				0.993	0.976	
Satd. Flow (perm)	1811	0	0	1829	1676	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	124.7			108.3	50.2	
Travel Time (s)	9.0			7.8	3.6	
Intersection Summary						
Area Type:	Other					

HCM Unsignalized Intersection Capacity Analysis 215: SE1 & Rangeview Rd

Scenario 4
Afternoon Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	149	22	19	118	10	10
Future Volume (Veh/h)	149	22	19	118	10	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	149	22	19	118	10	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			171		316	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			171		316	160
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1406		668	885
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	171	137	20			
Volume Left	0	19	10			
Volume Right	22	0	10			
cSH	1700	1406	761			
Volume to Capacity	0.10	0.01	0.03			
Queue Length 95th (m)	0.0	0.3	0.6			
Control Delay (s)	0.0	1.1	9.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.1	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization	29.8%		ICU Level of Service	A		
Analysis Period (min)	15					

Lanes and Geometrics 217: Street G & S1

Scenario 4
Afternoon Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%				0%				0%			
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.865				0.899			
Flt Protected	0.950								0.988			
Satd. Flow (prot)	0	1750	0	0	1593	0	0	1842	0	0	1636	0
Flt Permitted	0.950								0.988			
Satd. Flow (perm)	0	1750	0	0	1593	0	0	1842	0	0	1636	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	41.8				34.8				68.9			
Travel Time (s)	3.0				2.5				5.0			
Intersection Summary												
Area Type:	Other											

HCM Unsignalized Intersection Capacity Analysis
217: Street G & S1

Scenario 4
Afternoon Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	14	0	0	0	0	4	0	0	0	10	0	30
Future Volume (vph)	14	0	0	0	0	4	0	0	0	10	0	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	0	0	0	0	4	0	0	0	10	0	30
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	14	4	0	40								
Volume Left (vph)	14	0	0	10								
Volume Right (vph)	0	4	0	30								
Hadj (s)	0.23	-0.57	0.00	-0.37								
Departure Headway (s)	4.2	3.4	4.0	3.6								
Degree Utilization, x	0.02	0.00	0.00	0.04								
Capacity (veh/h)	840	1032	900	997								
Control Delay (s)	7.3	6.4	7.0	6.7								
Approach Delay (s)	7.3	6.4	0.0	6.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				6.8								
Level of Service				A								
Intersection Capacity Utilization				17.4%	ICU Level of Service			A				
Analysis Period (min)				15								

Appendix K: OTM Excerpts



2. STOP Signs

STOP Sign (Ra-1)



Ra-1	600 mm x 600 mm 750 mm x 750 mm 900 mm x 900 mm 1200 mm x 1200 mm
Font	FHWA Series C
Colour	Legend & Border – White Reflective Background – Red Reflective
Minimum Sheeting	Type III or IV

ALL-WAY Tab Sign (Ra-1t)



Ra-1t	150 mm x 300 mm 300 mm x 600 mm
Font	Helvetica Bold Condensed
Colour	Legend & Border – Red Reflective Background – White Reflective
Minimum Sheeting	Type III or IV

Purpose and Background

Where no traffic control device is present at an intersection of two roadways, the basic rules of the road apply. The HTA assigns priority to vehicles already within the intersection or, in the event that two or more vehicles are approaching the intersection at approximately the same time, the HTA requires the driver on the left to yield to the vehicle on the right. A number of traffic control devices are available to assist in the allocation of right-of-way between vehicles in an intersection, increasing in level of control from YIELD signs to STOP signs to full traffic signal control.

The purpose of the STOP sign is to clearly assign right-of-way between vehicles approaching an intersection from different directions when traffic signals are not warranted or not yet installed, and it has been determined that a YIELD sign is inadequate. The STOP sign requires the driver to stop the vehicle before entering the intersection, yield to any traffic in or approaching the intersection and then proceed when it is safe to do so.

The introduction of STOP sign control can reduce the frequency of certain types of collisions (e.g. right-angle or turning), but also results in delay to motorists and may increase some other types of collisions (e.g., rear-end). STOP signs should, therefore, not be used indiscriminately.

STOP signs must not be used on the same approach to an intersection where traffic control signals are operating, as

the conflicting commands of two types of control devices would be confusing.

Portable or part-time STOP signs must not be used except in emergency or temporary situations, such as in conjunction with Traffic Control Persons or at intersections where traffic signals are inoperative.

STOP signs are not to be used as speed control devices. Their usage should be limited to the control of right-of-way conflicts.

In general, all-way stop control should only be used where traffic engineering studies considering such factors as traffic volumes, restricted sight lines and collision experience, indicate that this form of control is warranted.

Sign Types

The **standard size (600 mm x 600 mm) STOP sign (Ra-1)**, is the minimum size permitted, and may generally be used where the posted speed is 60 km/h or less.

The **oversize (750 mm x 750 mm) STOP sign (Ra-1)** should be used where the posted speed is 70 km/h or greater. This sign may also be installed at lower speed locations where the prevailing traffic conditions warrant greater visibility or emphasis, e.g., roadway geometry, complex visual environments where many signs and other devices compete for driver attention, or at high traffic volume locations where drivers must concentrate more on the driving task.

The **oversize (900 mm x 900 mm) STOP sign (Ra-1)** should be used where the oversize 750 mm x 750 mm STOP sign has been found not to provide sufficient emphasis. As with the smaller oversize sign, this may be due to roadway geometry, complex visual environments where many signs and other devices compete for driver attention, or at high traffic volume locations where drivers must concentrate more on the driving task. The sign should only be used after other methods of gaining compliance (e.g. left-hand side STOP signs) have been tried without success. The 900 mm x 900 mm size is not used on provincial highways.

Specific situations where the **special oversize (1200 mm x 1200 mm) STOP sign** must be used include:

- At the junction of two King's Highways in rural areas; or
- At the junction of any public road with a King's Highway in rural areas.

The special oversize **(1200 mm x 1200 mm) STOP sign** may be used in locations where two relatively major roads (e.g. Regional or County Roads) intersect, particularly in high speed rural locations where such an intersection may be unexpected, or at other locations where special emphasis is required.

In addition to the STOP sign, there are a number of other supplementary traffic control devices which may be considered, to provide added emphasis in selected circumstances.

On paved roads, the STOP sign may be supplemented with a stop line. For information on appropriate pavement markings, refer to OTM Book 11 (Pavement, Hazard and Delineation Markings).

Where the presiding road authority has determined that all-way stop control (see below) is required, the STOP signs should be supplemented with an **ALL-WAY tab sign (Ra-1t)** directly below the STOP sign (Ra-1).

The **standard size (150 mm x 300 mm) ALL-WAY tab sign** should be used with STOP signs that are 600 mm x 600 mm or 750 mm x 750 mm.

The **oversize (300 mm x 600 mm) ALL-WAY tab sign** should be used with STOP signs that are 900 mm x 900 mm or 1200 mm x 1200 mm.

The use of the TWO-WAY tab sign found in the last MUTCD is not recommended, as it is ambiguous and could lead to confusion. Consistency and uniformity throughout Ontario in this practice will help distinguish all-way stop situations from conventional stop control, and facilitate driver understanding of what is required in each case.

Where necessary for increased emphasis, a supplementary red flashing beacon may be used to reinforce a STOP sign. Such flashing beacons may be installed overhead within the intersection proper, or mounted directly above the STOP sign itself. For information regarding flashing beacons, refer to OTM Book 12 (Traffic Signals).

In cases of restricted visibility or other special conditions affecting the STOP sign, a **STOP AHEAD sign (Wb-1)** may be required or recommended. For information regarding STOP AHEAD signs, refer to OTM Book 6 (Warning Signs).

Guidelines for Use

Two-Way Stop Control

There are some lower volume intersections for which the current type of traffic control is either no control (following the right-of-way rules in the *Highway Traffic Act*) or Yield control. The next higher level of control for these intersections is two-way stop control (or one-way stop at a three-leg intersection where the stop control on the stem of a "Tee" intersection).

In the event of congestion, driver confusion, substandard sight distance for the uncontrolled or Yield approach legs or an unsatisfactory collision history, two-way stop operation should be implemented, unless countermeasures such as sight line improvements, street lighting, parking prohibitions, enforcement, or geometric revisions have the potential to improve operations and/or safety to a satisfactory level and can be implemented reasonably quickly.

There are certain circumstances under which a minimum of two-way stop must be implemented:

- At the intersection of two King's Highways;

- At the intersection of a County or Regional road with a King's Highway in a rural area;
- At the intersection of a County or Regional road with a King's Highway in a built-up area;
- At the intersection of a city street or township road with a King's Highway; or
- At the intersection of a minor street or road with a through street or highway.

All-Way Stop Controls

In some circumstances, it may be appropriate to install STOP signs on all approaches to an intersection. This results in an all-way stop condition. All-way stop controls disrupt the flow of traffic and introduce delays to all drivers using the intersection and should only be considered at the intersection of two relatively equal roadways having similar traffic volume demand and operating characteristics (see Minimum Volume Warrants below). The approaches should be directly opposing (i.e., not offset), should preferably approach at right angles (i.e. no skewed approaches) and have an equal number of lanes. For the vehicle volume counts, bicycles are considered vehicles under the HTA.

All-way stop controls should be considered under the following situations:

- As an interim measure, where traffic control signals are warranted but cannot be implemented immediately.

For information on traffic signal control, refer to OTM Book 12 (Traffic Signals);

- At locations having a high collision frequency where less restrictive measures have been tried and found to be inadequate or impractical (see All-Way Stop Collision Warrant below); or
- As a means of providing a transition period to accustom drivers to a change in intersection right-of-way control from one direction to another. Installation under this warrant must conform with the Amendment of Intersection Control, discussed under Special Considerations at the end of Section 2.

All-Way Stop Minimum Volume Warrant (Urban Arterial Roads)

All-way stop control may be considered on urban arterial roads where the following conditions are met:

- The total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of the highest eight hours of the day; and,
- The combined vehicle and pedestrian volume on the minor street exceeds 200 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours as the total volume; OR the combined vehicle and pedestrian volume on the minor street exceeds 150 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours as the total volume, with an

average delay to all minor street traffic (vehicles and pedestrians) of greater than 30 seconds for the entire eight hour period; and,

- The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection) as measured over the entire eight-hour count period. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway. For three-legged intersections a volume split of 75/25 is permissible.

All-Way Stop Minimum Volume Warrant (Collector Roads and Rural Arterial Roads)

All-way stop control may be considered on collector roads, or rural arterial roads, where the following conditions are met:

- The total vehicle volume on all intersection approaches exceeds 375 vehicles per hour for each of the highest eight hours of the day; and,
- The combined vehicle and pedestrian volume on the minor street exceeds 150 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours as the total volume; OR the combined vehicle and pedestrian volume on the minor street exceeds 120 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight

hours as the total volume, with an average delay to all minor street traffic (vehicles and pedestrians) of greater than 30 seconds for the entire eight hour period; and,

- The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection) as measured over the entire eight-hour count period. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway. For three-legged intersections a volume split of 75/25 is permissible.

All-Way Stop Minimum Volume Warrant (Local Roads)

All-way stop control may be considered on minor or local roads where the following conditions are met:

- The total vehicle volume on all intersection approaches exceeds 200 vehicles per hour for each of the highest four hours of the day; and,
- The combined vehicle and pedestrian volume on the minor street exceeds 75 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same four hours as the total volume; and,
- The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection) as measured

over the entire four-hour count period. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway. For three-legged intersections a volume split of 75/25 is permissible.

All-Way Stop Collision Warrant

All-way stop control may be warranted for a location experiencing an unusually high number of right-angle or turning collisions, as defined by comparison with similar locations through network screening (*TAC Guidelines for Network Screening of Collision-Prone Locations*) or over-representation analysis (*TAC Canadian Guide to In-Service Road Safety Reviews*) by conducting a statistical comparison in proportions of target collisions (right-angle/turning movement collisions) of the subject location with that of similar locations in the jurisdiction.

If data and procedures are available, employ a methodology that removes regression to the mean and identifies locations that are clearly operating with below average safety compared to similar intersections within a jurisdiction.

If frequency data is the only data that is available, use the following thresholds:

- Local/Collector/Rural Arterial: 3 collisions/year over three years (i.e. 9 collisions in 36 months)
- Urban Arterial: 4 collisions/year over three years (i.e. 12 collisions in 36 months)

Only those collisions susceptible to improvement through multi-way stop control must be considered (i.e., right-angle and turning type collisions).

All-Way Stop Visibility Warrant

Under some circumstances, sufficient sight distance is not available for traffic exiting the stop-controlled approaches of a two-way stop intersection, based on geometric design requirements. If all efforts to improve the sight distance have been exhausted and the sight distance cannot be brought up to the guidelines, conversion of the intersection to all-way stop operation may be considered. Special advance warning or overhead flashing lights may be necessary to augment the control if vertical or horizontal alignment is a factor.

Inappropriate Use of All-Way Stop Control

All-way stop controls should not be used under the following conditions:

- Where the protection of pedestrians, school children in particular, is a prime concern and the concern cannot be directly addressed by other means;
- On roads within urban areas having a posted speed limit in excess of 60 km/h;
- At intersections that are not roundabouts having fewer than three, or more than four, approaches;
- At intersections that are offset, poorly defined or geometrically substandard;

- On truck or bus routes, except in an industrial area or where two such routes cross;
- On multi-lane approaches where a parked or stopped vehicle on the right will obscure the STOP sign;
- Where traffic would be required to stop on grades;
- As a means of deterring the movement of through traffic in a residential area;
- Where visibility of the sign is hampered by curves or grades, and sufficient safe stopping distance does not exist; or
- Where any other traffic device controlling right-of-way is permanently in place within 250 m, with the exception of a YIELD sign. If required closer than 250 m, all-way stop control should be supported by a traffic operations study and sound engineering judgement.

All-way stop controls must not be used under the following conditions:

- As a speed control device (or a traffic calming tool); and
- On roads where progressive signal timing exists.

Location Criteria

A STOP sign must be installed in accordance with the regulations in order to be effective and enforceable.

The STOP sign must be installed on the right side of the roadway, facing traffic,

no closer than 1.5 m and no further than 15 m from the edge of the intersecting roadway, unless it is clearly not practicable to locate the STOP sign closer to the intersection.

The left edge of the STOP sign must be no more than 4 m from the edge of the roadway for all applications. The bottom edge of the STOP sign must not be less than 1.5 m and not more than 2.5 m above the level of roadway.

On divided highways and one-way roadways with visibility problems, a supplementary STOP sign should be installed on the left side of the roadway.

For two-way roadways, if collision records show an unusually high proportion of failure to stop collisions at the STOP sign on an intersection approach, a supplementary STOP sign on the left-hand side of the roadway or in the median may be installed. However, practitioners are reminded that overuse of traffic control devices tends to lessen their effectiveness.

Where one roadway intersects another roadway at an acute angle, the STOP sign on the intersecting roadway should be turned or shielded so that motorists travelling on the higher priority roadway cannot read it.

Typical locations of STOP signs are illustrated in [Figure 1](#).

Legal Status

HTA, Sections 136 and 137.

HTA Ontario Regulation 615 (SIGNS).

HTA Ontario Regulation 623 (STOP SIGNS AT INTERSECTIONS).

HTA Ontario Regulation 624 (STOP SIGNS IN TERRITORY WITHOUT MUNICIPAL ORGANIZATION).

On roadways under the jurisdiction of a municipality, a municipal by-law is required before the STOP sign becomes enforceable.

Special Considerations

Amendment of Intersection Right-of-way Control

Where right-of-way is being reassigned from one roadway to another crossing roadway, through the elimination of an existing STOP sign control and the installation of STOP sign control on the previously uncontrolled roadway, an introductory period is required to safely carry out the transition.

The recommended procedure for completing such a reversal is described below. For information on the warning signs noted in the procedure, reference should be made to OTM Book 6 (Warning Signs).

- (1) Install new STOP signs on the previously uncontrolled approaches along with stop lines and crosswalk markings, if required. Oversize STOP signs and/or additional left side installations may be provided where conditions warrant. Install ALL-WAY tabs on all approaches. A painted "STOP" legend on the roadway, in

advance of the stop line, may be added for additional emphasis.

Install 900 mm x 900 mm CROSS TRAFFIC DOES NOT STOP signs (Wa-19), on the newly controlled roadway, in advance of the STOP signs. This is the standard size of sign. A larger size sign may be used where prevailing traffic conditions warrant greater visibility or emphasis, e.g., in complex visual environments where many signs and other devices compete for driver attention.

Install NEW signs (Wb-3) above, and AFTER (month and day) tab signs (Wa-19t) below the CROSS TRAFFIC DOES NOT STOP signs, in black letters on a yellow reflective background, stating the date that the old control will be removed. The warning sign positions must be such that they do not block the approaching motorist's view of the STOP signs but command attention and should be read as the driver approaches the stop line. A location approximately 30 m in advance of the stop line is recommended, in low speed applications.

Install STOP AHEAD (Wb-1) signs, with NEW signs above, at the proper location in advance of the intersection on the newly controlled approaches. An oversize STOP AHEAD sign, and a STOP AHEAD roadway marking legend may be provided for additional warning where warranted.

- (2) After at least 15 days, remove the STOP AHEAD signs, if any, the STOP signs, stop lines and any crosswalk lines from the previously controlled roadway. Remove the ALL-WAY tabs from all approaches. Remove the NEW signs attached to the CROSS TRAFFIC DOES NOT STOP signs, and the STOP AHEAD signs. Remove the AFTER tabs. Any roadway marking legends, if provided, should be allowed to fade and not be replenished unless local conditions warrant the continued provision of this additional warning.

- (3) After an additional period of at least 15 days, the CROSS TRAFFIC DOES NOT STOP signs should be removed. Any oversize STOP signs may now be replaced with standard sized signs unless the continued additional emphasis is warranted. STOP AHEAD signs should be reduced from oversize to standard size or removed if their continued presence is unwarranted.

Where existing all-way stop control is to be removed and a through roadway created, the following procedure is recommended:

- (1) Install 900 mm x 900 mm CROSS TRAFFIC DOES NOT STOP signs on the approaches where the STOP control is to remain, at least 15 days before the removal of control.

Install NEW signs over the CROSS TRAFFIC DOES NOT STOP signs and AFTER (month and day) tab signs below, stating the date when the

control on the crossing roadway will be removed.

- (2) On the appointed date, remove the STOP AHEAD signs, if any, on the crossing roadway. Remove the STOP signs, stop lines and any crosswalk lines on these approaches. Remove all of the ALL-WAY tabs at the intersection. Remove the AFTER (month and day) tabs from the warning signs.

- (3) After an additional period of at least 15 days, the NEW signs and the CROSS TRAFFIC DOES NOT STOP signs should be removed.

In all cases, information regarding the change in right-of-way control should be publicized via local print and electronic media, particularly using radio stations which provide traffic coverage in commuter areas. Local residents should be advised of the revisions, and law enforcement agencies requested to provide stepped-up enforcement and more frequent patrols of the location. Advance notification should also be provided to local ambulance services, transit authorities, bus companies, taxi companies and trucking firms known to use the intersection frequently.

Any actual removal or revision of the control at an intersection should occur prior to the start of the morning peak on the specified date, both to preserve the integrity of the AFTER (month and day) tab message and to permit the revision to take place during a period of reduced demand.

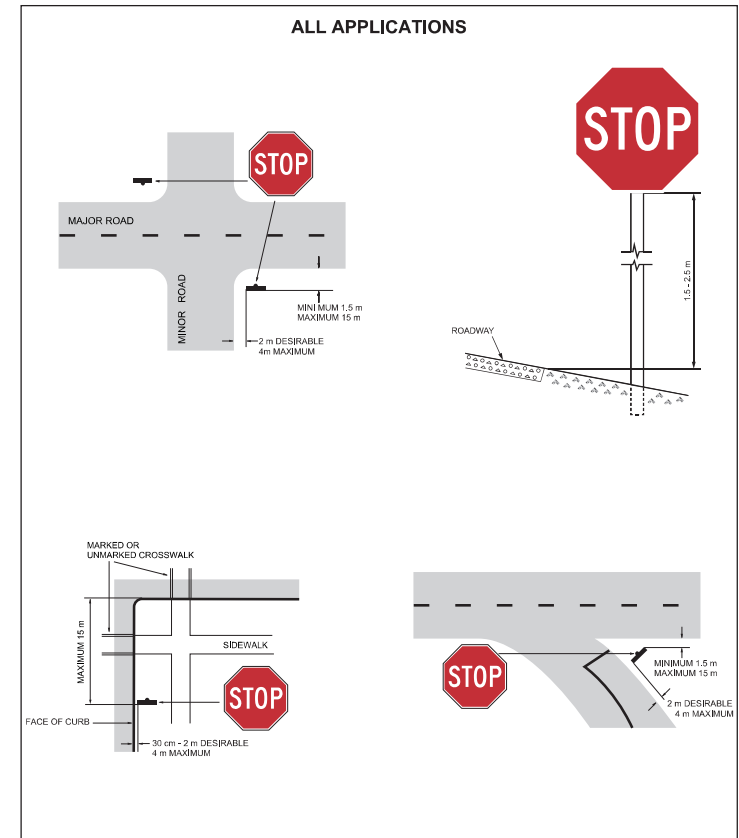


Figure 1 - Typical Locations of STOP Sign

4.4 Justification 1 – Minimum Vehicle Volume

Purpose

The Minimum Vehicle Volume Justification is intended for applications where the principal reason for installing a traffic signal is the cumulative delay produced by a large volume of intersecting traffic at an unsignalized intersection.

Justification 1A reflects the lowest total traffic on all approaches, and Justification 1B reflects the lowest volume on the minor road for which the average delay is similar for both signalized and unsignalized conditions. Therefore, this justification is intended to address the minimum volume conditions for which signalization can be used to minimize total average vehicle delay at the intersection.

As volumes increase beyond threshold criteria, delay to traffic on the minor road will increase, and the overall delay for the intersection will be greater than would be the case if minor delays were distributed between both main and minor roadways.

Standard

The need for a traffic signal must be considered if both Justification 1A and Justification 1B are 100% fulfilled.

If Justifications 1A and 1B do not reach or exceed 100%, but are at least 80% fulfilled, the lesser fulfilled of the Justifications 1A or 1B can be used in the assessment of Justification 3, the Combination Justification.

In applying Justification 1 (Minimum Vehicle Volume) for “T” intersections, the justification values for the minor street are increased by 50%. This approach reflects the reduction in traffic volumes due to the lack of one of the approaches.

Table 12 may be used for Justification 1: Minimum Vehicle Volume. Restricted Flow is applicable to Urban Conditions, while Free Flow is applicable to Rural conditions (see Section 4.2 for definitions).

Guidelines

Justification 1 evaluates total intersection volume and total minor road volume. The hours selected should represent the eight highest hours of the 24-hour traffic volume, and they do not have to be consecutive hours. Each one of the highest eight hours of the entering volumes is compared to the justification value. The justification should be met for each of the eight hours. “Sectional Percent” is calculated in Table 12 for reference purposes, and may indicate how close an intersection is to achieving full justification. “Total Across” is calculated by adding all 8-hour compliance percentages. The Compliance % figures used in Table 12 must not exceed 100%.

Table 20 presents minimum requirements for installation of traffic signals for Justification 1 to Justification 6.

Table 20 – Summary Table of Traffic Signal Justification

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT FOR TWO-LANE ROADWAYS		COMPLIANCE	
		FREE FLOW	RESTRICTED FLOW		
		OPERATING SPEED GREATER THAN OR EQUAL TO 70 km/h	OPERATING SPEED LESS THAN 70 km/h	SECTIONAL %	ENTIRE %**
1. MINIMUM VEHICULAR VOLUME	A*. Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of an Average Day, and	480	720		
	B***. Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	120	170		
2. DELAY TO CROSS TRAFFIC	A*. Vehicle Volume, Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	720		
	B*. Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	50	75		
3. VOLUME/DELAY COMBINATIONS	The Above Justifications (1 and 2) Both Satisfied to the Extent of 80% or More	YES ☐	NO ☐		
4. MINIMUM FOUR HOUR VEHICLE VOLUME	At Plotted Point Representing Hourly Volume for Minor Approach vs. Major Approach for Four Highest Hours of an Average Day Fall above the Applicable Curve	YES ☐	NO ☐		
5. COLLISION EXPERIENCE	A. Total Reported Accidents of Types Susceptible to Correction by a Traffic Signal, per 12 Month Period Averaged Over a 36 Month Period, and	5			
	B. Adequate Trial of Less Restrictive Remedies, Where Satisfactory Observance and Enforcement Have Failed to Reduce the Number of Collisions	YES ☐	NO ☐		
6. PEDESTRIAN VOLUME AND DELAY	A. Plotted Point Representing 8 Hour Pedestrian Volume vs. 8 Hour Vehicular Volume Fall in Justified zone, and	YES ☐	NO ☐		
	B. Plotted Point Representing 8 Hour Volume of Pedestrian Experiencing Delays of 10 s or more vs. 8 Hour Pedestrian Volume Fall in Justified Zone	YES ☐	NO ☐		

Notes:

* Vehicle Volume Warrants (1A) and (2A) for Roadways Having Two or More Moving Lanes in One Direction should be 25% Higher than Values Given Above.

** The Lowest Sectional Percentage Governs the Entire Warrant.

*** For "T" Intersections, the Values for Warrant (1B) should be increased by 50%.

- e) Pedestrian Grade Separations In cases of very heavy pedestrian and traffic volumes, it may be economically viable to construct pedestrian bridges or tunnels.
4. The priority placed on implementing a new pedestrian crossing device should reflect the proximity and convenience of existing crossings; a higher priority should be placed on crossings where no reasonable alternatives exist within walking distance.

4.10 Justification 7 – Projected Volumes

In some cases, it is desired to determine the future need for traffic signals at an existing or planned intersection. There are two basic scenarios. The first is that the intersection may exist and all that is changing is the addition of one or more developments which will add traffic to the intersection. The second is a development which will require, or be associated with, the construction of one or more new legs at an existing intersection or a completely new intersection or roadway.

The prediction of future traffic demands is based on knowledge of growth in roadway usage, growth of local traffic generators and predicted traffic volumes, obtained from a traffic

impact study, transportation planning study, environmental assessment or other similar evaluation. The preferred approach is that eight-hour volume projections are estimated as part of the engineering study and evaluated against Justifications 1, 2 or 3. It is incumbent upon the road authority to ensure that the calculation methodology is sound and is based on good data, so that there is a high level of confidence in the predicted traffic volumes.

For future development, especially where the intersection or road may not exist, eight-hour volumes may be difficult to obtain or predict with the necessary accuracy. If eight-hour volumes are unavailable or not considered to be of sufficient accuracy, Peak Hour Volumes (PHV) may be estimated as part of the transportation studies and reduced to Average Hourly Volumes (AHV) for comparison with traffic signal justifications for projected volumes.

Table 21 – Justification 7 – Projected Volumes

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Sectional		Entire %
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900			
	*B. Vehicle volume, along minor streets (average hour)	120	170	120	170			
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	720	600	900			
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75			

*Note: For "T" intersections, these values should be increased by 50% for 1B only.

The Average Hourly Volume for a typical day can be estimated from the Peak Hour Volumes using the following relationships:

$$AHV = \frac{PHV}{2} \text{ or } AHV = \frac{amPHV + pmPHV}{4}$$

Alternately, the Average Hourly Volume for the eight highest hours of an average day can be estimated from Annual Average Daily Traffic (AADT) volume using the following relationship:

$$AHV = \frac{AADT}{16}$$

Where:

AHV = Average hourly volume

AADT = Annual average daily traffic

Analysis Using Eight-hour Volumes

If eight-hour projections are available, Justifications 1, 2 or 3 should be used. For the situation of an existing intersection with new development, Justifications 1 or 2 need to be met to 100%, or Justification 3 needs to be met to 80%.

For developments where new intersections or roadways are to be built, there is more uncertainty in the volume projections as the estimate requires projections of background traffic as well as development traffic. For this reason, where new intersection or roadway construction is required, Justifications 1 or 2 must be met to 120%.

Analysis Using Average Hour Volume

In the case that the volume estimates are based on the expansion of peak hour volumes or average daily traffic, the effect on Justifications 1 or 2 of the requirement to meet the warrant for each of eight hours would be lessened by averaging. As well, increased uncertainty is introduced by estimating from as little as one hour of traffic volume. For this reason, the thresholds are raised and, for traffic signals to be considered, Justification 7 as per Table 21 is used but with a 20% increase over the required volumes for an existing intersection and a 50% increase for a future intersection or roadway. For example, under restricted flow and two lanes, the AHV for Part 1A of Justification 7 must be met to $900 \times 1.20 = 1080$ vph.

Note that future volumes may include side street traffic attracted to the new traffic signal since the signal may provide a significant reduction in delay.

Table 22 – Future Development: Volume Expansion Required to Meet Justifications

Roadway Condition	Full Eight-hour Count Estimate Available		AHV Only Available
	Justification 1 or 2	Justification 3	Justification 7
Both Intersecting Roads Exist; Development is Future	100%	80%	120%
One Road, Both Roads and/or Intersection are Future; Development is Future	120%	N/A	150%

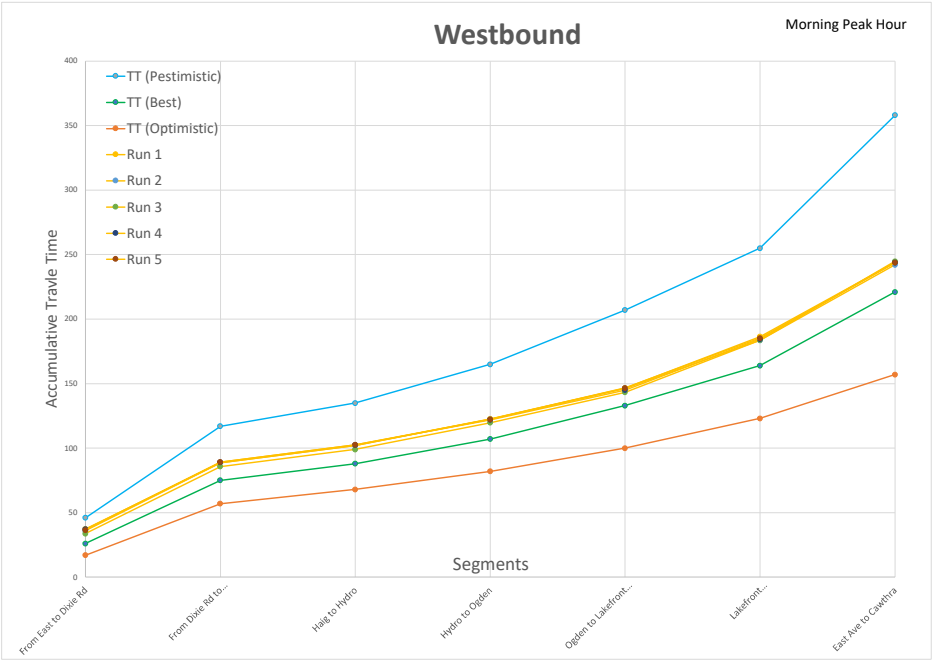
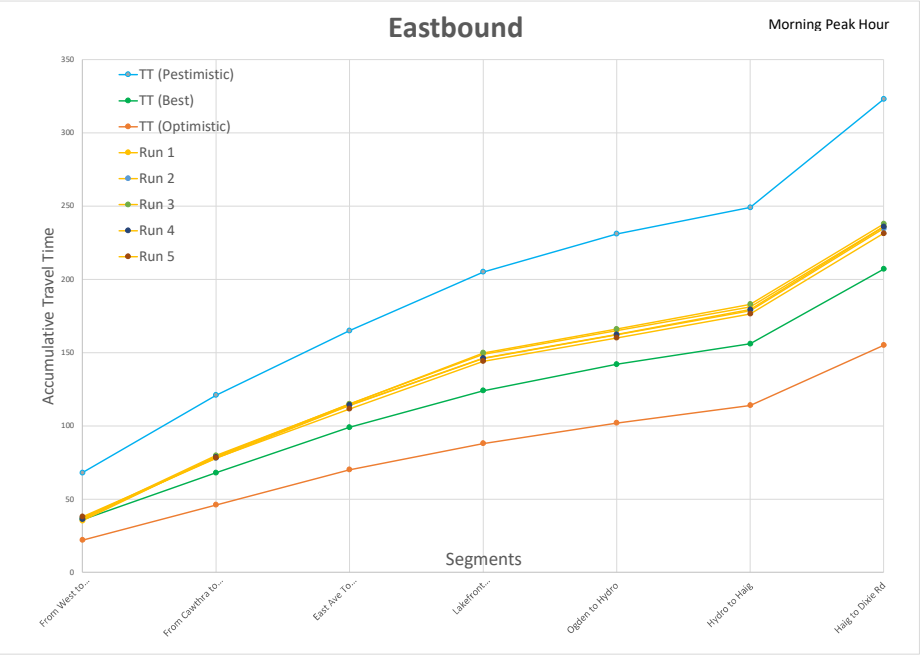
Appendix L: Travel Time Calibration



Google Maps API - Travel time results

Detailed model calibration results

Morning Peak Hour



Google Maps API - Travel time results

Detailed model calibration results

Afternoon Peak Hour

