RANGEVIEW ESTATES

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

Prepared For: Rangeview Landowners Group Inc.

May 31, 2024

95 St. Clair Avenue West, Suite 1000
Toronto, ON M4V 1N6
www.bagroup.com

RANGEVIEW ESTATES
RESPONSES TO CITY COMMENTS
DARC 2 - OFFICIAL PLAN AMENDMENT (OPA)

COMMENTS RELATED TO BA GROUP SEPTEMBER 2023 REPORT

CITY OF MISSISSAUGA TRAFFIC REVIEW

Comment 59: [MULTIPLE LAND OWNERS] - It is not immediately clear how future municipal infrastructure, including lands, will be provided to the City from the multiple land owners. The applicant(s)/owner(s) are to demonstrate a plan to the City's satisfaction that would provide the lands for roads and municipal servicing necessary for the future Rangeview lands as well as for the overall community.

Response:

As Rangeview Estates is comprised of several landowners, the phasing has been designed to allow each existing parcel to develop independently at different periods of the development approvals process.

Section 3.1.4 in the April 2024 BA Group Transportation Considerations Report includes the proposed approach to allow each existing parcel to develop independently at different periods of the development approvals process. This approach is key for those parcels that are located mid-block along Lakeshore Road East. Access to individual properties would be accommodated through a combination of consolidated existing driveways on Lakeshore Road East, East Avenue, Street L and internal “hammerhead” turns. An illustration of the proposed temporary access for properties along Lakeshore Road East is provided in **Appendix E** of BA Group’s May 2024 Report. Driveways constructed onto Lakeshore Road East would be shared and designed for future conversion to pedestrian walkways, with the driveways onto Lakeshore Road East closed once access via Street L to a north-south street is available. Access to ramps, loading areas and drop-offs would be from the partially constructed Street L, at the rear of the properties. Access for each development will be confirmed through future development applications.

When an individual parcel plans to develop, the public road and/or parkland associated with that parcel, as defined in the Rangeview DMP, will be conveyed to the City of Mississauga in order to ensure that the overall vision demonstrated in in the Rangeview DMP can be achieved. Interim access configurations will be confirmed on a site-by-site basis as required in cases where the full road network cannot be delivered as part of a project.

In addition, the existing roads within Rangeview Estates (East Avenue, Rangeview Road, Lakefront Promenade and Hydro Road) will be upgraded over time as part of servicing-related road reconstruction, with interim cross-sections considered in cases where the ultimate right-of-way has not yet been acquired. Interim cross-sections will include consideration for public realm, pedestrians, cycling facilities and traffic operations improvements.

Comment 60: SUBMISSION REQUIREMENT: [DEVELOPMENT APPLICATION - TRANSPORTATION STUDY] - An area-wide Transportation Study (e.g. road network and capacity analysis, active transportation connections and enhanced transit assessment etc.) for the Lakeview Waterfront is required that will examine among other things: (i) Future enhanced transit including its alignment and design; (ii) Multi-modal splits between transit, active transportation and vehicle use; (iii) TDM; (iv) Additional roads; (v) Potential traffic infiltration impacts on adjacent neighbourhoods, (vi) Access Management Plan, and; (vii) Recommendations to incorporate into site specific development proposal(s) [NOTE: The traffic consultant should provide a terms of reference to the City's Traffic Section for review and receive confirmation prior to commencing all traffic related studies that form part of this sections comments (i.e. Transportation Study including Microsimulation Analysis and Phasing].

Response:

The terms of reference for the comprehensive traffic analysis was submitted to the City's Traffic Section for their review. The signed Appendix A (Certification Form signed on April 4, 2024) and Appendix B (Terms of Reference Checklist) have been provided in the April 2024 BA Group Transportation Considerations Report in Appendix C.

As described in Section 2.3 of BA Group's May 2024 Report, the Lakeshore Connecting Communities TMP sets out a long-term vision for transit and corridor improvements along Lakeshore Road East from 2020 to 2041 that will support waterfront development. The planned transit facility includes express bus / bus rapid transit (BRT) along Lakeshore Road East in Mississauga, between East Avenue and Etobicoke Creek (adjacent to the Rangeview Lands). This dedicated right-of-way BRT service is planned within the centre of the Lakeshore Road East ROW and has been included in all traffic analysis scenarios within the BA Group May 2024 Report. A future looped transit route within the Rangeview lands is planned for Hydro Road, Street A and Lakefront Promenade. The proposed road cross-sections have included consideration for the operational needs of transit.

Multi-modal travel mode shares between transit, active transportation and vehicle use have been included in Section 6.3.2 of BA Group's May 2024 Report. The Region of Peel's Transportation Master plan sets out a target to achieve a 55% sustainable mode share in Mississauga by 2041. However, as this target represents a City-wide average, the sustainable mode share within higher order transit corridors is expected to be greater than 55%, with a correspondingly lower auto driver mode share. It is therefore reasonable to expect that the auto driver mode share in the Lakeview area could be a low as 40% to 35%. Using 2016 TTS data, the existing travel mode shares within areas of Mississauga and Toronto, in addition to four comparable Toronto neighbourhoods, were determined. At the request of City Staff, BA Group assessed the existing travel mode share of Liberty Village as a proxy for the Site. The auto driver mode share in Liberty Village is currently 38% in the AM and 33% in the PM. These auto driver mode shares generally align with the proposed mode share for Rangeview and Lakeview of 40% to 35% that BA Group is proposing for the

ultimate future condition (Rangeview with 5,300 units and Lakeview with 16,000 units). It is important to note that there is a strong correlation between the supply of parking and auto driver mode share. Details that support how parking supply reduces auto driver mode share and data to support a reduced auto driver mode share, has been included in Appendix F of the May 2024 BA Group Transportation Considerations Report. As described in Section 5.0 of BA Group's May 2024 Report, Transportation Demand Management (TDM) strategies have been developed for the proposed development to guide the provision of viable alternative transportation options beyond the single occupant, private automobile. To achieve the objective and goals, a series of mobility strategies and corresponding TDM measures are outlined and have been incorporated into the design and future operations of the proposed Site. The proposed TDM measures will be further refined at a later stage of the development application process.

The updated BA Group traffic analysis for the new analysis scenarios (Scenarios 4, 5, 6, 7A and 7B) considers that the following road improvements would be completed.

- BRT on Lakeshore Road East;
- Construction of dual eastbound left-turn lanes at Cawthra and Lakeshore Road East;
- Construction of westbound right-turn lane at Cawthra Road and Lakeshore Road East;
- Construction of westbound right-turn lane at Dixie Road and Lakeshore Road East;
- Construction of eastbound right-turn lane at Lakefront Promenade and Lakeshore Road East;
- Northbound lanes reconfigured at Lakefront Promenade and Lakeshore Road East to include a dedicated left-turn lane and share through/right lane;
- Construction of eastbound right-turn lane at Hydro Road and Lakeshore Road East;
- Northbound lanes reconfigured at Hydro Road and Lakeshore Road East to include a dedicated left-turn lane and a shared left/through/right lane;
- Signalization of Hydro Road and Lakeshore Road East intersection, as per Lakeshore Connecting Communities BRT roll plan drawings.
- The extension of Ogden Avenue from Lakeshore Road East to Rangeview Road.
- The connection of Haig Boulevard to Lakeshore Road East.

The potential traffic infiltration impact (i.e. "shortcutting") on adjacent neighbourhoods as a result of the development of the Site is expected to be minimal. However, as development progresses on Rangeview and Lakeview, a monitoring plan can be confirmed in order to determine if there are any infiltration concerns that need to be addressed.

As Rangeview Estates is comprised of several landowners, the phasing has been designed to allow each existing parcel to develop independently at different periods of the development approvals process. Access for the interim phase for individual properties will be accommodated through a combination of consolidated existing driveways on Lakeshore Road East, East Avenue, Street L and internal "hammerhead" turns. An illustration of the proposed temporary access for properties along Lakeshore Road East is provided in Appendix E of BA Group's May 2024 Report. Long-term points of access for all development blocks will be considered at a later stage of the development application process.

Recommendations to incorporate into site specific development proposals include a monitoring plan to evaluate the performance of the area road network and address any concerns at individual intersections. In order to confirm the ability of the area transportation network to acceptably accommodate the proposed

development, it is recommended that a comprehensive traffic analysis update be undertaken for the Lakeview site to develop beyond 8,050 units. An updated traffic study would ideally be completed for increments of 2,000 units, up to 16,000 units on Lakeview. Other recommendations for site specific development proposals can be confirmed at a later stage of the development application process.

Comment 61: SUBMISSION REQUIREMENT: [DEVELOPMENT APPLICATION - MICROSIMULATION ANALYSIS] - The Owner/Applicant is advised that a VISSIM analysis will also be 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). [NOTE: The transportation consultants are advised to contact this section prior to commencing the study].

Response:

As outlined in Section 8.0 of BA Group's May 2024 Report, a VISSIM model was created for the microsimulation of the traffic analysis and appropriately calibrated as per accepted industry standards. The VISSIM model includes an assessment of Scenario 7B (2041) with 35% auto driver mode share and considers Rangeview with 5,300 units and Lakeview with 16,000 units).

Comment 62: SUBMISSION REQUIREMENT: [DEVELOPMENT APPLICATION - RIGHT OF WAY PACKAGE] - The developer shall provide a right-of-way package for all proposed roads within the development. The right-of-way package is to include reference to the relevant City of Mississauga standard drawings with detailed cross-sections that are applicable for each road. The developer should be advised that further comments on the development concept may be provided after the ROW package is submitted and therefore, revisions to the overall draft plan may be required. [***NOTE***] The applicant is advised that any deviation from a City of Mississauga standard is subject to a comprehensive review and approval process by City staff and all affected external agencies. If non-standard cross sections are proposed, the following information will also be required, but not limited to: An extensive right-of-way package that includes details of all design elements within a proposed right-of-way for each proposed street. The right-of-way package is to be prepared in two parts: (A) The right-of-way package shall include plan views and a description for each of the following considerations: (i) Public Transit Facilities; (ii) Pedestrian Facilities; (iii) Cycling Facilities; (iv) On-Street Parking and Curbside Management; and (v) Traffic Calming (B) The right-of-way package shall also include typical cross-section details of each street that include the following information: (i) Street Name; (ii) Road Classification; (iii) Right-of-way widths; (iv) Pavement widths and lane widths; (v) Boulevard widths; (vi) Sidewalks, curbs, splash pads, grades; and (vii) All above and below ground utilities.

BA Group's December 2023 Street Network and Right-of-Way Considerations Report includes detailed cross-sections for each road with consideration for all modes of travel. Further details regarding the right-of-way package will be provided at a later stage of the development application process.

Comment 65: Traffic Planning provides the following comments on the Draft OPA Document: (i) Schedule 8 - There are inconsistencies between the 'MOP Draft Schedule 'A' Document and 'Map 4' in the 'Official Plan Amendment document. Further, subject to the review of the TIS and ROW Package, larger ROW widths may be required for certain roads and/or portions of roads. (ii) Item 20 / Section 13.3.11.6 - We do not support the revisions to the wording for the Transportation Study requirements. The existing wording of this policy shall remain.

Response:

BA Group's December 2023 Street Network and Right-of-Way Considerations Report includes detailed cross-sections for each road with consideration for all modes of travel. Further details regarding the right-of-way package will be confirmed at a later stage of the development application process.

REGION OF PEEL TRAFFIC REVIEW

Comment 50: TRAFFIC DEVELOPMENT: An updated Traffic Impact Study is required to assess the increase in units proposed in the Rangeview Estates Master Plan Area (and to also appropriately consider in the Province’s recent MZO for increased units in the abutting Lakeview Waterfront subdivision on the road system around Rangeview Estates).

Response:

The May 2024 BA Group Transportation Considerations Report includes an updated comprehensive traffic analysis that considers Rangeview with 5,300 residential units and Lakeview with 16,000 residential units (as per recent MZO).

The updated BA Group traffic analysis for the new analysis scenarios (Scenarios 4, 5, 6, 7A and 7B) considers that the following road improvements would be completed.

- BRT on Lakeshore Road East;
- Construction of dual eastbound left-turn lanes at Cawthra and Lakeshore Road East;
- Construction of westbound right-turn lane at Cawthra Road and Lakeshore Road East;
- Construction of westbound right-turn lane at Dixie Road and Lakeshore Road East;
- Construction of eastbound right-turn lane at Lakefront Promenade and Lakeshore Road East;
- Northbound lanes reconfigured at Lakefront Promenade and Lakeshore Road East to include a dedicated left-turn lane and share through/right lane;
- Construction of eastbound right-turn lane at Hydro Road and Lakeshore Road East;
- Northbound lanes reconfigured at Hydro Road and Lakeshore Road East to include a dedicated left-turn lane and a shared left/through/right lane;
- Signalization of Hydro Road and Lakeshore Road East intersection, as per Lakeshore Connecting Communities BRT roll plan drawings.
- The extension of Ogden Avenue from Lakeshore Road East to Rangeview Road.
- The connection of Haig Boulevard to Lakeshore Road East.
- Implementation of a dual northbound left-turn phase on Lakeshore Road East at Lakefront Promenade.

TABLE OF CONTENTS

TABLE OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Introduction & Background

BA Group was 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. Rangeview Landowners Group Incorporated (LOG) currently represents 9 landholders within Rangeview Estates. The LOG currently owns 21/33 (64%) privately held properties within Rangeview.

The previous Transportation Considerations Report submitted to the City for Site was dated September 2023 ("the September 2023 BA Group Report"). This current updated Transportation Considerations Report provides an update to the September 2023 BA Group Report and is intended to consider the May 2023 Ministerial Zoning Order (MZO) that permits the development of 16,000 residential units on Lakeview Village ("Lakeview").

The development proposal statistics for the Rangeview Site and proposed road network remain largely unchanged since the previous submission. Key additions to this updated report include the following:

- Traffic analysis with incremental development scenarios for future conditions that considers up to 5,300 residential units on Rangeview and 16,000 residential units on Lakeview;
- A reduction in auto driver mode share (from 50% to 35%) that reflects the future evolving area transportation context; and
- A VISSIM analysis for 2041 future total conditions for Scenario 7B at full-build out of Rangeview with 5,300 residential units and Lakeview with 16,000 residential units and all road improvements and connections to Lakeshore Road East in place.
- The creation of a video traffic simulation in VISSIM at full build-out of both the Rangeview and Lakeview sites for Scenario 7B (Rangeview with 5,300 units and Lakeview with 16,000 units and auto driver share of 35%).

A demonstration of the morning peak hour (the most critical time period) traffic simulation for Scenario 7B can be viewed at the following YouTube link:

https://www.youtube.com/watch?v=S8RL8y-ces8

Proposed Development

The proposed development concept for Rangeview includes consideration for up to 5,300 residential units. The current demonstration of the master plan is able to generate approx. 4,000 – 8,000 m2 of non residential gross floor area. To be conservative, the detailed traffic analysis for this updated study included 95k ft2 (8825 m2) of non-residential GFA and also considers the travel demands of the adjacent lands to the south and east, inclusive of Lakeview (16,000 residential units, along with 1.7 million ft^2 GFA of non-residential uses) and Serson (449,000 ft^2 GFA of non-residential uses).

Area Street Network

The Site is directly adjacent to Lakeshore Road East (arterial road) with convenient road connections across the City, Peel Region and the Greater Toronto Area (GTA). The public street network surrounding Rangeview includes a hierarchy of road connections that range from arterial roads to local roads and is located just over 2.0 kilometres from the Queen Elizabeth Way (QEW).

The approval of the Lakeview Village development has resulted in planned changes to the local street network that align with the future road network within OPA 125. As part of Rangeview, additional components of the OPA 125 road network are being proposed. The proposed Rangeview road network considers active transportation, ease of access & connectivity for all travel modes, “Complete Streets” and conformity with the planned Lakeview Village road network. The Rangeview proposal includes functional plans and cross-sections for the planned road network, inclusive of East Avenue, Lakefront Promenade, Street F (extension of Ogden Avenue from Lakeshore Road East to the property line, just south of Rangeview Road), Hydro Road, Street L, Rangeview Road and Street G.

Area Transit Network

The Site’s northern boundary is adjacent to the two MiWay surface transit routes, which provide direct connections to area destinations including Dixie Outlet Mall, Port Credit and Long Branch GO stations. With a transfer at the Long Branch GO Station, the Site is connected to GO Transit (Lakeshore West Line) and TTC bus / streetcar service in the east. The plans for a dedicated Bus Rapid Transit (BRT) service along Lakeshore Road East (adjacent to Rangeview), from East Avenue to Etobicoke Creek, are well underway with a current completion date of 2027.

Area Cycling Network

The existing cycling network within 500 metres of the Site area consists of multi-use trails, park trails, and signed bike routes along all sides of the Site perimeter. These cycling connections provide convenient travel opportunities for residents, employees and visitors of the surrounding area, specifically to travel using non-automobile means. The Lakeshore Connecting Communities Transportation Master Plan (TMP), proposes to incorporate uni-directional cycle tracks, separated from vehicle lanes, in each boulevard along the Lakeshore Road East corridor. Within OPA 125, as part of the planned street network, a series of “Primary Off-Road Routes” and “Primary On-Road / Boulevard Routes” are included primarily within Lakeview Village.

The proposed Rangeview street network will provide connectivity to the Lakeview Village cycling facilities, as well as to Lakeshore Road East, for travel beyond the Site. The proposed Rangeview cycling network includes two-way in-boulevard cycle tracks, where cyclists are separated from vehicles by a curb and buffer, on one side of the road along East Avenue, Lakefront Promenade, Ogden Avenue, Hydro Road and Rangeview Road. Cyclists would be expected to share the road on lower volume streets such as Street L and Street G, where there are no planned designated cycling facilities.

Area Pedestrian Network

The Site is within 500 metres of numerous parks, various restaurants and services, along the Lakeshore Road East corridor that can be reached by walking as Lakeshore Road East includes sidewalks on both sides of the road. The Rangeview proposal includes a planned street network with a high quality urban pedestrian

environment with wide sidewalks on most of the proposed streets and pedestrian mews areas to generate pedestrian activity. The proposal for a new traffic signal on Lakeshore Road East at Hydro Road will provide additional protected crossing opportunities for pedestrians. The pedestrian network proposed for Rangeview will connect to the Lakeview Village pedestrian network, with connectivity to Lake Ontario and beyond.

Transportation Demand Management (TDM)

The TDM strategies incorporated into the development proposal will encourage people to take fewer and shorter vehicle trips in order to support transit and active transportation, as well as enhance public health and reduce harmful environmental impacts. TDM measures have been incorporated into the design and future operations of the proposed Site to include strategies such as the development of a community with a range of land uses with connectivity provided for active modes of travel, convenient connections to transit, cycling facilities & bike repair stations, on-site car/ bike/ scooter sharing facilities and a reduced parking supply for residents and visitors.

Potential for a New GO Station

As a result of the advancement of GO Transit in the Greater Toronto & Hamilton Area, there is potential to improve GO Transit in the vicinity of the Site with the addition of a new GO Station. Based on the proximity to local multi-modal connections and distance to nearby existing GO Stations on the Lakeshore West Line (approximately 2.5 km from Port Credit GO Station and approximately 2.5 km from Long Branch GO Station), a potential location for a new station would be east of Cawthra Road and north of Lakeshore Road East.

A Cawthra GO Station would greatly enhance the multi-modal transportation options available to future residents and visitors to both Rangeview and Lakeview Village.

Travel Demand & Traffic Analysis

To develop the traffic analysis scenarios for this study, a number of development thresholds were tested for Rangeview to better understand the traffic-related impacts on the overall area road network. Each scenario considered the total number of residential units for both Rangeview and Lakeview Village, the total non-residential GFA for Rangeview and Lakeview Village, and the road network and intersection improvements that would be in place at the time of development.

The traffic analysis for the September 2023 BA Group Report (Scenarios 1, 2, 3A, and 3B) considered two long-term horizons (2031 and 2041) and generally aligned with the methodology of TYLin's April 2021 Traffic Considerations Report Addendum ("the 2021 April TYLin report") completed for Lakeview Village. To determine the background traffic volumes for this study, traffic volume layers, inclusive of Site traffic volumes and background traffic volumes, were taken from the April 2021 TYLin Report.

In order to focus on the updated analysis required to consider Lakeview with 16,000 residential units, this report does not include analysis updates for existing conditions and Scenarios 1, 2, 3A, and 3B at this time. For completeness, these scenarios continue to be included in the updated report and will be updated in the future as required when updated traffic data becomes available.

The updated BA Group traffic analysis includes a modified approach for new analysis scenarios (Scenarios 4, 5, 6, 7A, and 7B). The new scenarios consider an iterative approach to consider Lakeview beyond 8,050 units i.e. 10,000 units, 12,000 units, and 14,000 units with a maximum of 16,000 units. The methodology also considers that the auto driver travel mode share will decrease to approximately 35% in the future with the evolving transportation context of the area. The travel demand established in the December 2023 TYLin report was considered in conjunction with the 35% auto driver mode share, to determine trip rates for the Rangeview Site. Proxy data is provided in the report to justify future auto driver mode share rates as low as 35%. Additionally, to align with the December 2023 TYLin Report, the Lakeview non-residential GFA has been reduced from 2.1 million ft^2 to 1.7 million ft^2.

The analysis undertaken in Scenarios 4 through 7 estimates conditions after what will most likely be decades of development. It is recommended that given the time horizon of development, projected changes in mode split, potential addition of new public transit options and generally evolving nature of urban transportation, additional comprehensive studies be conducted for development beyond the initial 5,300 unit (Rangeview) and 8,050 units (Lakeview). This study should take into account current conditions, changes in public transit, and travel demand data from buildings that have been constructed and occupied.

A summary of the updated traffic analysis undertaken for Scenarios 4, 5, 6, 7A, and 7B is as follows:

Scenario 4: Rangeview with 5,300 Residential Units and Lakeview with 10,000 Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview with 10,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,283 and 3,790 two-way vehicle trips, during the morning and afternoon peak period, respectively. **The estimated auto driver mode share is 46%.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the westbound through at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak hour;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak hour.

The above-noted performance is deemed to be acceptable as in busy urban environments, it is typical that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

Scenario 5: Rangeview with 5,300 Residential Units and Lakeview with 12,000 Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 12,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,454 and 4,023 two-way vehicle trips, during the morning and afternoon peak period, respectively. **The estimated auto driver mode share is 43%.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the westbound through at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak.

The above-noted performance is deemed to be acceptable as in busy urban environments, it is typical that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

Scenario 6: Rangeview with 5,300 Residential Units and Lakeview with 14,000 Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 14,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,571 and 4,189 two-way vehicle trips, during the morning and afternoon peak period, respectively. **The estimated auto driver mode share is 40%.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the westbound through at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning and afternoon peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak.

The above-noted performance is deemed to be acceptable as in busy urban environments, it is typical that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

Scenario 7A: Rangeview with 5,300 Residential Units and 16,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 16,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,929 and 4,636 two-way vehicle trips, during the morning and afternoon peak period, respectively. **The estimated auto driver mode share is 40%.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the westbound through at Ogden & Lakeshore Road East during the morning peak hour;
- the westbound left-turn at Lakeshore Road East & Haig Boulevard during the afternoon peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak hour;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning and afternoon peak hour;
- the southbound right-turn at Dixie Road & Lakeshore Road East during the afternoon peak; and
- the westbound through at Dixie Road & Lakeshore Road East during the afternoon peak.

The above-noted performance is deemed to be acceptable as in busy urban environments, it is typical that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

Scenario 7B: Rangeview with 5,300 Residential Units and 16,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 16,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,438 and 4,057 two-way vehicle trips, during the morning and afternoon peak period, respectively. **The estimated auto driver mode share is 35%.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the morning and afternoon peak and;
- the southbound right-turn at Dixie Road & Lakeshore Road East during the afternoon peak.

It is noted that the study area intersections can generally accommodate Rangeview with 5,300 units and Lakeview with 16,000 units with an auto driver mode share of 40%. However, as the auto driver mode share reduces to 35%, which is a reasonable assumption based on the evolving transportation context of the area, the overall intersection performance improves within the study area.

Summary of VISSIM Analysis

A VISSIM analysis was completed for this report for Scenario 7B only (auto driver mode share of 35%) in order to confirm the results of the traffic analysis undertaken with Synchro by both TYLin and BA Group that considers Rangeview with 5,300 units and Lakeview with 16,000 units. The VISSIM microsimulation analysis included 7 intersections along the Lakeshore Road East corridor.

The VISSIM analysis for **Scenario 7B** confirmed that the intersections work acceptably, with the exception of the following:

- the northbound left-turn/ northbound through movements at Lakeshore Road East & Cawthra Road operate with a LOS F during the afternoon peak hour. This is expected as both of these movements include very low traffic volumes (south approach at this time only serves a driveway to a small office).
- the eastbound left-turn / eastbound through at Cawthra Road operates with a LOS F during the afternoon peak period due to high turning volumes.
- at the intersection of Dixie Road, many movements operate with a LOS F during both the morning and afternoon peak periods due to high vehicle volumes.
- all eastbound left-turn / westbound left-turn movements at intersections along Lakeshore Road East are expected to experience poor levels of service with increased delays as a direct result of the implementation of the fully protected left-turn phasing required to accommodate the BRT.

Queuing concerns for **Scenario 7B** were noted as follows:

- Due to high volumes, northbound queues leaving the Site at both Lakefront Promenade and Hydro Road may extend beyond the available storage. Northbound queues at the remainder of streets leaving the Site may be lengthy but can be accommodated within the planned available storage.

- During the AM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound vehicles at Cawthra Road, eastbound vehicles at Haig Boulevard and northbound vehicles at Hydro Road.
- During the PM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound and southbound vehicles at Cawthra Road, eastbound vehicles at East Avenue and southbound vehicles at Dixie Road.

Conclusions

The traffic analysis confirms that the future transportation network can acceptably accommodate the travel demands of the 21,300 residential units (Rangeview with 5,300 units Lakeview with 16,000 units) and 100% build-out of the non-residential GFA.

The above-noted intersection performance is deemed to be acceptable as in busy urban environments, it is typical that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

The ability of the transportation network to accommodate both Rangeview and Lakeview anticipates auto driver share decreasing to approximately 35 to 40%, based on the evolving transportation context of the area and in consideration of auto driver mode share proxy studies in areas with a similar context.

Through the development of the community, it is recommended that continued efforts be made to secure a transit station on the Lakeshore West GO line north of the development. Complementary to this and in line with the goal of minimizing automobile travel would be continued reductions in the provision of vehicular parking.

In order to confirm the ability of the area transportation network to acceptably accommodate the proposed development, it is recommended that a comprehensive traffic analysis update be undertaken for the Lakeview site to develop beyond 8,050 units. An updated traffic study would ideally be completed for increments of 2,000 units, up to 16,000 units on Lakeview.

1.0 INTRODUCTION

BA Group was 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. All land parcels on the south side of Rangeview Road that have frontage on Rangeview Road are included as part of the Site. Rangeview Landowners Group Incorporated (LOG) currently represents 9 landholders within Rangeview Estates. The LOG currently owns 21/33 (64%) privately held properties within Rangeview. The LOG ownership map is provided in **Appendix A**.

This Transportation Considerations Report has been prepared as part of the **Official Plan Amendment (OPA)** application being submitted to the City of Mississauga. The location of the Site is illustrated in **Figure 1.**

1.1 BACKGROUND

A Transportation Considerations Report dated September 2023, recently was prepared by BA Group ("the September 2023 BA Group Report") as part of the **Development Master Plan (DMP)** and **Official Plan Amendment (OPA)** submitted to the City. This updated Transportation Considerations Report provides an update to the September 2023 BA Group Report and is intended to consider the May 2023 Ministerial Zoning Order (MZO) that permits the development of 16,000 residential units on Lakeview Village ("Lakeview").

The development proposal statistics for the Rangeview Site and proposed road network remain largely unchanged since the previous submission. Key additions to this updated report include the following:

- Traffic analysis with incremental development scenarios for future conditions that considers up to 5,300 residential units on Rangeview and 16,000 residential units on Lakeview;
- A reduction in auto driver mode share from 40% to 35%, that is more reflective of the future evolving area transportation context; and
- A VISSIM analysis for future total conditions for Scenario 7B at full-build out of Rangeview with 5,300 residential units and Lakeview with 16,000 residential units (35% auto driver mode share).
- The creation of a video traffic simulation in VISSIM at full build-out of both the Rangeview and Lakeview sites for Scenario 7B (Rangeview with 5,300 units and Lakeview with 16,000 units and auto driver share of 35%).

A demonstration of the morning peak hour (the most critical time period) traffic simulation for Scenario 7B can be viewed at the following YouTube link:

https://www.youtube.com/watch?v=S8RL8y-ces8

1.2 EXISTING SITE CONTEXT

The Site is currently occupied by a mix of commercial, industrial, retail and services with vehicle access provided through Lakeshore Road East, Rangeview Road, East Avenue, Lakefront Promenade and Hydro Road. The existing context of the Site is illustrated in **Figure 2**.

P:\80\61\01\Graphics\2023\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 1 SITE LOCATION

P:\80\61\01\Graphics\2023\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 2 SITE CONTEXT

1.3 PROPOSED DEVELOPMENT CONCEPT

The proposed development concept includes the following key elements:

- Redevelopment of the Site as a mixed-use area that includes residential and commercial uses.
- The implementation of a road network that facilitates multi-modal connectivity and advances place-making initiatives.
- Redevelopment that is consistent, congruent and supportive of the ongoing Lakeview Village development that is to occur directly south of the Site, given that many of the proposed road network connections are mutually beneficial to both redevelopment proposals.
- As per Official Plan Amendment 89 (OPA 89) to the City of Mississauga Official Plan, the Site is permitted to develop 3,700 residential dwelling units. As part of this application, it is proposed to increase the development allowance on the Site to 5,300 residential dwelling units.
- Consideration for a recommendation that Metrolinx evaluate the potential to introduce a Cawthra Road GO Station along the Lakeshore West GO Train Line, to further facilitate higher order transit access for the Site, as well as the Lakeview Village development.

The Master Plan development concept proposed for Rangeview is illustrated in **Figure 3**. Since the development proposals for the combined lands south of Lakeshore Road East, inclusive of Rangeview, Lakeview Village and Serson, were considered as part of the detailed traffic analysis for this study, **Table 1** includes a development summary for the combined lands. It is important to note however that this application only relates to the approvals related to Rangeview at this time. Reduced scale architectural plans of the Rangeview development proposal are included in **Appendix B**.

TABLE 1 PROPOSED DEVELOPMENT CONCEPT (COMBINED LANDS)

Land Use	Proposed Statistics
Rangeview	
Residential	3,700 to 5,300 units
Retail & Office (*current demonstration of the master plan is able to generate approx.* ***4,000 to 8,000 m²*** *of non-residential GFA*)	95,000 ft² (8,825 m²) considered in traffic analysis to be conservative
Adjacent Lands	
Lakeview Village	
Residential	16,000 units
Retail, Office, Research & Development, Hotel, Community Centre (GFA)	1.7 million ft²
Serson	
General Office/ Research & Development Centre (GFA)	449,000 ft²

P:\80\6101\Graphics\2024\AdobeIDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 3 RANGEVIEW MASTER PLAN DEVELOPMENT CONCEPT

1.4 STUDY SCOPE

The study will be completed in accordance with the City of Mississauga's Traffic Impact Study Guidelines. The Appendix *B Pre-Consultation Terms of Reference Checklist* was submitted to the City on March 18, 2024, and was signed by the City with comments on April 4, 2024. This Checklist is provided in **Appendix C**.

A summary of BA Group's review of the urban transportation elements of the development proposal includes the following:

- Review of the relevant transportation planning and policy context;
- Review of the area transportation context;
- Transportation Demand Management (TDM) strategy, inclusive of a vehicle parking strategy;
- Preliminary assessment of the viability of a Cawthra Road GO Station;
- Proposed road network & right-of-ways (ROW);
- Research and recommendations regarding a reduced auto driver mode share that is more reflective of the future evolving transportation context;
- Confirmation of the multi-modal travel demand expected to be generated by the combined sites (Rangeview + Lakeview); and
- Comprehensive traffic analysis of the four development scenarios (Scenarios 1, 2, 3A & 3B) included with the September 2023 BA Group Report and five new scenarios created for this updated report (Scenarios 4, 5, 6 and 7A & 7B) in order to consider Lakeview with up to 16,000 units, along with a reduced auto mode share that evolves from approximately 35 to 40%.

2.0 TRANSPORTATION PLANNING & POLICY CONTEXT

Public policy with respect to mobility and development planning has changed over recent years with sustainable growth at the forefront of many policy initiatives. Provincial and municipal-wide directives set a planning framework that increasingly aims to mitigate and reduce vehicle traffic through the promotion and facilitation of non-auto trips and the improvement of public transit access and active modes of travel. Greater priority is now being placed on the movement and experience of people, as opposed to vehicle traffic and auto use.

Common themes across provincial and municipal policies and guidelines include:

Planning transit from a network perspective

Public transit is being transformed to achieve an interconnected network of high-order public transit service. Planning and funding efforts are being undertaken by all levels of government to achieve this vision.

Designing streets and public realm for people

While the efficient movement of automobiles has previously been the focus in transportation planning, this is no longer a primary focus. The enjoyment, safety and efficiency of pedestrians has become the primary focus of mobility planning at the regional and municipal levels.

Connecting and expanding cycling infrastructure

The City of Mississauga (and Peel Region) is focusing efforts on expanding its active transportation network. Plans are comprised of a primary network of multi-use trails and a secondary network of shorter local neighbourhood connections that create a continuous network of recreational facilities throughout the City.

Increasing multi-modal mobility options

In addition to public transit and active transportation, shared mobility options such as car-sharing, bike-sharing and ride-sharing, are becoming increasingly common in other parts of the GTA and help reduce the need for individuals to own a private vehicle. These services allow individuals to conveniently and affordably have access to a private vehicle when needed.

Reducing automobile reliance

Regional and municipal policies (Official Plans, Transportation Master Plans, etc.) are placing emphasis on mixed-use developments centered around transit in order to promote non-auto based travel. Transportation Demand Management strategies within new developments also facilitate the efficiency of existing and planned transportation infrastructure.

2.1 PROVINCIAL PLANNING

The **Growth Plan for the Greater Golden Horseshoe (2020)** outlines the importance of supporting the achievement of complete communities through a more compact built form, designed to provide a mix of uses to meet people's daily needs, facilitating aging in place, reducing automobile reliance and promoting non-auto modes. Planning for growth and optimizing infrastructure along transit and transportation corridors, adopting minimum density targets and reduced parking standards in major station areas, and integrating active transportation within the existing and planned street network are priorities.

The **2020 Provincial Policy Statement** encourages the provision of Transportation Demand Management strategies within new developments to increase the efficiency of existing and planned transportation infrastructure. It also encourages transit-oriented development and higher density that adopts a mix of uses to promote non-auto based travel.

The **Metrolinx 2041 Regional Transportation Master Plan** supports intensification in accordance with sustainable transportation objectives. Additional rapid transit options, greater pedestrian connections, and mixed-use density should be considered for the City of Toronto and the surrounding region, including the City of Mississauga.

The **Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe** (February 2022) provides a 30-year vision (i.e. to 2051) to building a more sustainable and resilient transportation system in the Greater Golden Horseshoe (GGH) to enable transit-oriented communities. Planned rapid transit infrastructure expansion is included and outlined in greater detail in **Section 3.2.2**.

2.2 REGIONAL PLANNING

The **Region of Peel Official Plan (OP)** promotes sustainable forms of transportation through Regional Intensification Corridors, which in turn support sustainable development through efficient use of land, densities supportive of transit and pedestrian mobility, and complete urban communities containing living, working and recreational opportunities. Regional Intensification Corridors are characterized by Urban Growth Centres linked by public transit, high intensity, compact urban form with an appropriate mix of uses, transit-supportive and pedestrian-oriented urban forms, and opportunities for higher order transit.

The **Peel Region Sustainable Transportation Strategy (STS)**, approved by Peel Region Council in February 2018, is a framework outlining policies, programs and infrastructure in order to enable and grow the sustainable transportation modes in Peel Region. Most notably, the STS sets a goal for 50% of the morning peak period trips in the Region to be made by sustainable transportation modes by 2041, up from the current 37% sustainable mode share. The STS identifies sustainable transportation modes as trips made by walking, cycling, transit, and carpool as well as trips avoided through teleworking.

Over fifty actions items are identified in the STS, consisting of both short-term and long-term recommendations. The short-term priorities of the STS are supported by two accompanying five-year implementation plans, the 2018-2022 Active Transportation Implementation Plan (ATIP) and the 2018-2022 Transportation Demand Management Implementation Plans (TDMIP). Examples of short-term priorities include encouraging and supporting cycling and walking from transit hub and other community destinations as well as identifying the locations of new and upgraded walking and cycling infrastructure.

2.3 CITY OF MISSISSAUGA & LOCAL PLANNING

2.3.1.1 City of Mississauga Official Plan (OP) (Office Consolidation July 27, 2023):

The City of Mississauga Official Plan (OP) sets the planning policy framework to guide the future growth and development of the City. It recognizes that new growth will take place primarily through infilling and redevelopment of appropriate areas that can benefit from growth and change. A key priority identified within the OP is to support a strong public transportation system in the City and address the City's long-term sustainability. General support is also indicated for providing more opportunity for transit and active transportation choices to create a more sustainable, multi-modal city.

Major Nodes are intended to be prominent centres of mixed-use activity with a variety of employment opportunities, higher-density housing, and active transportation choices that achieve a high-quality urban environment. The Site is located within the Rangeview Estates precinct of the Lakeview Waterfront Major Node Character Area identified in the City of Mississauga OP. This designation came about through Official Plan Amendment (OPA) 89 and 125 which are discussed in further detail below.

2.3.1.2 City of Mississauga Official Plan: Official Plan Amendment (OPA) 89

Official Plan Amendment (OPA) 89 to the Mississauga Official Plan was enacted and passed on July 4, 2018, through By-law 0169-2018. The purpose of OPA 89 was to add a new Major Node Character Area to the OP, the Lakeview Waterfront Major Node, and update land use designations to include residential development. As a result of OPA 89, the Site is located within the Lakeview Waterfront Major Node and further, the Rangeview lands were permitted to include 3,700 residential dwelling units.

The Lakeview Waterfront Major Node Character Area, specifically, will be designed to encourage multi-modal transportation with an emphasis on transit and active transportation to reduce traffic delays, congestion, energy consumption and pollution. The community will have a highly-connected network of streets and routes for active transportation to support walking and cycling. The community will include a mobility system that encourages all transportation modes and innovative parking solutions.

Furthermore, within the Lakeview Waterfront Major Node Character Area, the lands adjacent to Lakeshore Road East, including the Site, will become part of a higher-order transit corridor and transit-oriented community, once the enhanced transit route planned along the Lakeshore Road East is complete.

2.3.1.3 City of Mississauga Official Plan: Official Plan Amendment (OPA) 125

Official Plan Amendment (OPA) 125 to the Mississauga Official Plan was enacted and passed on November 10, 2021, through By-law 0231-2021. The purpose of OPA 125 was to revise policies pertaining to the Lakeview Waterfront Major Node Character Area reflecting planning associated with the lands to the south and east of the Site, as outlined in **Section 2.3.2**. Key within OPA 125, was a revised block structure (see **Exhibit 1** below) and a revised planned road network (see **Exhibit 2** below), notably including a southward extension of Ogden Avenue (Street F) into the Rangeview Lands and further south).

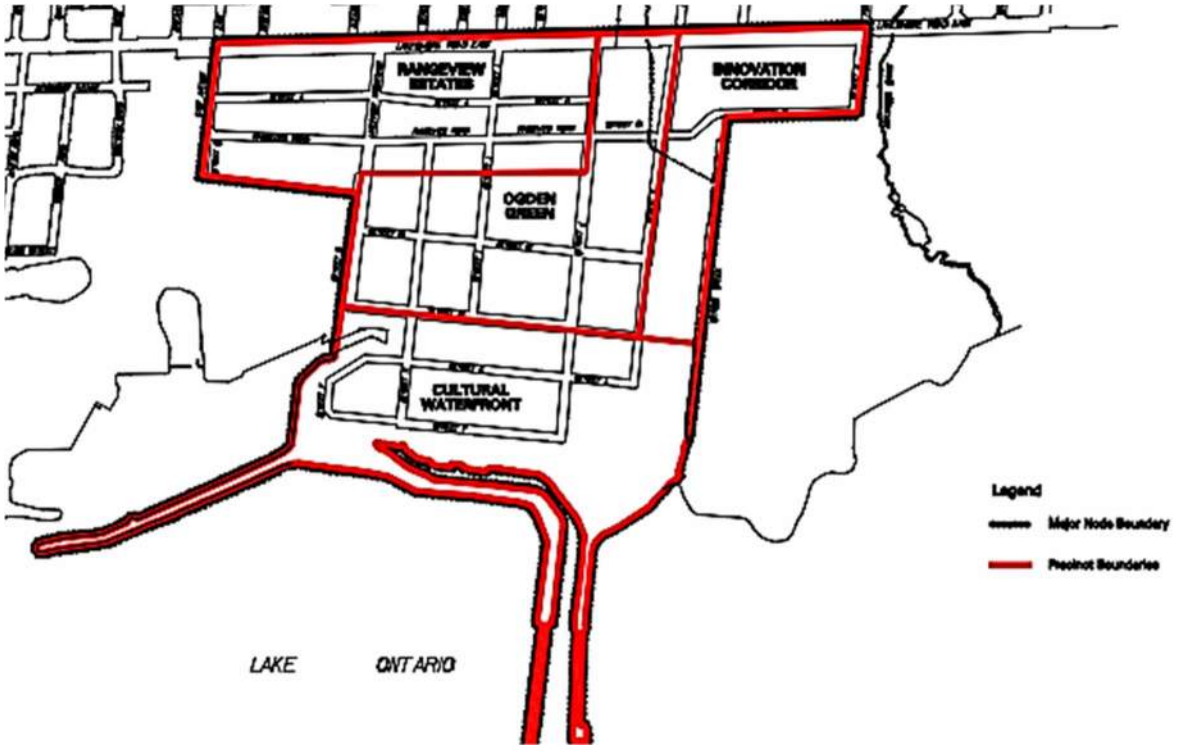


EXHIBIT 1: LAKEVIEW WATERFRONT MAJOR NODE CHARACTER AREA PRECINCTS (CITY OF MISSISSAUGA OFFICIAL PLAN: MAP 13-3-2)

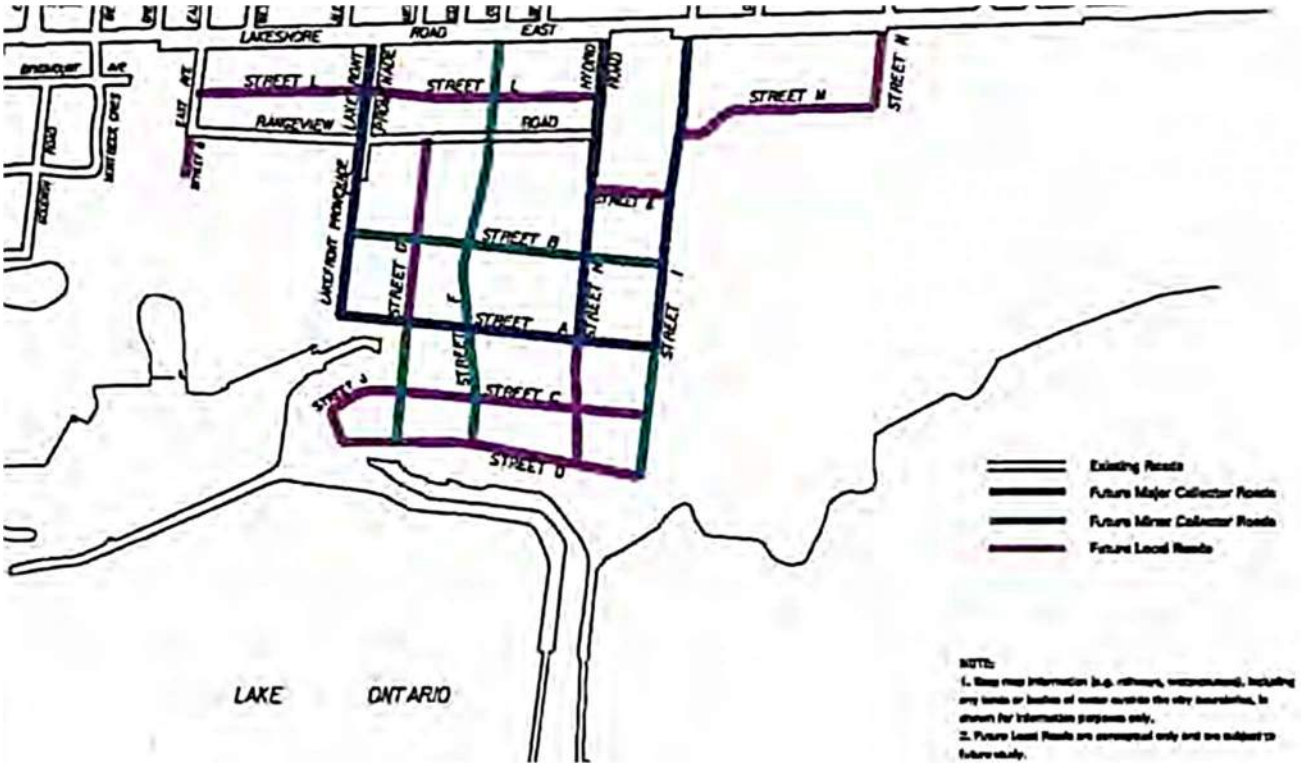


EXHIBIT 2: LAKEVIEW WATERFRONT MAJOR NODE CHARACTER AREA FUTURE ROADS (CITY OF MISSISSAUGA OFFICIAL PLAN: SECTION 13.3, FIGURE 4)

Conditions of Approval were provided within OPA 125, that pertain to the area street network and other improvements, that will be necessary to accommodate the planned development of both Lakeview Village and Rangeview, and are listed as follows:

> *42.0 The applicant/owner shall make satisfactory arrangements with the Region of Peel and City of Mississauga for mitigation measures and external road improvements as described in the Transportation Considerations Report, including all addendums as prepared by The Municipal Infrastructure Group Ltd. to support full build-out of the proposed development. The mitigation measures prior to full build-out are as follows:*
>
> *a. Construction of westbound right-turn lane at Cawthra Road and Lakeshore Road East;*
> *b. Construction of westbound right-turn lane at Dixie Road and Lakeshore Road East;*
> *c. Construction of eastbound right-turn lane at Lakefront Promenade and Lakeshore Road East;*
> *d. Northbound lanes reconfigured at Lakefront Promenade and Lakeshore Road East to include a dedicated left-turn lane and share through/right lane;*
> *e. Construction of eastbound right-turn lane at Hydro Road and Lakeshore Road East;*
> *f. Northbound lanes reconfigured at Hydro Road and Lakeshore Road East to include a dedicated left-turn lane and a shared left/through/right lane;*
> *g. Signalization of Hydro Road and Lakeshore Road East intersection, as per Lakeshore Connecting Communities BRT roll plan drawings.*
>
> *Further considerations may include:*
>
> *h. Ogden Avenue and Haig Boulevard road extensions, and the implementation of the Lakeshore Connecting Communities Bus Rapid Transit (BRT) being completed;*
> *i. Construction of eastbound right-turn lane at Haig Boulevard and Lakeshore Road East;*
> *j. Northbound lanes at Ogden Avenue and Lakeshore Road East configured to include a dedicated left-turn lane and a shared through/right lane;*
> *k. Northbound lanes at Haig Boulevard and Lakeshore Road East configured to include a dedicated left-turn lane and a shared through/right lane; and,*
> *l. Southbound lanes reconfigured at Dixie Road and Lakeshore Road East to include a dedicated right-turn lane and a shared left/through lane.*

The comprehensive traffic analysis for the proposed development (**Section 7.0** of this report) of the Rangeview Lands, has assumed the completion of the mitigation measures included within the Conditions of Approval as part of future scenarios.

2.3.1.4 Lakeshore Connecting Communities Transportation Master Plan (TMP)

The Lakeshore Connecting Communities Transportation Master Plan (TMP), endorsed by City Council in June 2019, sets out a long-term vision for transit and corridor improvements along Lakeshore Road East from 2020 to 2041 that will support waterfront development. The TMP envisions the Lakeshore Road East corridor as an area that supports all modes of transportation, connects people to places, and moves goods to market.

Of the transit network alternatives considered in the TMP, the preferred transit solution for the 2041 horizon year is express bus / bus rapid transit (BRT) along the extent of Lakeshore Road East in Mississauga; more

detail is provided within **Section 3.2.2**. In addition to provisions for rapid transit, continuous separated/protected bike lanes and sidewalks on both sides of the street are planned through the extent of the route. In January 2021, it was announced that the City of Mississauga would receive federal and provincial funding for transit infrastructure through the Investing in Canada Infrastructure Program (ICIP) to fund projects including the Lakeshore BRT. At this time, completion of the Lakeshore BRT is targeted for 2027.

2.3.2 Lakeview Village

Lakeview Community Partners Limited together with the City, the Region, relevant external agencies, and the community undertook a multi-year process of creating the Lakeview Waterfront Development Master Plan, applicable to the lands (Lakeview Village) immediately south and east of Rangeview, which culminated with Council's endorsement of the Plan on November 6, 2019. Plan of subdivision (illustrated in **Exhibit 3**), rezoning and Official Plan Amendment (OPA) applications were all submitted and have since been approved; By-law 0119-2022 was passed, amending City of Mississauga Zoning By-law 0225-2007, but remains under appeal at the time of writing of this report. As described above, OPA 89 and OPA 125 include Lakeview Village. It is important to note that in May 2023, **a Ministerial Zoning Order (MZO) was approved that permits the development of 16,000 residential units on Lakeview.**

Lakeview Village is being planned as a mixed-use development. The following development statistics have been approved to date:

- 8,050 to 16,000 dwelling units (inclusive of low-rise, mid-rise, and high-rise multifamily housing)
- 191 hotel rooms
- 435,856 ft^2 recreational community centre GFA
- 745,316 ft^2 office GFA
- 745,316 ft^2 research & development centre GFA
- 202,718 ft^2 retail GFA (38,793 ft^2 retail GFA is considered to be ancillary)

From a transportation perspective, the development of Lakeview Village is inter-related with the proposed redevelopment of the Rangeview Site. As illustrated in the Plan of Subdivision (**Exhibit 3**), much of the street network is shared between the two sites, notably including existing and planned Major and Minor Collector Roads (i.e. Lakefront Promenade, the planned Ogden Avenue extension and Hydro Road).

The planned street network for both Rangeview and Lakeview Village will provide north-south connections to Lakeshore Road East, as well as key east-west connections across both sites. In addition to the shared road network, the existing residential development unit count permissions for Rangeview and Lakeview Village were jointly outlined in OPA 89 and updated in OPA 125, as follows:

- Rangeview (referred to as Rangeview Estates): 3,700 units.
- Lakeview Village (referred to as Ogden Green, Cultural Waterfront): 8,050 units.

The Lakeview Waterfront Major Node Character Area, inclusive of Rangeview and Lakeview Village, is currently permitted to include a total of 11,750 residential units. With the Lakeview MZO, a total of 16,000 residential units are now approved on the Lakeview site.

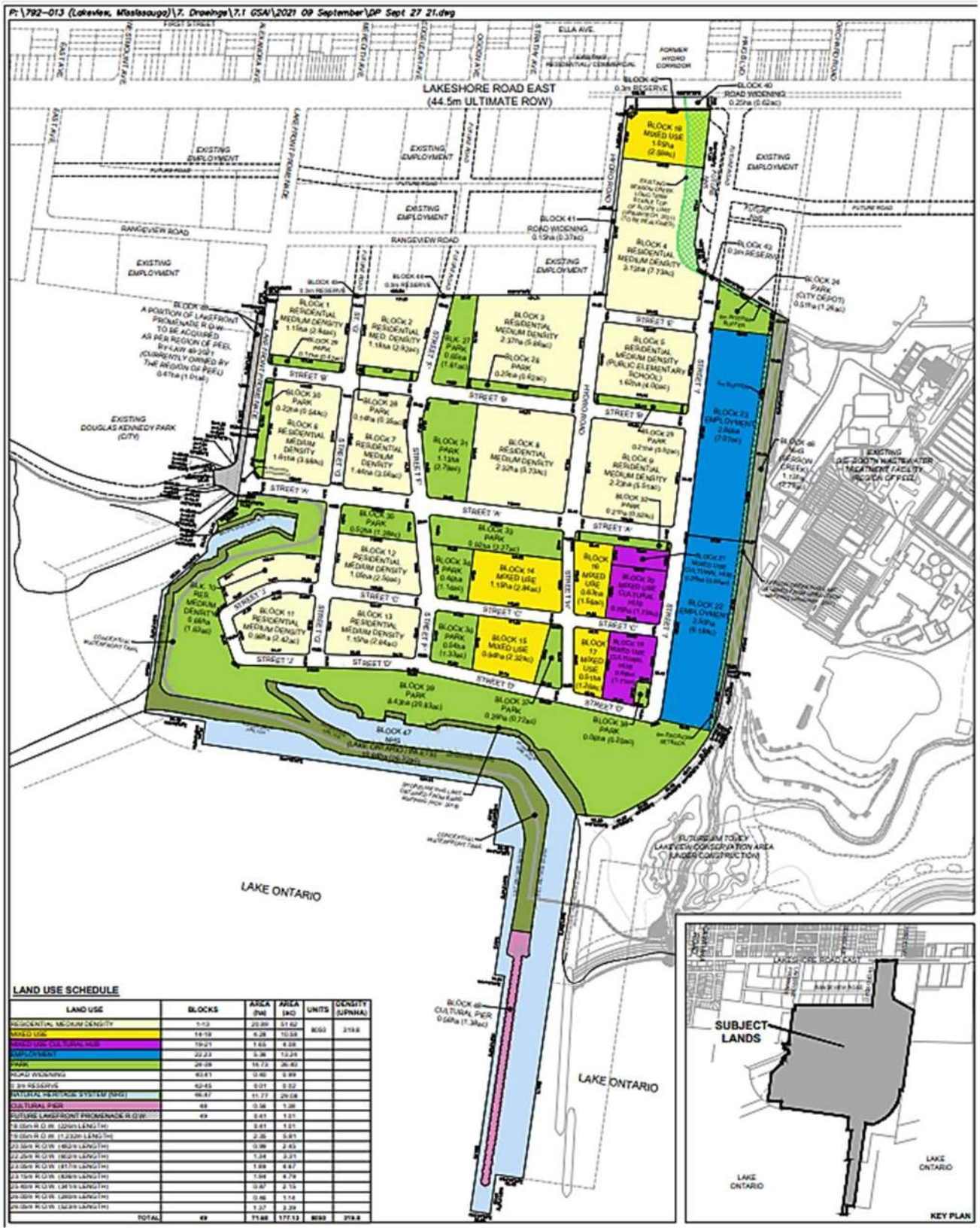


EXHIBIT 3: LAKESHORE LANDS DRAFT PLAN OF SUBDIVISION (LAKEVIEW COMMUNITY PARTNERS LIMITED / GLEN SCHNARR & ASSOCIATES INC. – SEPTEMBER 27, 2021)

By-law 0119-2022

Within Site-specific By-law 0119-2022, a number of Holding provisions were imposed on Lakeview Village as part of the rezoning approval which restricts the use of the lands (i.e. maximum residential development of 8,050 dwelling units) until relevant conditions are satisfied. Relevant to transportation conditions, the following are including:

- H2: maximum of 6,800 dwelling units are permitted until such time as *"submission of a transportation study and confirmation that the necessary traffic infrastructure improvements have been secured to adequately accommodate increased traffic volumes to the satisfaction of the Region of Peel ("Region") and the City."*
- H3: maximum of 7,500 dwelling units are permitted until such time as *"submission of a transportation study and confirmation that the necessary traffic infrastructure improvements have been constructed to adequately accommodate increased traffic volumes to the satisfaction of the Region and the City."*
- H6: maximum of 92,900 m^2 non-residential GFA are permitted until such time as *"submission of a satisfactory transportation study and confirmation that the necessary traffic infrastructure improvements have been constructed to adequately accommodate increased traffic volumes all to the satisfaction of the Region and the City."*

It is noted that 92,900 m^2 non-residential GFA is nearly equivalent to 1,000,000 ft^2 non-residential GFA.

3.0 TRANSPORTATION CONTEXT

3.1 AREA STREET NETWORK

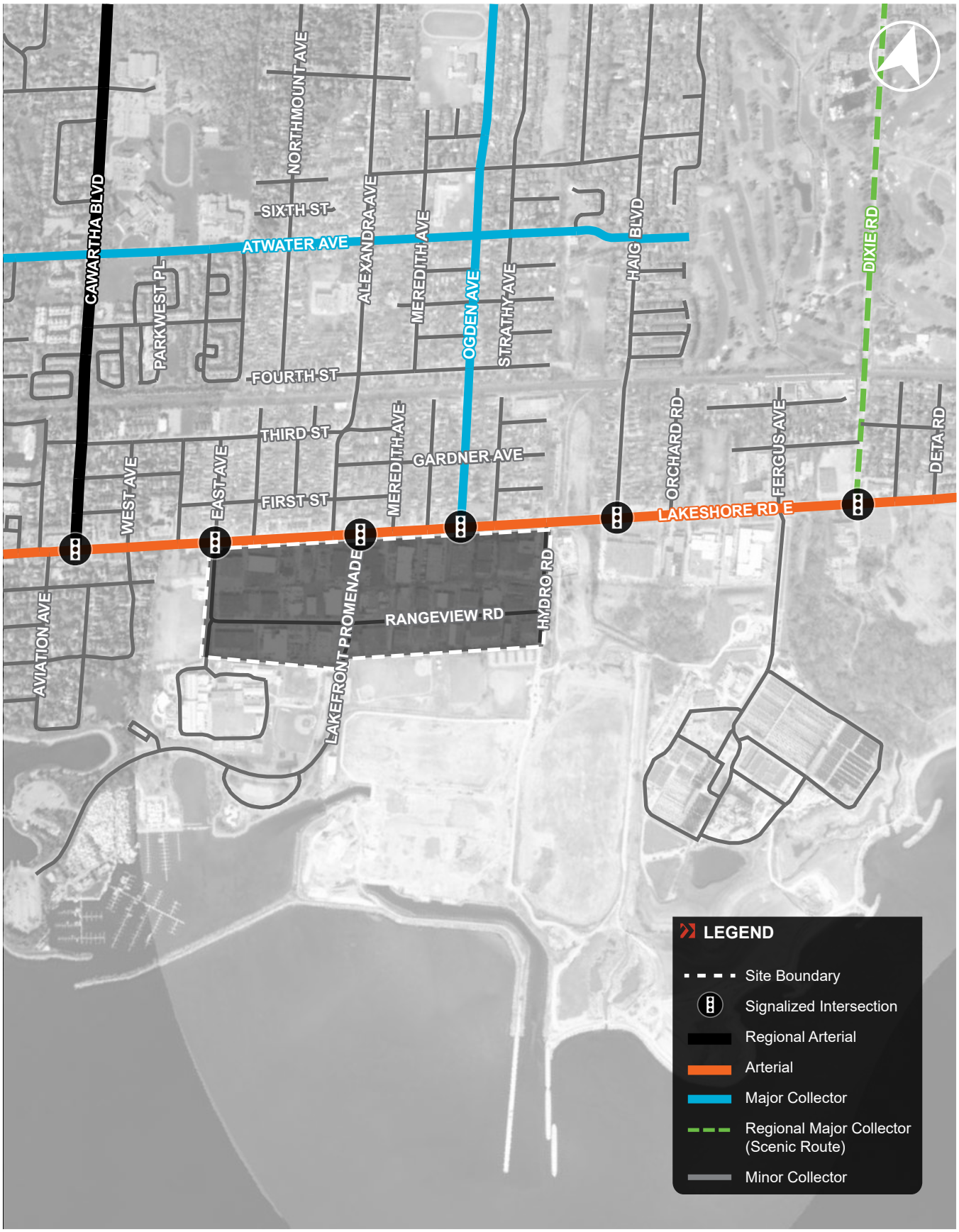
3.1.1 Existing Area Street Network

The Site is well-located relative to roadway connections provided across the City, Peel Region, and the Greater Toronto Area (GTA). The public street network surrounding the Site includes a hierarchy of road connections ranging from arterial roads to local roads. The Site is also located just over 2.0 kilometres from the Queen Elizabeth Way (QEW).

The existing area road network is illustrated in **Figure 4** and a detailed description of the area road network is provided in **Table 2**. Additionally, various local roads north of Lakeshore Road East, provide connections adjacent to the Site (i.e. to Lakeshore Road East). These local roads include the north-south roads, Westmount Avenue, Alexandra Avenue, Meredith Avenue, Edgeleigh Avenue and Strathy Avenue.

TABLE 2 EXISTING AREA STREET NETWORK

Type		Street Name	Description
Regional Arterial	N-S	Cawthra Road	A regional arterial road, generally running in a north-south direction from Lakeshore Road East in the south to the Queen Elizabeth Way (QEW) / Highway 403 interchange in the north. Near the Site area, the roadway has a four-lane cross section, two lanes in each direction, and left turn lanes at major intersections. The posted speed limit is 50 km/h.
		Dixie Road	A regional arterial road, generally running in a north-south direction from Lakeshore Road East in the south, providing a connection to the Queen Elizabeth Way (QEW), after which it continues north beyond the City limits. Near the Site area, the roadway has a three-lane cross section, one lane in each direction, including a centre two-way left turn lane. The posted speed limit is 50 km/h.
Major Arterial	E-W	Lakeshore Road East	A major arterial road, generally running in an east-west direction from Front Street in the west (where it continues west as Lakeshore Road West) to the City limits in the east (where it continues as Lake Shore Boulevard through the City of Toronto). Near the Site area, the roadway has a five-lane cross section, two lanes in each direction, including a centre two-way left turn lane. There are left turn lanes at major intersection and the posted speed limit is 50 km/h.
Major Collector	N-S	Ogden Avenue	A major collector road, generally running in a north-south direction from Lakeshore Road East in the south to South Service Road in the north. Near the Site area, the roadway has a two-lane cross section, one lane in each direction. The assumed speed limit is 50 km/h.
Minor Collector	N-S	Haig Boulevard	A minor collector road, generally running in a north-south direction from Lakeshore Road East in the south to South Service Road in the north. Near the Site area, the roadway has a two-lane cross section with one lane in each direction. The assumed speed limit is 50 km/h.
Local Road	N-S	Hydro Road	A local road, generally running in a north-south direction from Lakeshore Road East in the north to Lakeview Promenade (i.e. Lake Ontario) in the south. The roadway has a two-lane cross section with one lane in each direction. The assumed speed limit is 50 km/h.
		East Avenue	A local road, generally running in a north-south direction from Third Street in the north to the Lakeview Water Treatment Plant in the south. The roadway has a two-lane cross section with one lane in each direction. The assumed speed limit is 50 km/h.
		Lakefront Promenade	A local road, generally running in a north-south direction from Lakeshore Road East in the north to the Lakefront Promenade Marina in the south. The roadway has a two-lane cross section with one lane in each direction. The assumed speed limit is 50 km/h, however, south of Rangeview Road, the speed limit reduces to 25 km/h.
	E-W	Rangeview Road	A local road, generally running in an east-west direction from East Avenue in the west to Hydro Road in the east. The roadway has a two-lane cross section with one lane in each direction. The assumed speed limit is 50 km/h.



P:\80\61\01\Graphics\2023\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 4 EXISTING AREA ROAD NETWORK

3.1.2 Ultimate Planned Street Network

As outlined in **Section 2.3**, the advancement of the Lakeview Village development has resulted in planned changes to the local street network, including within the Rangeview Site, that are reflected in OPA 125. As part of the proposed OPA, details pertaining to the street network within the Rangeview Site are being advanced. Further, the approved Lakeshore Connecting Communities TMP includes planned changes to Lakeshore Road East, including within the vicinity of the Site, which have been considered as part of the comprehensive traffic analysis for this report. **Figure 5** illustrates the planned street network, including planned and proposed changes derived from each of the three above-noted processes.

3.1.2.1 Lakeshore Connecting Communities Transportation Master Plan

As outlined in **Section 2.3**, the Lakeshore Connecting Communities TMP, a Bus Rapid Transit (BRT) facility with a dedicated right-of-way, is planned with a completion date of 2027 on Lakeshore Road East, in the vicinity of the Site. Exhibit 5 includes a roll plan excerpt for the right-of-way adjacent to the Site.

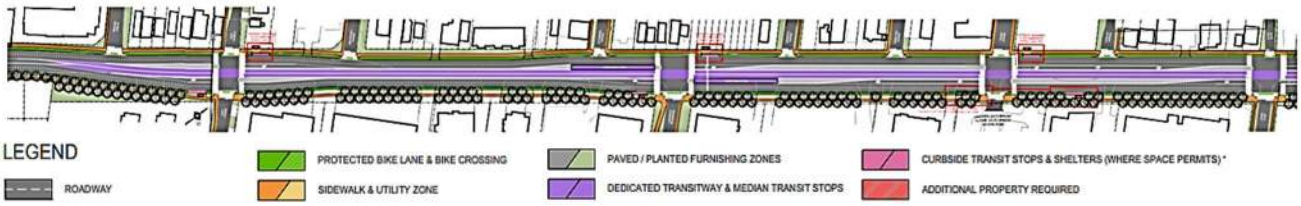


EXHIBIT 4: LAKESHORE ROAD EAST – ROLL PLAN EXCERPT (LAKESHORE CONNECTING COMMUNITIES TRANSPORTATION MASTER PLAN: CITY OF MISSISSAUGA / HDR)

Key elements of the planned changes to the Lakeshore Road East right-of-way include:

- Two vehicle travel lanes in each direction, including left-turn lanes at signalized intersections (East Avenue, Lakefront Promenade, Ogden Avenue and Hydro Road);
- Minor side streets to have right-in/ right-out access;
- Dedicated bus-only lanes in the centre of the right-of-way;
- Express bus stop located at Lakefront Promenade;
- Protected cycling lanes (both sides) & pedestrian crossings; and
- Sidewalks & paved/planted furnishing zones.

3.1.2.2 Planned Area Street Network: Inspiration Lakeview/ Lakeview Village

As outlined in **Section 2.3**, a new street network is planned for the entirety of the OPA 125 lands, which includes Rangeview and Lakeview Village. Within **Table 3**, details pertaining to the proposed new streets (within Lakeview Village) and adjustments to existing streets are outlined. The names of the proposed streets are listed in **Table 3** as referred to by the Inspiration Lakeview project materials.

Notably, some existing streets are planned to have a modified classification. Lakefront Promenade, north of the planned Street L, is to be converted from a local road to a Major Collector Road. Hydro Road, north of the planned Street L, is to be converted from a local road to a Major Collector Road.

P:\80\6101\Graphics\2024\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 5 FUTURE AREA ROAD NETWORK

TABLE 3 OPA 125/ LAKEVIEW VILLAGE STREET NETWORK DETAILS

Street[1]	Right-of-Way Width (m)[2]	Road Classification	Pavement Width (m)	Dual Cycle Tracks	Sidewalks (2.0m)	Layby Parking
Lakefront Promenade	30.34	Major Collector	6.7	West boulevard	Both sides	--
Street A	26.05	Major Collector (Hydro Road to Street K)	6.7	South boulevard	Both sides	South side
	23.15	Minor Collector (Street I to Hydro Road)	6.7	South boulevard	Both sides	North side
Street B	22.25	Minor Collector	6.6	North boulevard	South side	Both sides
Street C	19.05	Local Road	6.6	--	Both sides	South side
Street D	20.55	Local Road	6.6	South boulevard	North side	North side
Street E	19.05	Local Road	6.6	--	Both sides	South side
Street F (Ogden Avenue	23.05	Minor Collector	6.6	East boulevard	Both sides	East side
Street G	23.05	Minor Collector (Street A to Street D)	6.6	West boulevard	Both sides	East side
	19.05	Local Road (Property Line to Street A)	6.6	--	Both sides	West side
Hydro Road (Street H)	25.4	Major Collector (Lakeshore Road East to Street A)	6.7	East boulevard	Both sides	East side
	18.05	Local Road (south of Street A)	6.6	--	Both sides	East side
Street I	23.15	Minor Collector	6.7	East boulevard	Both sides	West side
Street J	19.05	Local Road (west of Street G)	6.6	--	Both sides	Inside curve

Notes:
1. Refer to **Figure 5** for location of streets.
2. Source: Inspiration Lakeview Village draft plan of subdivision materials (The Municipal Infrastructure Group Ltd.)

3.1.3 Proposed New Street Network (Rangeview Lands)

Within Rangeview, it is proposed to advance upgrades to the local street network that reflect the planned road network contained within OPA 125. Within this section, greater detail is provided pertaining to proposed changes to the local street network within Rangeview. The names of the proposed streets are as identified in OPA 125. **Exhibit 6** illustrates how the planned Rangeview road network will connect to the planned Lakeview Village road network. The functional road plan is also provided in **Appendix D.**

EXHIBIT 5: PLANNED RANGEVIEW ROAD NETWORK CONNECTING TO LAKEVIEW VILLAGE ROAD NETWORK

Key Street Design Objectives

Consideration for all road users:
Enhancements to the existing street network elements, will support the movement for all users (vehicles, pedestrians, cyclists) and be designed in a way to minimize road conflicts and encourage alternative modes of travel and active transportation.

Ease of access:
The new street network will facilitate convenient connections from the proposed development to / from the broader area network. The proposed street design is intended to service and support pedestrian and cycling permeability and maintain vehicle capacity at all times of the day.

Complete Streets:
The improved and proposed roads within the Site have been designed with the policies of "Complete Streets" at the forefront. The City of Mississauga is undertaking the "Changing Lanes" project (scheduled to be complete in 2023) which will update, develop, and implement new tools to ensure that streets are safe and convenient for all users. It will deliver a "Complete Streets" Guide for streets in Mississauga and represent an updated approach to street planning and design for the City.

Conformity with Lakeview Village street design:
Given that many of the streets in the local area located south of Lakeshore Road East are shared between Lakeview Village and the Rangeview, and that the approvals process is substantially advanced for the former, the proposed street network for the latter is proposed to reflect many of the design conditions (e.g. rights-of-

the proposed street network for the latter is proposed to reflect many of the design conditions (e.g. rights-of-way, etc.) planned for Lakeview Village. The objective is for the streets to have a consistent design both in terms of transportation elements and ultimately, urban design.

Intersections south of Lakeshore Road East:
All intersections south of Lakeshore Road East (excluding driveways) are proposed to be unsignalized with all-way stop-control, with all vehicle movements permitted. All street descriptions below and the traffic analysis reflect this condition. As development progresses and updated traffic counts become available, the all-way stop control intersections could be reviewed to determine if any intersection warrants traffic signals. All intersections along the north-south streets between Lakeshore Road East and Rangeview Road could be converted to signalized intersections.

East Avenue

East Avenue is an existing minor collector north-south public street running from Lakeshore Road East in the north to Lakeview Water Treatment Plant in the south. It is the western boundary of Rangeview. The functional plan and proposed cross-section for East Avenue are provided in **Figure 6**.

Cross Section:
East Avenue will have a 23.05 metre right-of-way (ROW) consisting of the following:

- One 3.3 metre travel lane in each direction (6.6 m roadway) and 2.2 metre lay-by on the east side.
- On the east side of the roadway, a 3.0 metre two-way, protected cycle track is provided.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks and 2.5 metre planting zones.
- Appropriate buffers are provided between ROW elements.

Intersections:
East Avenue will have intersections with Lakeshore Road East, the proposed Street L, and Rangeview Road.

- The intersection with Lakeshore Road East retains the existing traffic signal location and will continue to be a signalized intersection with all vehicle movements permitted. The proposed configuration of East Avenue at this intersection will remain similar (i.e. no turning lanes). All pedestrian movements will be facilitated with crosswalks and appropriate connections will be provided between the East Avenue and Lakeshore Road East cycling facilities, to be confirmed as part of the Lakeshore Connecting Communities TMP.
- The intersection with Street L will be unsignalized with all-way stop-control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.
- The intersection with Rangeview Road will be unsignalized with all-way stop-control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks and appropriate connections will be provided between the East Avenue and Rangeview Road cycling facilities.

Lakefront Promenade

Lakefront Promenade is an existing north-south public street running from Lakeshore Road East in the north to the Lakefront Promenade Marina in the south. The functional plan and proposed cross-section for Lakefront Promenade are provided in **Figure 7**.

Cross-Section:
Lakefront Promenade will be a major collector with a 30.45 metre right-of-way (ROW) south of Lakefront Promenade consisting of the following:

- One 3.35 metre travel lane (6.7 metre roadway) in each direction.
- On the west side of the roadway, a 3.0 metre two-way, protected cycle track is provided.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks with planting zones ranging from 2.9 to 9.08 metres.
- Appropriate buffers are provided between ROW elements.

Intersections:
Lakefront Promenade will have intersections with Lakeshore Road East, the proposed Street L, and Rangeview Road.

- The intersection with Lakeshore Road East retains the existing traffic signal location and will continue to be a signalized intersection with all vehicle movements permitted. The roadway will be expanded at this intersection with dedicated left and right-turn lanes. All pedestrian movements will be facilitated with crosswalks and appropriate connections will be provided between the Lakefront Promenade and Lakeshore Road East cycling facilities, to be confirmed as part of the Lakeshore Connecting Communities TMP.
- The intersection with Street L will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.
- The intersection with Rangeview Road will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks and appropriate connection will be provided between the Lakefront Promenade and Rangeview Road cycling facilities.

Street F (Ogden Avenue Extension from Lakeshore Road East to Rangeview Road)

Street F is the proposed southerly minor collector extension of Ogden Avenue, from north of Lakeshore Road East, which will eventually connect to the property line, just south of Rangeview Road. The functional plan and proposed cross-section for Ogden Avenue are provided in **Figure 8**.

Cross Section:
Ogden Avenue will have a 23.05 metre right-of-way (ROW) south of Lakeshore Road East consisting of the following:

- One 3.3 metre travel lane in each direction and 2.2 metre layby on the east side. In total, where layby is provided, an 8.8 metre roadway will be provided.
- On the east side of the roadway, a 3.0 metre two-way, protected cycle track is provided.

- The boulevard on each side of the roadway will contain 2.0 metre sidewalks and 2.5 metre planting zones.
- Appropriate buffers are provided between ROW elements.

Intersections:
Ogden Avenue as a minor collector will have intersections with Lakeshore Road East, the proposed Street L, and Rangeview Road.

- The intersection with Lakeshore Road East retains the existing traffic signal location (currently a driveway for 1036 Lakeshore Road East on the south side) and will continue to be a signalized intersection with all vehicle movements permitted. The roadway will be expanded at this intersection with dedicated left-turn, through and right-turn lanes. All pedestrian movements will be facilitated with crosswalks and appropriate connections will be provided between the Ogden Avenue and Lakeshore Road East cycling facilities, to be confirmed as part of the Lakeshore Connecting Communities TMP.
- The intersection with Street L will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.
- The intersection with Rangeview Road will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks and appropriate connection will be provided between the Ogden Avenue and Rangeview Road cycling facilities.

Hydro Road

Hydro Road is an existing north-south public street running from Lakeshore Road East in the north to the Waterfront Trail in the south. The functional plan and proposed cross-section for Hydro Road are provided in **Figure 9**.

Cross Section:
Hydro Road as a major collector will have a 25.4 metre right-of-way (ROW) consisting of the following:

- One 3.35 metre travel lane in each direction (6.7 metre roadway) and 2.2 metre layby (which will serve as a bio-retention area) on the east side.
- On the east side of the roadway, a 3.0 metre two-way, protected cycle track is provided.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks. On the west side, there will be a 5.0 metre bioswale planting zone and on the east side, there will be a 2.5 metre planting zone.
- Appropriate buffers are provided between ROW elements.

Intersections:
Hydro Road will have intersections with Lakeshore Road East, the proposed Street L, and Rangeview Road.

- The intersection with Lakeshore Road East is unsignalized but is proposed to be a signalized intersection with all vehicle movements permitted. The proposed configuration of Hydro Road at this intersection will remain similar (i.e. no turning lanes). All pedestrian movements will be facilitated with crosswalks and appropriate connections will be provided between the Hydro Road and Lakeshore Road East cycling facilities, to be confirmed as part of the Lakeshore Connecting Communities TMP.

- The intersection with Street L will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.
- The intersection with Rangeview Road will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks and appropriate connection will be provided between the Hydro Road and Rangeview Road cycling facilities.

Street L

Street L is not an existing street. It is proposed to operate in an east-west direction from East Avenue in the west to Hydro Road to the east, to the north of, and parallel to Rangeview Road. The functional plan and proposed cross-section for Street L are provided in **Figure 10**.

Cross Section:
Street L will have a 19.05 metre right-of-way (ROW) consisting of the following:

- One 3.75 metre travel lane in each direction. In total, a 7.5 metre roadway will be provided.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks and tree planting zones ranging from 2.5 to 4.05 metres.
- Appropriate buffers are provided between ROW elements.

Intersections:
Street L will have intersections with East Avenue, Lakefront Promenade, Ogden Avenue and Hydro Road. All intersections with Street L will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.

Rangeview Road

Rangeview Road is an existing east-west public street running from East Avenue in the west to Hydro Road to the east. The functional plan and proposed cross-section for Rangeview Road are provided in **Figure 11**.

Cross Section:
Rangeview Road as a minor collector will have a 22.25 metre right-of-way (ROW) consisting of the following:

- One 3.30 metre travel lane in each direction (6.6 metre roadway) and 2.2 metre layby on the south side (which will serve as a bio-retention area).
- On the north side of the roadway, a 3.0 metre two-way, protected cycle track is provided.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks and 2.5 metre planting zones.
- Appropriate buffers are provided between ROW elements.

Intersections:
Rangeview Road will have intersections with East Avenue, Lakefront Promenade, Ogden Avenue and Hydro Road. All intersections with Rangeview Road will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks and appropriate connection will be provided between the Rangeview Road and north-south street cycling facilities.

Street G

Street G is not an existing street. It is proposed to operate in a north-south direction from Rangeview Road in the north to the south (within Lakeview Village) near Lake Ontario. Notably, Street G is named Street H within OPA 125. The functional plan and proposed cross-section for Street G are provided in **Figure 12**.

Cross Section:
Street G as a local road will have a 19.05m right-of-way (ROW) consisting of the following:

- One 3.3 metre travel lane in each direction (6.6 metre roadway) and 2.2 metre layby on the west side.
- The boulevard on each side of the roadway will contain 2.0 metre sidewalks and 2.5 metre planting zones.
- Appropriate buffers are provided between ROW elements.

Intersection:
Street G will have an intersection within Rangeview at Rangeview Road (it has other intersections within Lakeview Village). The intersection with Rangeview Road will be unsignalized with all-way stop control, with all vehicle movements permitted. All pedestrian movements will be facilitated with crosswalks.

3.1.3.1 Summary of Rangeview Proposed Street Network

A summary of the proposed street network for Rangeview is provided in **Table 4**.

TABLE 4 PROPOSED RANGEVIEW STREET NETWORK – DESIGN SUMMARY

Street[1]	Right-of-Way Width (m)	Road Classification	Pavement Width (m)	Dual Cycle Tracks	Sidewalks (2.0m)	Layby Parking
East Avenue	23.05	Local	6.6	East boulevard	Both sides	East side
Lakefront Promenade	30.45	Major Collector	6.7	West boulevard	Both sides	--
Street F (Ogden Avenue Extension from Lakeshore Road East to the property line, just south of Rangeview Road)	23.05	Minor Collector	6.6	East boulevard	Both sides	East side
Hydro Road	25.40	Major Collector	6.7	East boulevard	Both sides	East side
Street L	19.05	Local	7.5	--	Both sides	--
Rangeview Road	22.25	Local	6.6	North boulevard	Both sides	South side
Street G	19.05	Local	6.6	--	Both sides	West side

Notes:
1. Refer to **Figure 5** and **Appendix D** for location of streets.

3.1.4 Interim Phasing for Access to Properties along Lakeshore Road East

As Rangeview Estates is comprised of several landowners, the phasing has been designed to allow each existing parcel to develop independently at different periods of the development approvals process. It is particularly important to establish a functional road network where the proposed interim phase creates a partial road network that provides each landowner with temporary access to their property so that development can occur without impacts to an adjacent parcel. This approach is key for those parcels that are located mid-block along Lakeshore Road East.

Access to individual properties would be accommodated through a combination of consolidated existing driveways on Lakeshore Road East, East Avenue, Street L and internal “hammerhead” turns. An illustration of the proposed temporary access for properties along Lakeshore Road East is provided in **Appendix E.**

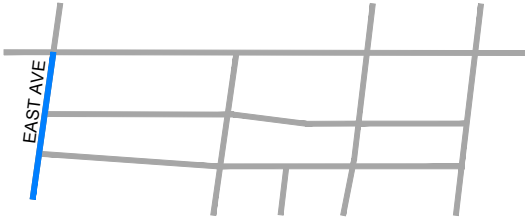
When an individual parcel plans to develop, the public road and/or parkland associated with that parcel, as defined in the Rangeview DMP, will be conveyed in order to ensure that the overall vision demonstrated in the Rangeview DMP can be achieved. Interim access configurations will be considered on a site-by-site basis where needed in cases where the full road network cannot be delivered as part of a project.

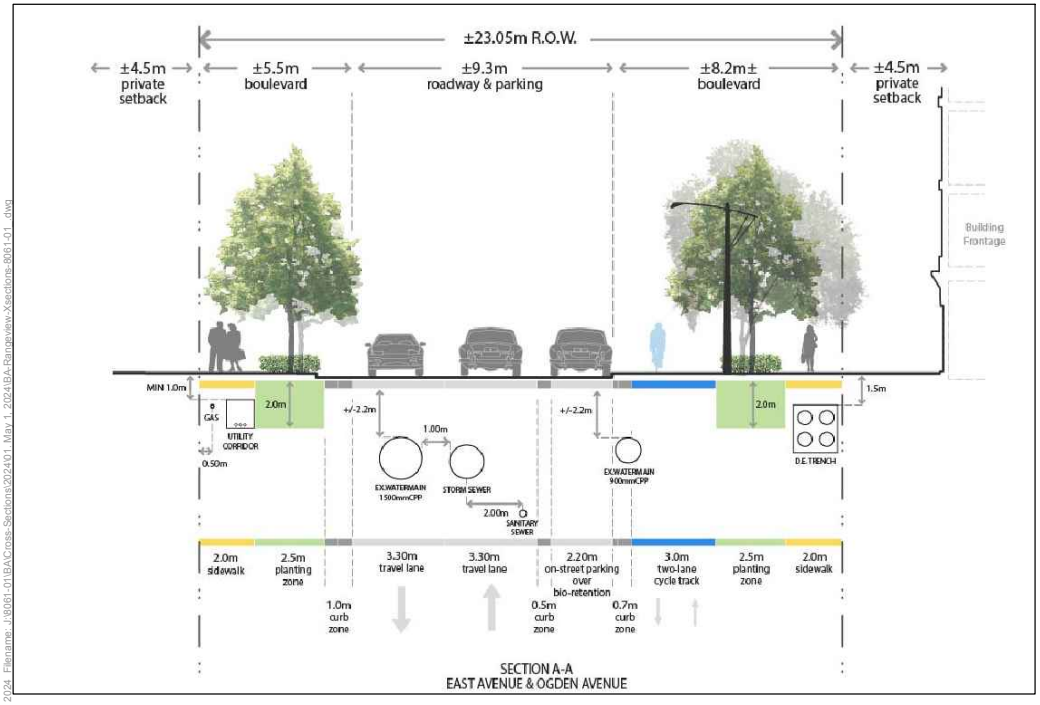
The existing roads within Rangeview Estates (East Avenue, Rangeview Road, Lakefront Promenade and Hydro Road) will be improved over time as part of servicing-related road reconstruction, with interim cross-sections considered in cases where the ultimate right-of-way has not yet been acquired. Interim cross-sections will include consideration for the public realm, pedestrians, cycling facilities and traffic operations improvements.

Until the entire ultimate Street L is constructed, temporary property access is proposed for the following properties as noted below:

- 830 & 832 Lakeshore – new driveway access on the east side of East Avenue;
- 848 to 872 & 880 Lakeshore – consolidated existing driveway on Lakeshore Road East connects to Street L with connection to the internal driveway and hammerhead turn;
- 974 & 1000 to 1006 Lakeshore – consolidated existing driveway on Lakeshore Road East connects to Street L with connection to the internal driveway and hammerhead turn; and 1050 Lakeshore – consolidated existing driveway on Lakeshore Road East connects to Street L with connection to the internal driveway and hammerhead turn.
- 1050 Lakeshore – consolidated existing driveway on Lakeshore Road East connects to Street L with connection to the internal driveway and hammerhead turn.

Driveways constructed onto Lakeshore Road East would be shared and designed for future conversion to pedestrian walkways, with the driveways onto Lakeshore Road East closed once access via Street L to a north-south street is available. Access to ramps, loading areas and drop-offs would be from the partially constructed Street L, at the rear of the properties. Access for each development will be confirmed through future development applications.





23.05m MINOR COLLECTOR

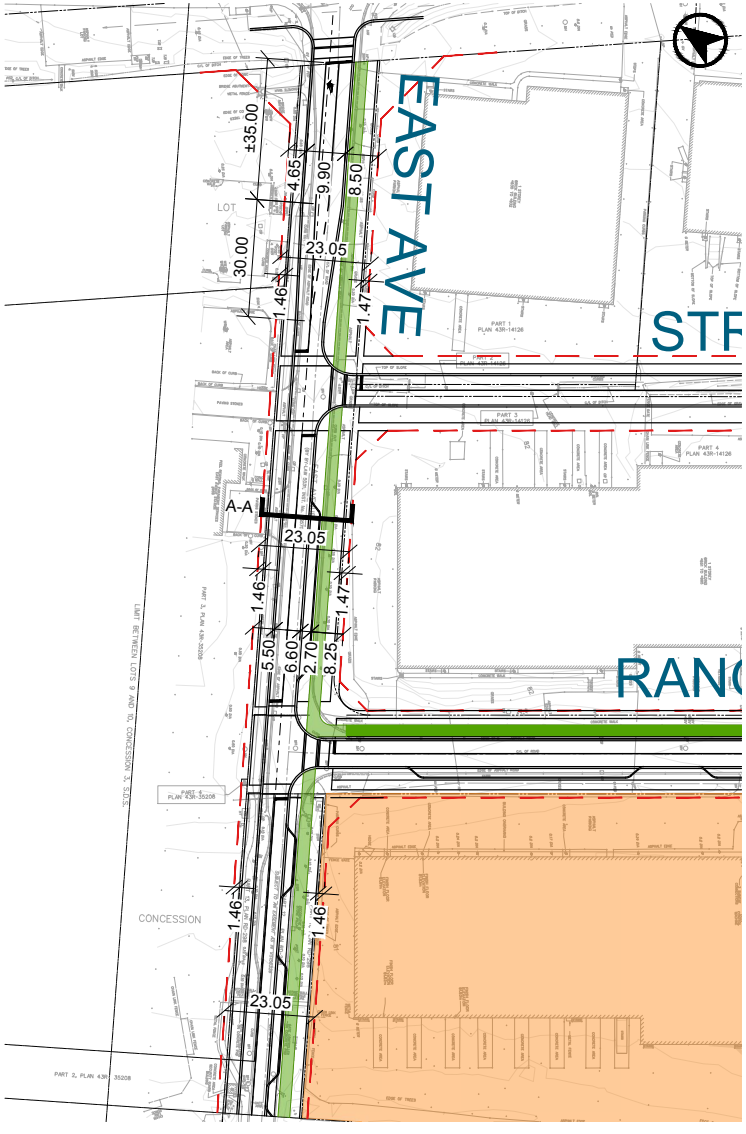
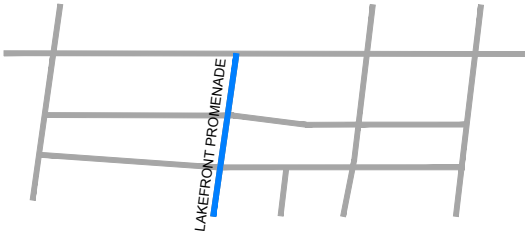
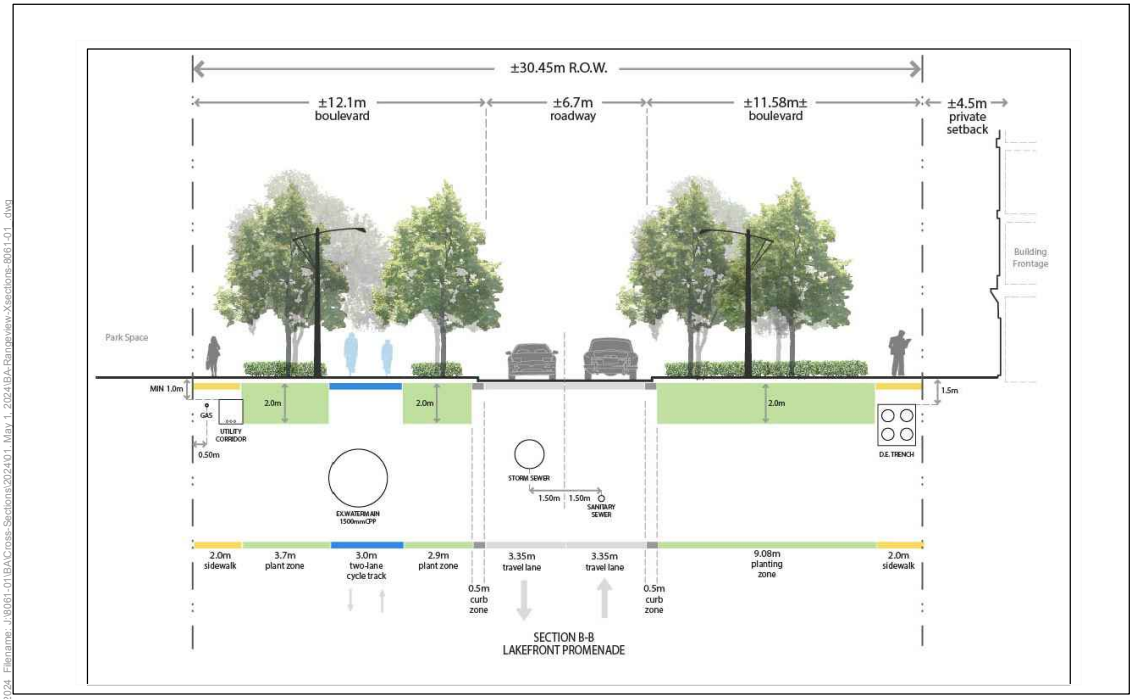
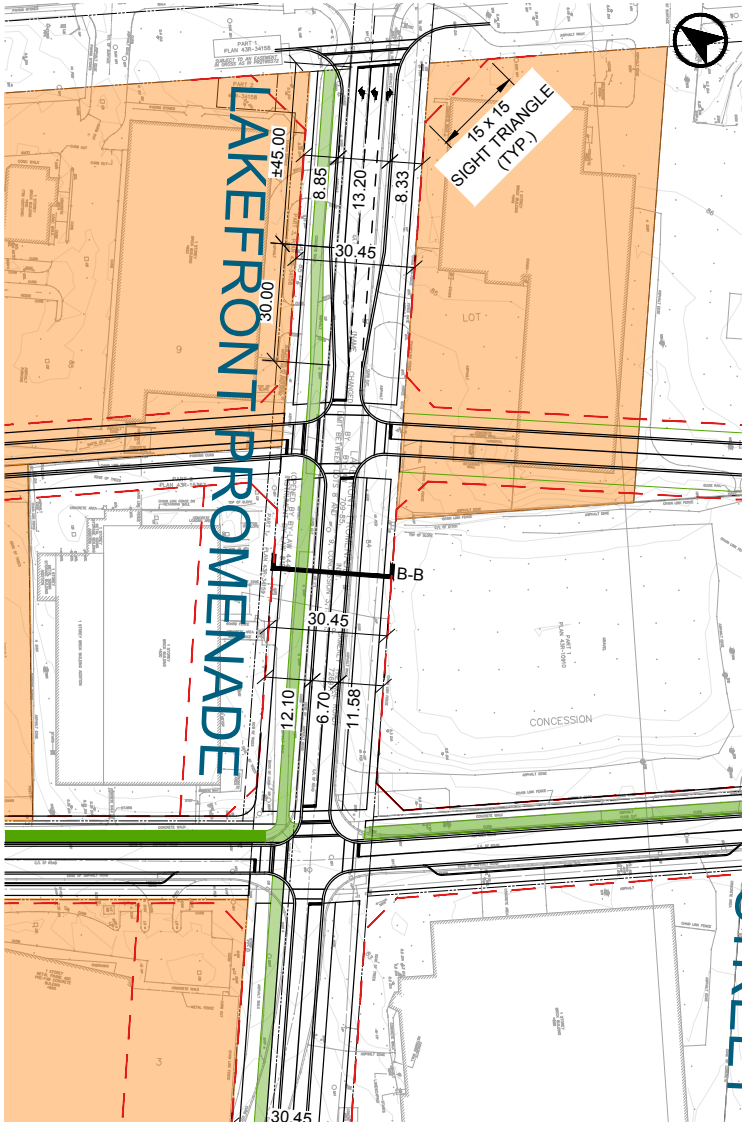


FIGURE 6 EAST AVENUE - FUNCTIONAL PLAN & CROSS-SECTIONS



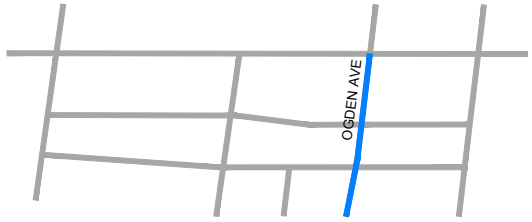


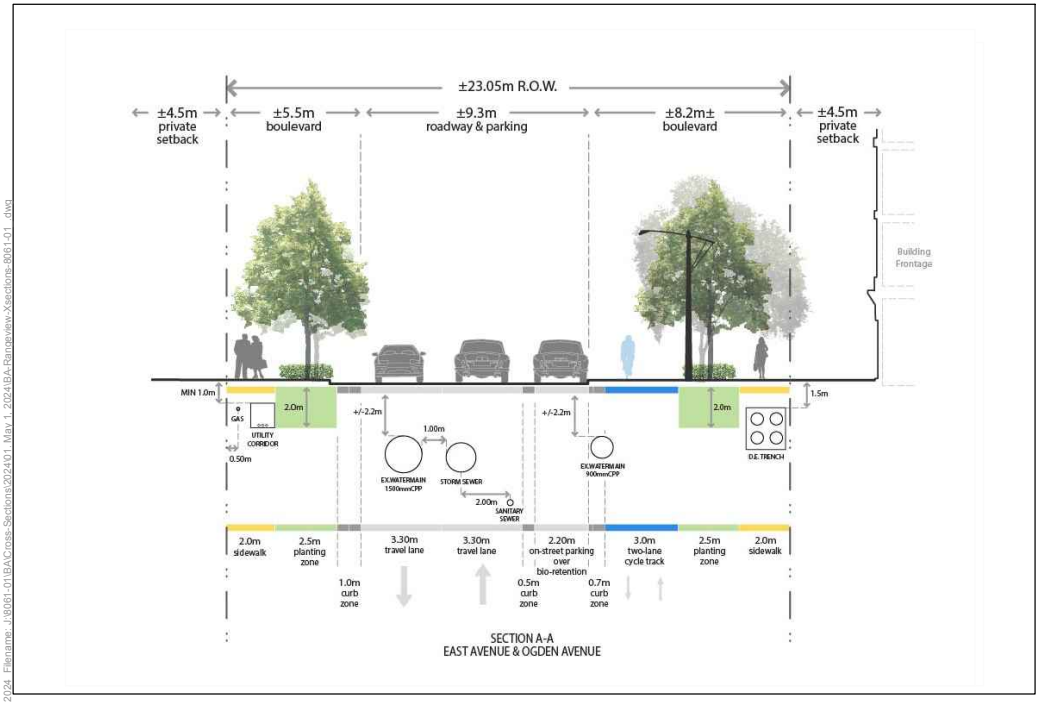
30.45m MAJOR COLLECTOR



Date Plotted: May 1, 2024 Filename: J:\8061-01\BA\Cross-Sections\2024\01 May 1, 2024\BA-Rangeview-Xsections-8061-01 - dwg

FIGURE 7 LAKEFRONT PROMENADE - FUNCTIONAL PLAN & CROSS-SECTIONS





23.05m MINOR COLLECTOR

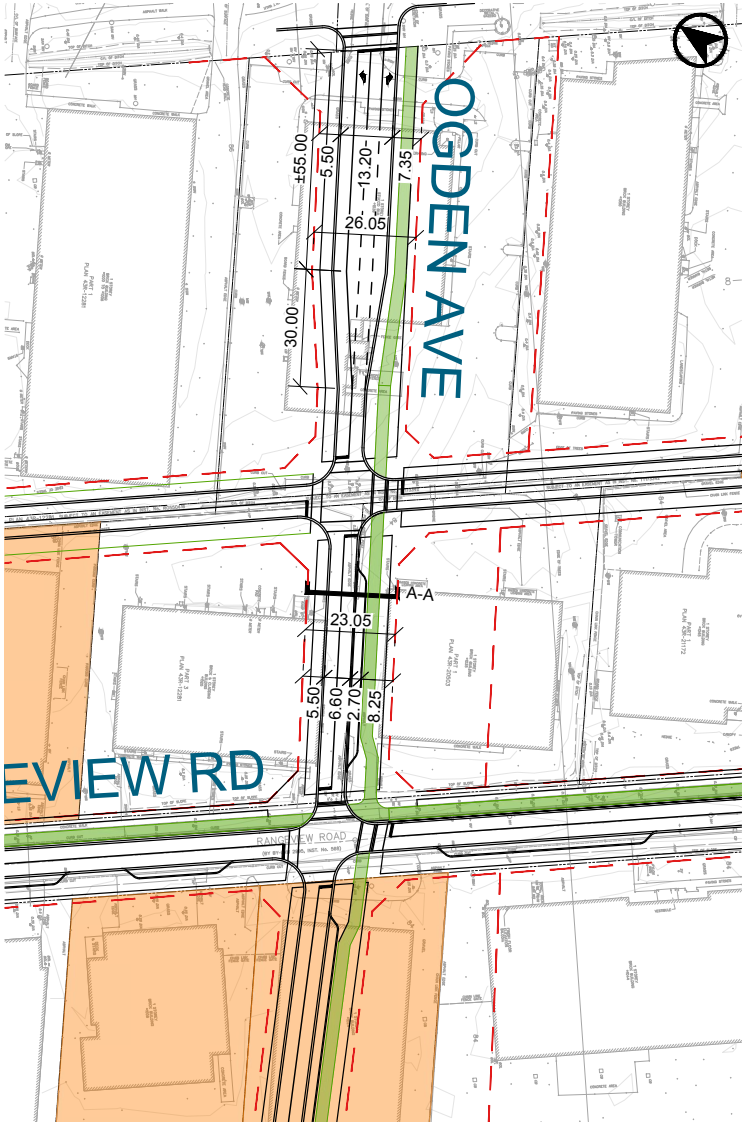
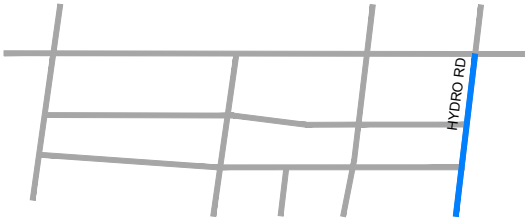
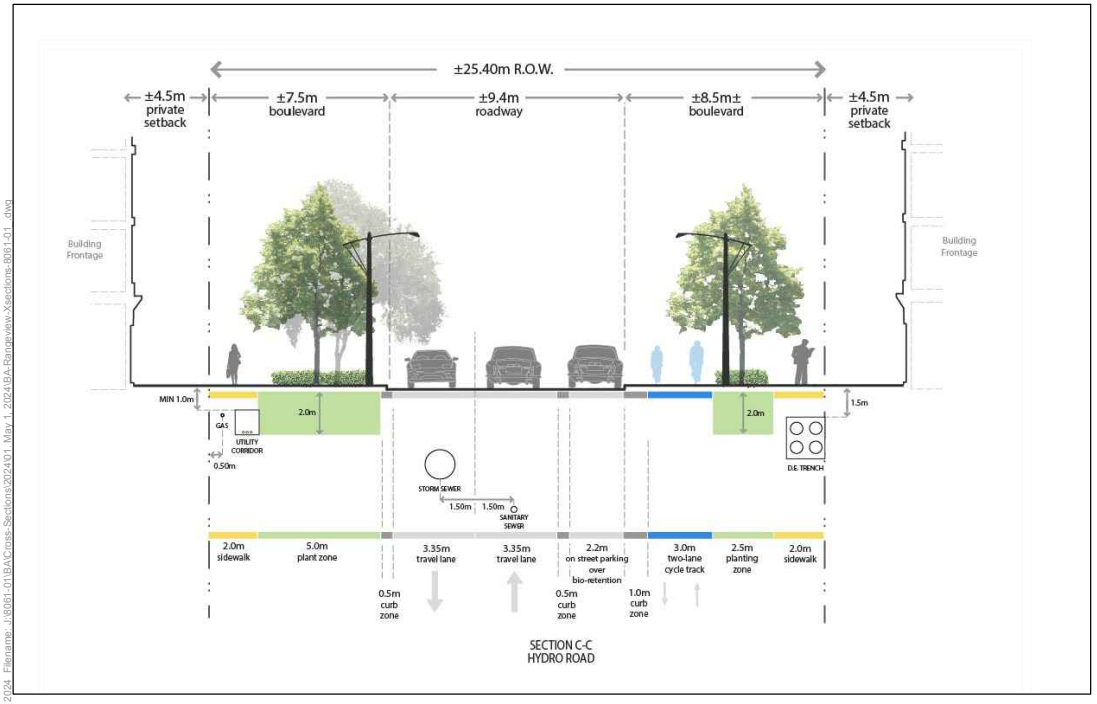


FIGURE 8 PROPOSED OGDEN AVENUE EXTENSION - FUNCTIONAL PLAN & CROSS-SECTIONS

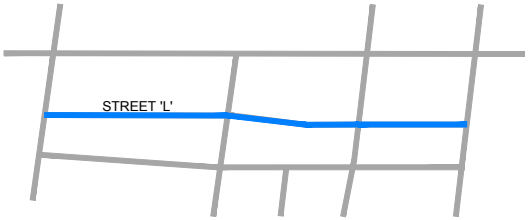


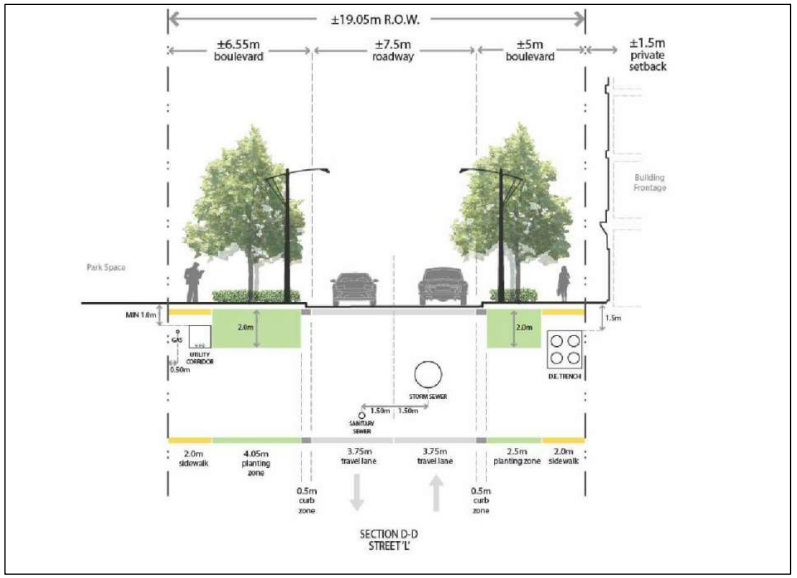


25.4m MAJOR COLLECTOR

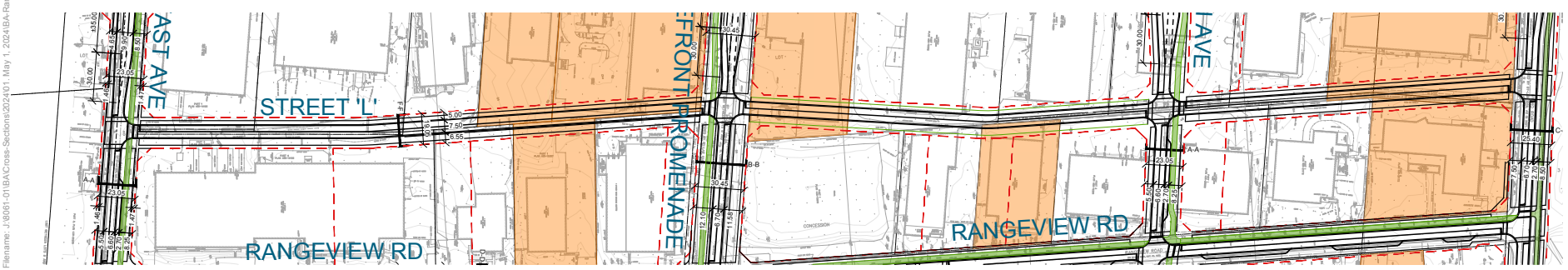
Date Plotted: May 1, 2024 Filename: J:\8061-01\BA\Cross-Sections\2024\01 May 1, 2024\BA-Rangeview-Xsections-8061-01 - dwg

FIGURE 9 HYDRO ROAD - FUNCTIONAL PLAN & CROSS-SECTIONS



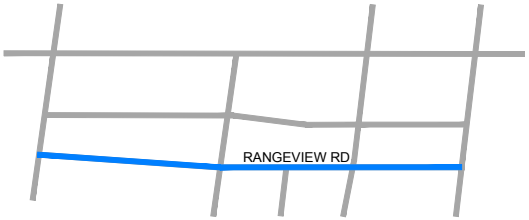


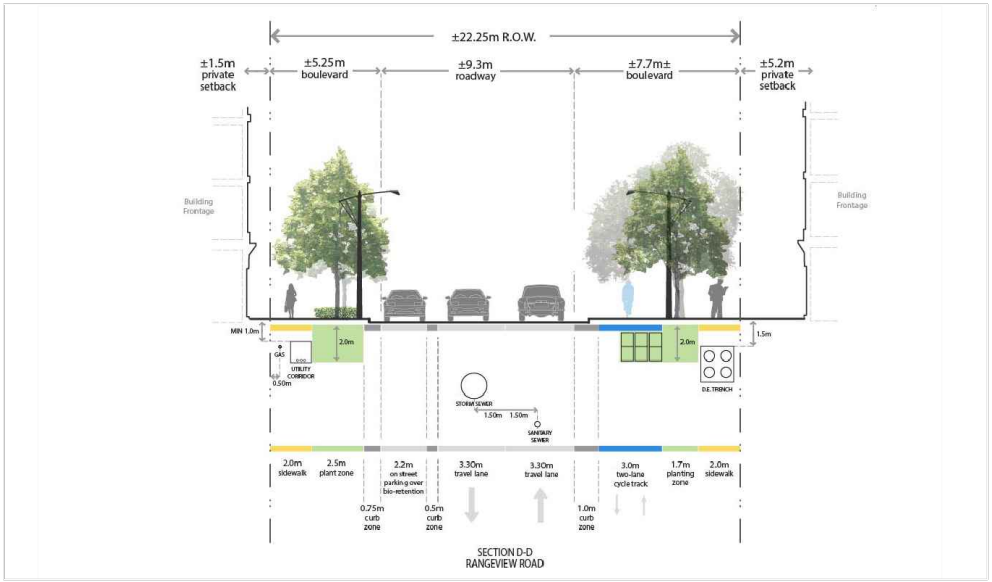
19.05m LOCAL ROAD



Date Plotted: May 1, 2024 Filename: J:\8061-01\BA\Cross-Sections\2024\01. May 1, 2024\BA-Rangeview-Xsections-8061-01_.dwg

FIGURE 10 PROPOSED STREET 'L' - FUNCTIONAL PLAN & CROSS-SECTIONS





22.25m MINOR COLLECTOR

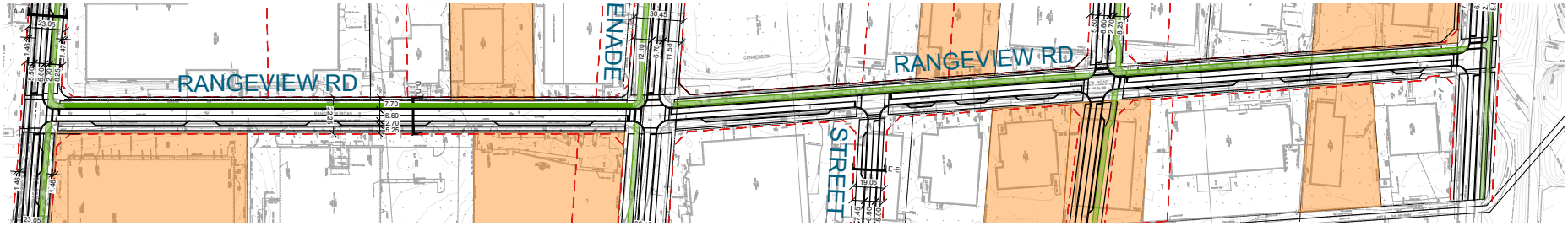
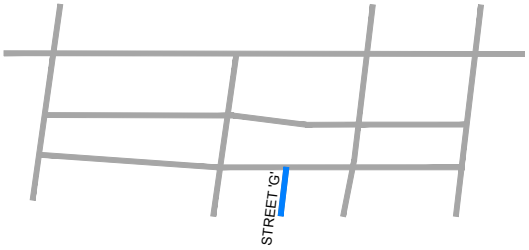
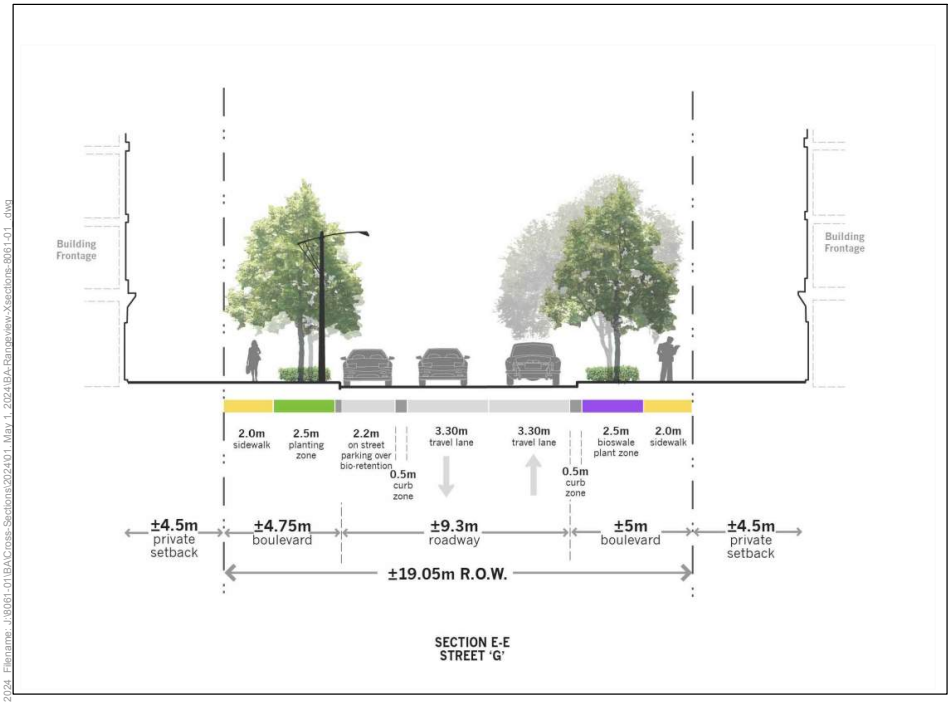


FIGURE 11 RANGEVIEW ROAD - FUNCTIONAL PLAN & CROSS-SECTIONS





19.05m LOCAL ROAD

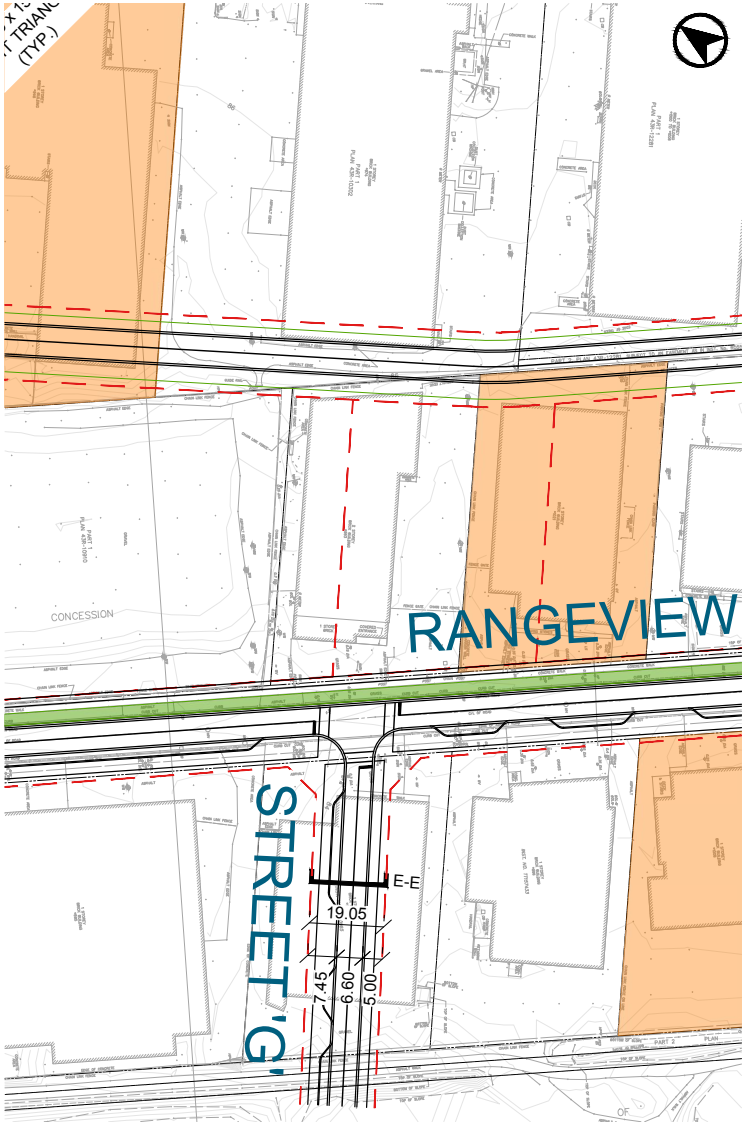


FIGURE 12 PROPOSED STREET 'G' EXTENSION - FUNCTIONAL PLAN & CROSS-SECTIONS

3.2 AREA PUBLIC TRANSIT NETWORK

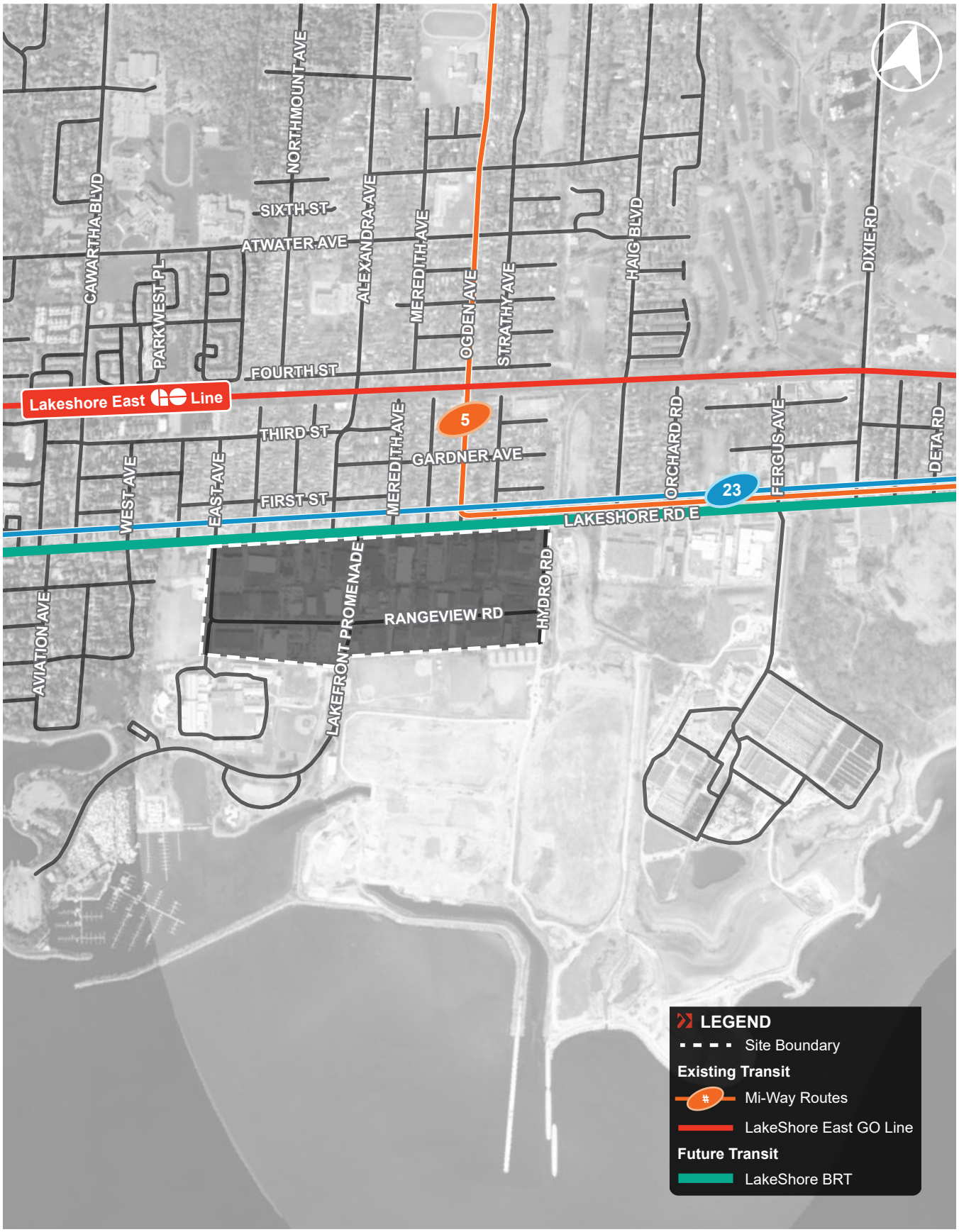
3.2.1 Existing Public Transit Network

The Site's northern boundary is located immediately adjacent to the two MiWay surface transit routes which provide direct connections to area destinations including Dixie Outlet Mall, Port Credit, and Long Branch GO station. With a transfer at the Long Branch GO Station, the Site is connected to GO Transit (Lakeshore West Line) and TTC bus / streetcar service in the east.

Details regarding the area's existing transit options are provided in **Table 5** and illustrated in **Figure 13**.

TABLE 5 AREA TRANSIT NETWORK

Number / Name of Service Line		Closest Stop Location	Description
Bus	23 Lakeshore (MiWay)	Several stops along Lakeshore Road East	Route 23 Lakeshore is a local bus route operating primarily along Lakeshore Road East / West, on all days, between the Clarkson GO Station and Long Branch GO Station. Route 23 runs every 17-21 minutes during weekday peak periods. This route connects with numerous other GO Transit, MiWay, and TTC routes.
	5 Dixie (MiWay)		Route 5 Dixie is a local bus route operating primarily along Dixie Road, on all days, between Cardiff Boulevard / Khalsa Drive and the Long Branch GO Station. Route 5 runs every 7-12 minutes during weekday peak periods. This route connects with numerous other GO Transit, MiWay, and TTC routes.



P:\80\61\01\Graphics\2023\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 13 EXISTING AND FUTURE AREA TRANSIT NETWORK

3.2.2 Planned Public Transit Network

3.2.2.1 Lakeshore Connecting Communities Bus Rapid Transit (BRT)

As described in **Section 2.3**, The Lakeshore Connecting Communities TMP sets out a long-term vision for transit and corridor improvements along Lakeshore Road East from 2020 to 2041 that will support waterfront development.

Of the transit network alternatives considered in the TMP, the preferred transit solution for the 2041 horizon year is express bus / bus rapid transit (BRT) along the extent of Lakeshore Road East in Mississauga (illustrated in **Exhibit 5**). Between East Avenue and Etobicoke Creek (and thus adjacent to the Rangeview Lands), a dedicated right-of-way BRT service is planned within the centre of the Lakeshore Road East ROW. The Lakeshore BRT is planned to be completed in 2027.

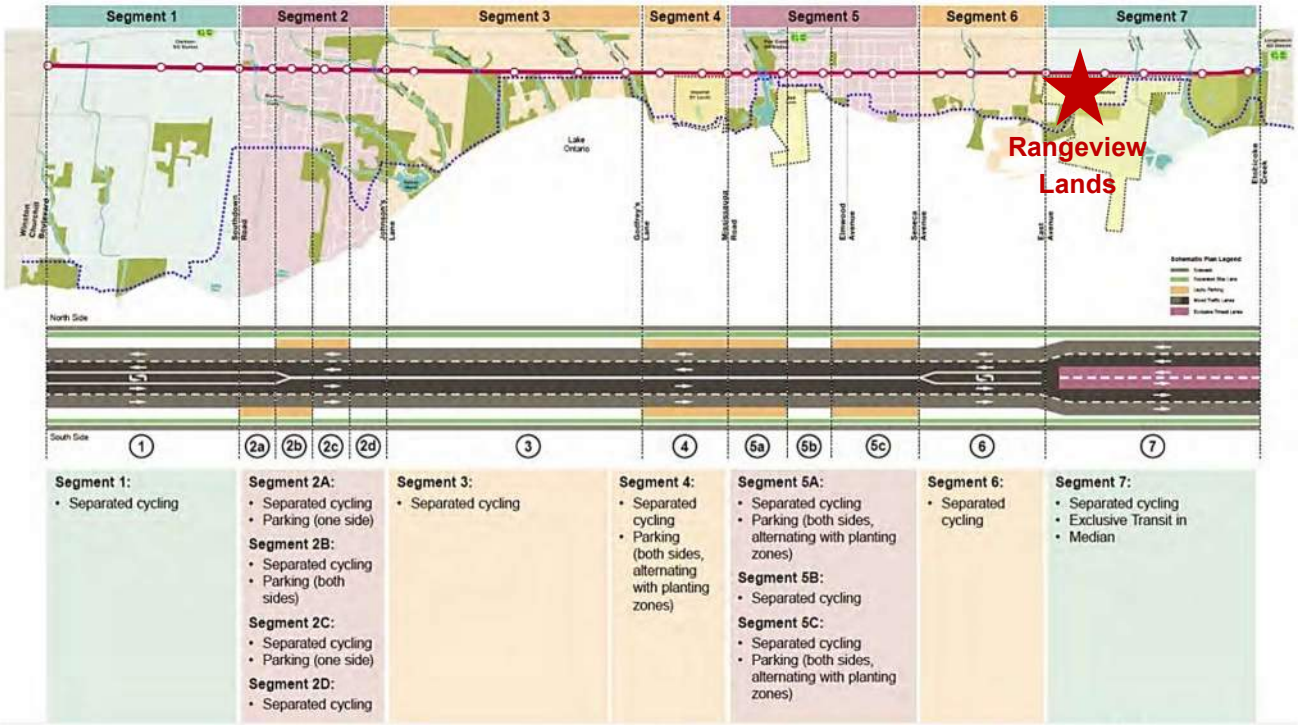


EXHIBIT 5: LAKESHORE BRT PREFERRED RIGHT-OF-WAY (LAKESHORE CONNECTING COMMUNITIES TRANSPORTATION MASTER PLAN: CITY OF MISSISSAUGA / HDR)

The preferred transit solution beyond the 2041 horizon year is an extension of the Toronto Transit Commission (TTC) Waterfront West LRT (or “streetcar”) this is the recommended “ultimate solution.” The streetcar would be extended from Long Branch GO Station to Mississauga Road following a similar alignment (i.e. dedicated ROW to East Avenue; operating in mixed traffic west of East Avenue).

3.2.2.2 Official Plan Transit Network

As part of OPA 89, transit provisions south of Lakeshore Road East were identified, as illustrated below in **Exhibit 6**.

EXHIBIT 6: LAKEVIEW CHARACTER NODE LONG-TERM TRANSIT NETWORK (CITY OF MISSISSAUGA OFFICIAL PLAN: PART OF SCHEDULE 6 FROM OPA 89)

A route that passes through Rangeview, including Lakefront Promenade and Hydro Road, is identified as a "Future Enhanced Transit Route."

3.3 AREA CYCLING NETWORK

3.3.1 Existing Area Cycling Network

The existing cycling network within 500 metres of the Site area consists of multi-use trails, park trails, and signed bike routes along all sides of the Site perimeter. These cycling connections provide convenient travel opportunities for residents, employees and visitors of the surrounding area, specifically to travel using non-automobile means. The existing and future area cycling network is described in **Table 6** and is illustrated in **Figure 14**.

TABLE 6 AREA CYCLING INFRASTRUCTURE

	Route	Type of Cycling Infrastructure	Description
North-South	Ogden Avenue	Signed Bike Route	Signed bike route, shared between cyclists and motorists, which travels along Ogden Avenue from Lakeshore Road East to near South Service Road. Via the Ogden-Isley Pedestrian Bridge, the route continues north via Stanfield Road, accessing The Queensway, Dundas Street East, Bloor Street, Burnhamthorpe Road East, and Eastgate Parkway.
East-West	Waterfront Trail	Park Trail	Park trail that travels along the waterfront, generally south of Lakeshore Road East, providing an east-west connection from Winston Churchill Boulevard, near the City's west limits, to the City of Toronto, beyond the City's east limits.

3.3.2 Planned Area Cycling Network

3.3.2.1 Lakeshore Connecting Communities TMP

The Lakeshore Connecting Communities Transportation Master Plan (TMP), introduced in **Section 2.3**, proposes to incorporate uni-directional cycle tracks in each boulevard, separated from vehicle lanes, along the Lakeshore Road East corridor. The Site area is located in Segment 7 of the study corridor and the preferred ROW alternative is to construct separated 2.0 metre bike lanes along both sides of the Lakeshore corridor with a 0.5 metre buffer from the vehicle travel lane. It is noted that the City of Mississauga Cycling Master Plan 2018 also includes this route.

3.3.2.2 City of Mississauga OPA 125

As part of OPA 125, cycling route provisions south of Lakeshore Road East were identified, as illustrated in **Exhibit 7**. Within OPA 125, a series of 'Primary Off-Road Routes' and 'Primary On-Road / Boulevard Routes' (i.e. cycle tracks where cyclists are separated from vehicles by a curb and buffer) are illustrated primarily within Lakeview Village as part of the street network planned for the latter.

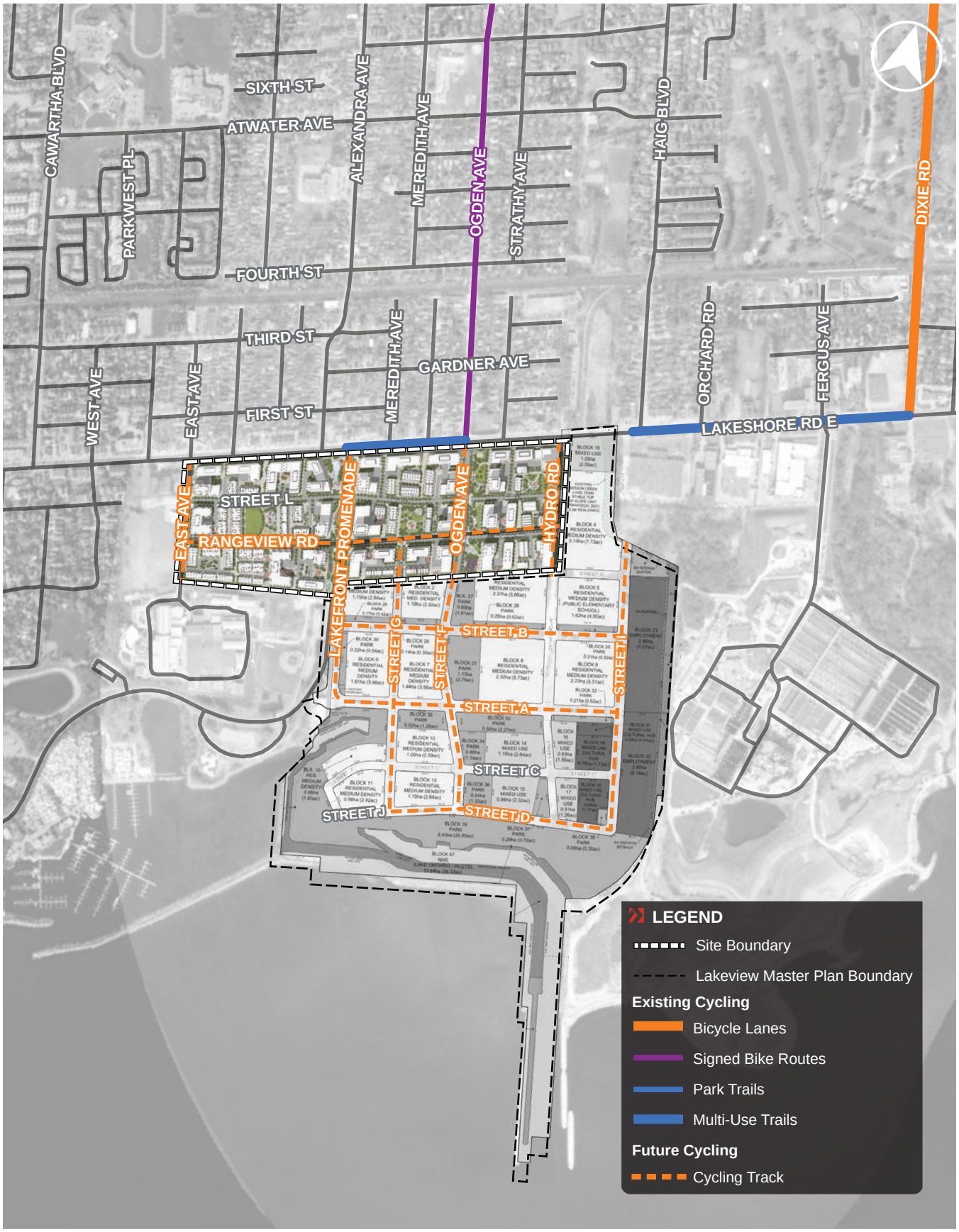
3.3.2.3 Rangeview Cycling Network

The proposed Rangeview street network will provide connectivity to the Lakeview Village cycling facilities, as well as to Lakeshore Road East, for travel beyond the Site. The proposed Rangeview cycling network includes two-way in-boulevard cycle tracks, where cyclists are separated from vehicles by a curb and buffer, on one side of the road along East Avenue, Lakefront Promenade, Ogden Avenue, Hydro Road and

Rangeview Road. Cyclists would be expected to share the road on lower volume streets such as Street L and Street G, where there are no planned designated cycling facilities.

A summary of the proposed cycling facilities in Rangeview is as follows:

- East Avenue: in-boulevard two-way cycle track (east side)
- Lakefront Promenade: in-boulevard two-way cycle track (west side)
- Ogden Avenue: in-boulevard two-way cycle track (east side)
- Hydro Road: in-boulevard two-way cycle track (east side)
- Rangeview Road: in-boulevard two-way cycle track (north side)
- Street L: shared on-road lanes (no designated cycling facility)
- Street G: shared on-road lanes (no designated cycling facility)



P:\80\61\01\Graphics\2024\Adobe\IDs\8061-01 - Figures for Review - Aug 2023.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 14 EXISTING AND FUTURE AREA CYCLING NETWORK

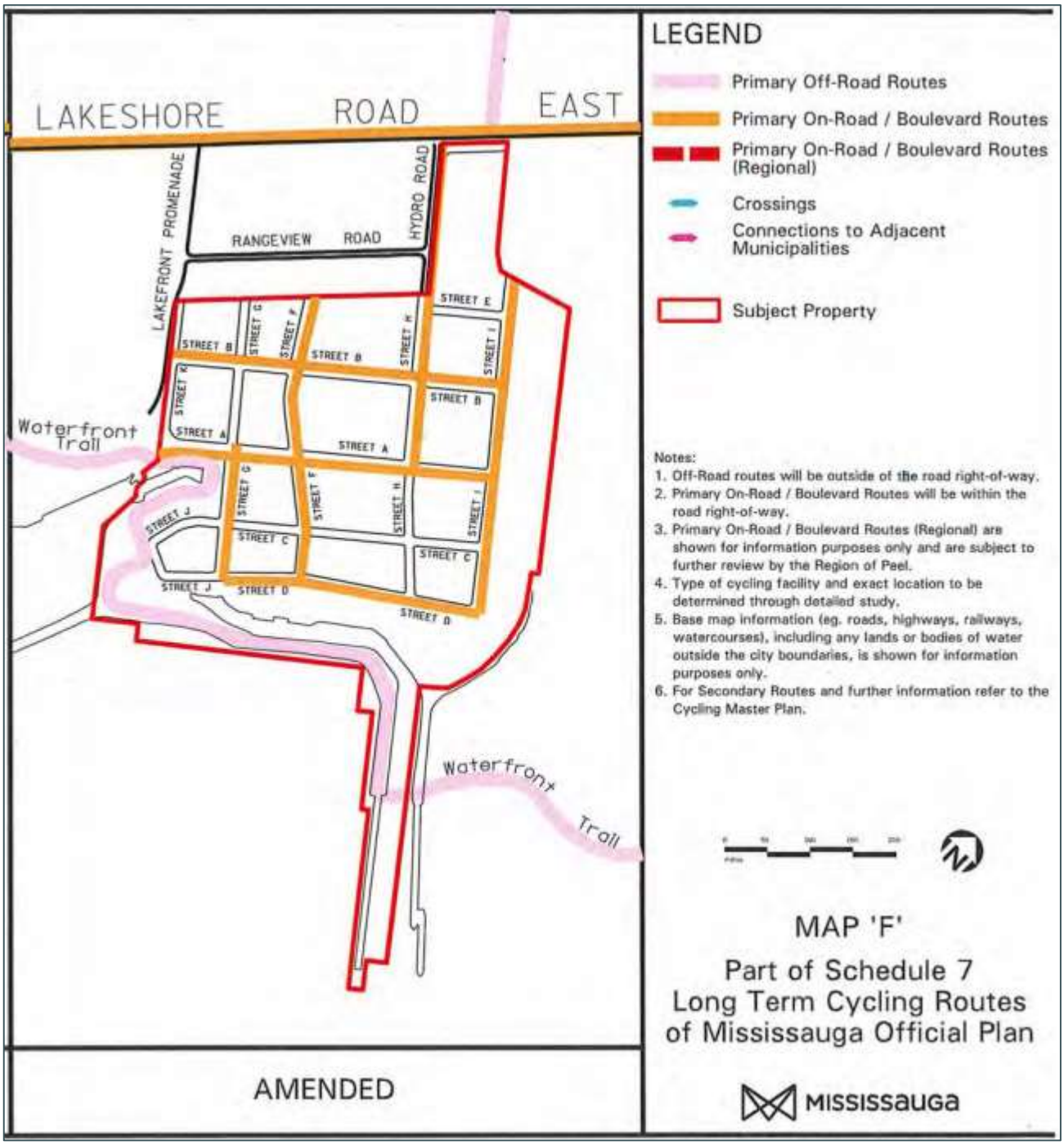


EXHIBIT 7: LAKEVIEW VILLAGE CHARACTER NODE LONG-TERM CYCLING ROUTES (CITY OF MISSISSAUGA OFFICIAL PLAN: PART OF SCHEDULE 7 FROM OPA 125)

3.4 AREA PEDESTRIAN CONTEXT

3.4.1 Existing Pedestrian Context

Within a 500-metre radius of the Site, numerous parks, such as the Douglas Kennedy Park and volleyball courts, can be accessed as well as various amenities along the Lakeshore corridor such as a dentist, pharmacy, convenience store, health centre, fast food outlets and restaurants, among other retail services. The Site is also within walking distance of a plaza which includes a drug store, Canada Post outlet, and multiple eateries, the Lakeside Montessori School, and various places of worship. The remainder of the Site area includes commercial buildings and warehouses oriented towards automobile repair services, industrial manufacturing and self-storage.

In the vicinity of the Site, the existing pedestrian environment facilitates pedestrian movements with efficient connections. Lakeshore Road East has sidewalks on both sides of the roadway, although the sidewalks along the south side are directly adjacent to vehicle travel lanes. There is opportunity to improve the pedestrian facilities along the local roads within and bounding the Site, including Rangeview Road, Hydro Road, Lakefront Promenade, and East Avenue, as each of these roads only have sidewalk facilities on one side of the roadway. Moreover, signalized intersections and marked pedestrian crossings are provided along Lakeshore Road East at East Avenue and Lakefront Promenade, but not at Hydro Road. All sidewalks within and bounding the Site have curb cuts at intersections.

3.4.2 Planned Pedestrian Context

The Site includes a proposed street network that will develop an urban pedestrian environment with wider sidewalk widths on most of the proposed streets and pedestrian mews areas to generate pedestrian activity. Further detail pertaining to the planned street network including detailed design and cross-sections is included in **Section 3.1.3**.

Moreover, the planned Lakeview Village development, introduced in **Section 2.3**, will also provide a high quality, fine-grain pedestrian environment to the south of the Site.

The proposal for a new traffic signal on Lakeshore Road East at Hydro Road will provide additional protected crossing opportunities for pedestrians. The pedestrian network proposed for Rangeview will connect to Lakeview Village's pedestrian network, with connectivity to Lake Ontario and beyond.

4.0 OPPORTUNITY: CAWTHRA GO TRANSIT STATION

Given the evolution and advancement of GO Transit in the Greater Toronto & Hamilton Area, there is potential to improve GO Transit in the vicinity of the Site with the addition of a new GO Station. Based on the proximity to local multi-modal connections and equidistance between nearby existing GO Stations on the Lakeshore West Line (approximately 2.5 km from Port Credit GO Station and approximately 2.5 km from Long Branch GO Station), a reasonable location for a new station would be east of Cawthra Road and north of Lakeshore Road East.

Within this section, a summary of ongoing GO Transit network and station planning is provided as context for the concept to introduce a GO Station to the local area which could be named Cawthra GO Station. The relevance of a potential Cawthra GO Station is that it would greatly enhance the multi-modal transportation options available to future residents and visitors to both Rangeview and Lakeview Village.

It is important to note however that as outlined in **Section 7.0**, the traffic analysis undertaken for this report confirms that the future transportation network, even **without** a new GO Station in the area, can acceptably accommodate the expected travel demands of the Rangeview Site with 5,300 residential units, along with the travel demand generated by Lakeview Village and Serson.

4.1 CAWTHRA GO STATION HISTORY

Between 2013 and 2015, Metrolinx undertook a study to identify new stations to add to the regional rail network. At this time, a “Cawthra Road GO Station” was on a list of approximately 120 “possible stations” that were analyzed. Possible Stations were scored based on three criteria: 1) transportation connectivity; 2) plans and land use; and 3) technical (construction & design). By March 2015, the list was reduced to 50 stations and Cawthra Road GO Station was no longer in consideration.

4.2 GO TRANSIT EXPANSION / ELECTRIFICATION UPDATE

Metrolinx is undertaking a “GO Expansion” project (formerly “Regional Express Rail”) to convert most existing rail lines (including Lakeshore West) to electric trains. The project will enable all-day, two-way service with 15-minute headways or better. A key benefit of electrification is quicker acceleration/deceleration which unlocks the potential to add more stations to electrified lines. In February 2022, Metrolinx and Infrastructure Ontario announced “Onxpress Transportation Partners” (consortium including Aecon, FCC Construcción S.A., (FCC), Deutsche Bahn, and Alstom) as the winning proponent of the program. Onxpress won the bid due to a proposal with service levels exceeding the 2018 Metrolinx Business Case Analysis, including:

- During weekday daytime periods, between 8-18 trains per hour (or 3-8 minute headways) on the busiest routes, like Lakeshore West; and
- During evenings and weekends, most stations will have 6-15 minute headways.

Construction is expected to begin in 2023, with incremental improvements to service beginning in 2025-2026.

4.3 EXISTING DEMAND FOR A CAWTHRA GO STATION

Of the three criteria utilized by Metrolinx to assess new stations from 2013-2015, a potential Cawthra GO Station merits new assessment based on two: “Transportation Connectivity” and “Plans and Land Use”.

4.3.1.1 Transportation Connectivity

As is outlined in this report in **Section 2.3** and Section **3.2.2**, a BRT in a dedicated right-of-way within Lakeshore Road East adjacent to the Site is expected to be substantially completed by 2027. There is potential for the BRT and the parallel GO Transit line to be complimentary and together, to influence travel behaviour and reduce vehicle trips.

4.3.1.2 Plans and Land Use

As is outlined in **Section 2.3**, the Lakeview Waterfront Major Node Character Area in the City of Mississauga Official Plan was recently amended in November 2021 (OPA 125). Current development provisions include 11,750 residential units, 750,000 SF office GFA, 750,000 SF research & development GFA, 165,000 SF retail GFA, 850 student elementary school, 39 student daycare, approved “as-of-right.” There is substantial ridership potential if a GO Station was located in proximity to this area.

5.0 TRANSPORTATION DEMAND MANAGEMENT PLAN

The 2020 Ontario Provincial Policy Statement (PPS) and the City of Mississauga Official Plan encourage Transportation Demand Management (TDM) as a strategy and embrace a range of TDM measures. TDM strategies will be incorporated into the Site to align with operational and functional needs including consideration for broader area infrastructure requirements.

As per the Region of Peel Sustainable Transportation Strategy, 2018-2022, TDM is: “Transportation demand management (TDM) measures encourage people to take fewer and shorter vehicle trips to support transit and active transportation choices, enhance public health and reduce harmful environmental impacts.”

The City of Mississauga Official Plan includes the following policies regarding TDM:

- 8.1.8: “To better utilize existing infrastructure, Mississauga will encourage the application of transportation demand management (TDM) techniques, such as car-pooling, alternative work arrangements and shared parking.”
- 8.4.7(f): “coordinating parking initiatives with transportation demand management (TDM) programs in order to effectively link transit planning, parking and other related issues in a comprehensive manner”.
- 8.5.2: “Mississauga will work with other levels of government, agencies and the private sector to encourage TDM measures.”
- 8.5.7: “Prior to approval of development applications, particularly those that will generate significant employment opportunities, a TDM plan may be required …”

5.1 OBJECTIVE & GOALS

Transportation Demand Management (TDM) strategies have been developed for the proposed development to guide the provision of viable alternative personal transportation options beyond the single occupant, private automobile. The overarching goals of the TDM strategy are to:

- Significantly reduce the number of private automobile-based trips made to/from the Site;
- Promote the use of more active and sustainable modes of transportation;
- Increase travel efficiency and transit linkages;
- Emphasize internal trips by non-auto modes of travel; and
- Reduce climate change emissions, air quality and overall health.

To achieve the objective and goals, a series of mobility strategies and corresponding TDM measures are outlined and have been incorporated into the design and future operations of the proposed Site.

5.2 STRATEGIES

TDM strategies include the application of various site design elements and operational policies that have the goal of redistributing and reducing the travel demand of a project, specifically that of single occupancy private vehicles. The proposed TDM objectives can be achieved by influencing mobility choice and patterns through the following site plan strategies:

- Create a Complete Connected Community
- Enhance the Public Realm and Pedestrian Mobility
- Facilitate and Increase Transit Use
- Encourage Cycling Use
- Provide Last-Mile solutions (micro-mobility)
- Low Minimum Parking Requirements
- Encourage Reduced Auto Ownership and Use

Several of TDM strategies identified above (i.e. public transit fare integration and the implementation of a bike share and/or scooter share network) require additional support at the Municipal, Regional, and / or Provincial levels to truly enable a shift in travel behaviour for residents, visitors and employees of the Site.

This comprehensive framework has been developed to serve as a guideline for the implementation of effective TDM strategies at the master plan level and will continue to be refined through the site design stage and in its operations following the full redevelopment of the property.

5.3 PROPOSED TDM MEASURES

5.3.1 Create a Complete Connected Community

The proposed development incorporates a mix of mutually supportive land uses, inclusive of residential and retail, located adjacent to significant employment land uses within Lakeview Village, that are integrated by a new street network that has been designed to facilitate and encourage transit and active modes of travel throughout the Site.

The provision of mutually supportive land uses fosters a relationship across the Site that allows each use to serve and support one another. This represents a substantial shift from the existing building form to a more walkable, urban, mixed-use neighbourhood. This dynamic combination of uses encourages the "internalization" of site trips, both within the Site and within the neighbourhood; there will be many trips that could be made within walking / cycling distance. The need for residents, employees, and visitors to make trips outside of the Site and surrounding area to address daily needs will be reduced, thereby, reducing the need for trips to be made utilizing automobiles.

Furthermore, the design of the street network takes into account the needs of all modes of travel and ensures the development of a complete network. The proposed street network creates fine-grain street and block connections, creating a level of porosity across the Site that will enable efficient pedestrian and active travel.

Numerous park / open spaces are also proposed throughout the site which will improve the at-grade permeability of the area and integrate the Site with the local pedestrian system.

Finally, the proposed density, mix of uses, and enhanced street network provides opportunities to support micro mobility options that provide strong non-auto connections to the surrounding area.

TDM Considerations

- Complimentary mix of land uses will result in the internalization of daily trips within the Site and neighbourhood that can be made by foot / bike, reducing the need for a personal automobile;
- Design of a fine-grained, permeable street network that supports all modes of travel; and
- Proposed density and mix of land uses provide greater opportunities to support local area transit services and other micro-mobility options that encourage non-auto modes of travel to the surrounding area.

5.3.2 Enhance Public Realm and Pedestrian Mobility

The Site, in its current orientation, was designed to prioritize the movement of vehicles with an emphasis on large surface parking lots serving automobile-oriented retail and automotive uses. For the most part, the surrounding streets are less desirable places to walk with limited pedestrian crossing opportunities and sidewalks generally only on one side of the road.

The proposed plan contains elements that aim to emphasize the pedestrian realm. Enhanced pedestrian facilities (wide sidewalks, attractive boulevards) and off-street connections through the Site will make walking a more attractive option.

Streetscape improvements will improve pedestrian comfort; these could include (but are not limited to) expanding sidewalk widths, increasing crossing opportunities, and providing street furniture and landscaping.

Convenient and direct pedestrian connections to area transit stops will be prioritized in the development of the Master Plan to ensure that public transit remains the preferable mode for trips that are to be made outside the local neighbourhood.

As much as possible, access to loading and parking facilities will be strategically located and consolidated in the site plan to minimize interference with the vibrant pedestrian realm.

Ultimately, each of these measures that will be integrated into Site plan designs will increase and facilitate pedestrian activity emanating from the Site.

TDM Considerations

- Streetscape improvements will improve pedestrian comfort.
- The proposed street network and development blocks have been designed keeping in mind the need for direct and convenient pedestrian connections throughout the Site.
- Access to loading and parking facilities will be minimized and strategically located in the Site Plan to minimize interference with the vibrant pedestrian realm.

5.3.3 Facilitate and Increase Transit Use

The northern boundary of the Site is adjacent to the planned Lakeshore BRT which will facilitate access across the extent of Mississauga's waterfront and several GO Stations. Given the size of the Site, providing strong active linkages and other last-mile solutions are essential to connect residents and visitors across the site to the area transit network. The proposed street and active network for the Site were designed to facilitate transit access for all users by emphasizing the public realm and creating direct pedestrian connections.

The integration of local transit from the onset of development is a high priority for the Site in order to encourage residents and visitors to utilize transit as a primary mode of travel and build travel behaviours that are supportive of the TDM Plan.

To this end, transit incentives (i.e. pre-loaded PRESTO cards) will be offered to first-time occupants of residential units to persuade them to use public transit for a period of time and establish this modal choice as a habit.

Notwithstanding that the Site is located along the Lakeshore Road East corridor and therefore in proximity to the TTC at Long Branch Station, there is currently no fare integration between these transit agencies (i.e. MiWay and TTC). In order to encourage transit as a viable (and affordable) mode choice, Peel Region, the City of Mississauga and the City of Toronto should consider possible fare integration to promote transit use.

Lastly, as outlined in **Section 4.0**, the opportunity to locate a new GO Station east of Cawthra Road along the Lakeshore West GO Transit rail line should be considered.

TDM Considerations

- Facilitate connections to and from public transit (along the Lakeshore Road East corridor) from the on-set of development to achieve desired modal shift.
- Provide a well-connected pedestrian network facilitating transit access for all users.
- Provide pre-loaded PRESTO cards to all first-time occupants of residential units.
- Encourage Peel Region, the City of Mississauga, and City of Toronto to consider possible fare integration opportunities to promote regional transit use.

5.3.4 Encourage Cycling Usage

To encourage cycling as a viable mode of travel for residents and visitors of the proposed development, significant infrastructure investments have been considered (cycling lanes, bicycle parking, bicycle repair facilities).

Most of the proposed street network will include two-way, in-boulevard cycle tracks (see **Section 3.1.3**) and connect to an external street (Lakeshore Road East) that is planned to be a cycling corridor as part of the Lakeshore Connecting Communities BRT (see **Section 3.3.2**).

Each development block is intended to include secure bicycle parking for residents and employees and at-grade or below grade bicycle parking for visitors. Bicycle parking provisions will be consistent with the minimum bicycle parking requirements of Zoning By-law 0225-2007 which were recently updated in 2022 as a result of the *Parking Regulations Study*.

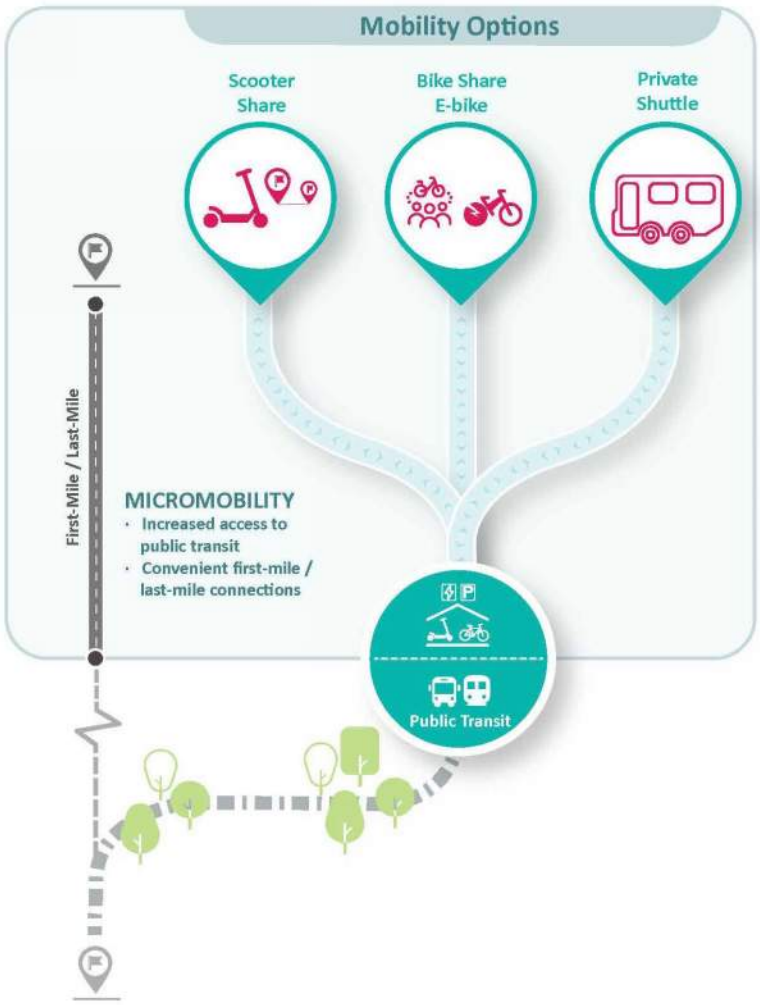
Bicycle repair facilities may be provided within each development's bicycle parking facility. With cycling uptake expected to be high, providing infrastructure to assist with quick and easy bicycle repairs would add convenience for prospective cyclists.

TDM Considerations

- Two-way, in-boulevard cycle tracks are provided along internal streets that will connect to the planned regional cycling network.
- Secure bicycle parking will be provided for residents and at-grade bicycle parking for visitors throughout the Site.
- Bicycle repair facilities will also be integrated into each development block in order to facilitate quick and easy bicycle repairs.

5.3.5 Micro-Mobility

In order to shift travel behaviour towards more sustainable modes of travel, the provision of convenient first-mile / last-mile trip connections to public transit or local amenities are required. These solutions help fill gaps in the area transportation network that otherwise would result in people opting for a private vehicle (i.e. needing to walk over a kilometre to a transit stop).



Bicycle and scooter sharing form part of the overall Mobility Strategy to maximize connections to transit and encourage sustainable local travel. This type of shared system, if deployed, would provide excellent opportunities to connect area residents to future rapid transit along Lakeshore Road East (and a potential Cawthra GO Station). Longer distance cycling trips to destinations like Long Branch GO station would be achievable with the planned implementation of a continuous cycling corridor on Lakeshore Road East connecting the site with the train station.

The City of Mississauga is currently undertaking an "E-Scooter Pilot" including "*studying how a shared program of publicly available bicycles, pedal-assist bicycles (e-bikes) or electric scooters (e-scooters) could be used for travel in Mississauga*." In December 2020, City Council approved the implementation of an interim e-scooter strategy intended to operate within the five-year e-scooter pilot program launched by the Province of Ontario. In Mississauga, e-scooters are permitted to operate on public roadways with a posted speed limit of 50km/h or less and on cycling infrastructure, but not within parks or off-road trails.

The provision of micro mobility solutions (including bike share, scooter share, bicycle parking) should be strategically located throughout the Site within smaller hub areas to ensure proximate access for residents and visitors.

TDM Considerations

- Reduced resident parking ratios that are reflective of contemporary parking policy in Canada, good transportation planning, and the good transit afforded to the Site (planned Lakeshore BRT).
- Provision of a shared pool of visitor parking will help maximize efficiency of parking across the Site.

5.3.6 Reduced Parking Provisions

An effective TDM measure that can be applied to the proposed development is the constraint of on-site vehicular parking supply. Appropriate vehicle parking management and the provision of an extensive suite of TDM measures are mutually supportive. If vehicle parking is oversupplied across the Site, residents and visitors would have less incentive to utilize the alternative, non-auto options that are available to them due to the site's favourable location and that are enhanced as part of this project. Likewise, a modest parking supply without appropriate TDM measures would negatively affect local traffic and place undue parking demand on the surrounding area.

Culminating in 2022, the City of Mississauga reviewed and updated the off-street parking regulations of Zoning By-law 0225-2007. Notably, precinct areas were introduced to stipulate different minimum parking requirements based on location within the City, influenced by proximity to higher order transit service and other factors.

The Site was identified as Precinct Area 3 and therefore, some of the following minimum parking requirements are relevant:

- Condominium Apartment, residents: 1.0 parking space per unit
- Rental Apartment, residents: 0.90 parking spaces per unit
- Apartments, visitors: 0.2 parking spaces per unit

Notably, other cities in Canada have updated minimum parking requirements in their Zoning By-laws resulting in the following:

- London (2008): Zero parking minimum downtown
- Ottawa (2016 & 2018): Zero parking minimum downtown & at LRT Stations; minimum 0.5 spaces per unit in "urban" & "inner suburban" areas
- Edmonton (2020): Zero parking minimum city-wide
- Brampton (2021): Zero parking minimum downtown and rapid transit corridors
- Vaughan (2021): Zero resident parking in Yonge Steeles Corridor Secondary Plan
- Toronto (2021): Zero parking minimum city-wide

A reduced parking supply compared to the new requirements of Zoning By-law 0225-2007 will be pursued as part of future applications reflecting contemporary advancements in parking policy across Canada and reflecting good transportation planning as part of this TDM Plan.

The adoption of shared parking spaces between non-residential uses (residential visitors, commercial, retail, etc.) to maximize efficiency based on typical parking utilization patterns will also be advanced.

TDM Consideration

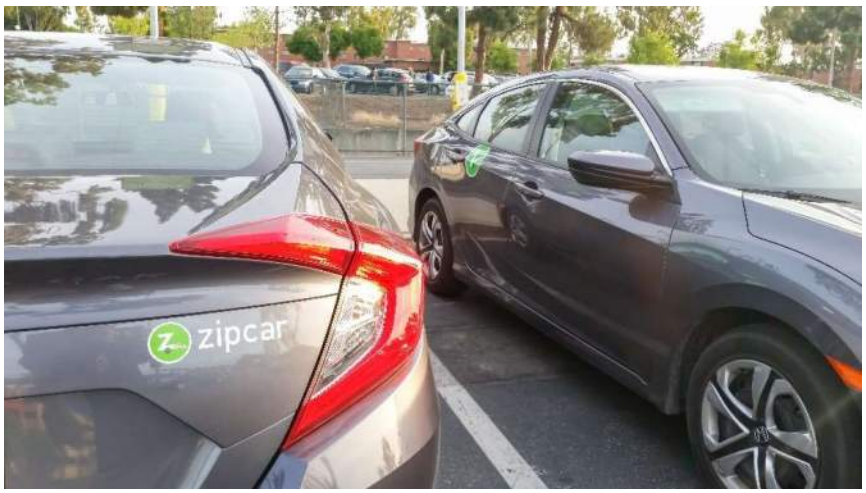
- Support the provision of bicycle and/or scooter sharing on-site to connect residents / visitors to local transit or area amenities.

5.3.7 Encourage Reduced Auto Ownership & Use

The provision of car-sharing programs is an important TDM measure because it allows residents to use automobiles as needed without requiring them to own a vehicle. By nature, this means that they make less vehicular trips, directly reducing the amount of vehicular travel emanating from the Site.

While there are currently minimal car-sharing services provided in Mississauga, should these services become available, the Site would be an excellent candidate for these services.

Car-share vehicles on-site will be supported, affording an attractive alternative to vehicle ownership for future residents.



TDM Considerations

- Supporting the provision of car-share vehicles on-site to facilitate vehicle trips, as needed, as an alternative to car ownership.

6.0 MULTI-MODAL TRAVEL DEMAND FORECASTING

6.1 UPDATED TRAFFIC ANALYSIS SCENARIOS

To develop the traffic analysis scenarios for this study, a number of development thresholds were tested for Rangeview to better understand the traffic-related impacts on the overall area road network.

As summarized in **Table 7,** each scenario considered the total number of residential units for both Rangeview and Lakeview Village and the total non-residential GFA for Rangeview and Lakeview Village.

The traffic analysis for the September 2023 BA Group Report (Scenarios 1, 2, 3A and 3B) considered two long-term horizons (2031 and 2041) and generally aligned with the methodology of TYLin's April 2021 Traffic Considerations Report Addendum ("the 2021 April TYLin report") completed for Lakeview Village. To determine the background traffic volumes for this study, traffic volume layers, inclusive of Site traffic volumes and background traffic volumes, were taken from the April 2021 TYLin Report.

In order to focus the updated analysis required to consider Lakeview with 16,000 residential units, this report does not include analysis updates for existing conditions and Scenarios 1, 2, 3A and 3B. For completeness, these scenarios continue to be included in the updated report and will be updated in the future as required, when updated traffic data is available.

The updated BA Group traffic analysis includes a modified approach for new analysis scenarios (Scenarios 4, 5, 6, 7A and 7B). The new scenarios consider an iterative approach to consider Lakeview beyond 8,050 units i.e. 10,000 units, 12,000 units, 14,000 units with a maximum of 16,000 units. The methodology also considers that the auto driver travel mode share will decrease and evolve to approximately 40% to 35% in the future with the evolving transportation context of the area. The travel demand established in the December 2023 TYLin report was considered in conjunction with the 40% to 35% auto driver mode share, to determine trip rates for the Rangeview Site. Proxy data is provided in the report to justify future auto driver mode share rates as low as 35%. Additionally, to align with the December 2023 TYLin Report, the Lakeview non-residential GFA has been reduced from 2.1 million ft^2 to 1.7 million ft^2.

The details of the multi-modal travel demand assessment for each scenario are provided in the following sections. The details of the traffic capacity analysis are provided in **Section 7.0**.

TABLE 7 TRAFFIC ANALYSIS SCENARIOS

Development	Existing	Scenario 1 (2031): No Ogden No Haig (with road improvements)[1]	Scenario 2 (2041): Phase 1 + Ogden connected to Lakeshore Road East	Scenario 3A (2041): Phase 2 Ogden + Haig connected to Lakeshore Road East	Scenario 3B (2041): Phase 2 Ogden+ Dual NBL turns at Lakefront Promenade / Lakeshore Road East (Haig not connected)	Scenario 4 Ogden+Haig connected + dual NBL at Lakefront Promenade	Scenario 5 Ogden+Haig connected + dual NBL at Lakefront Promenade	Scenario 6 Ogden+Haig connected + dual NBL at Lakefront Promenade	Scenario 7 Ogden+Haig connected + dual NBL at Lakefront Promenade
Auto Mode Share	***55%***	***50%***				***46%***	***43%***	***40%***	***7A = 40% 7B = 35%***
Rangeview	--	2,500 units + 0% non-residential	3,700 units + 100% non-residential	5,300 units + 100% non-residential		5,300 units + 100% non-residential			
Lakeview Village	--	7,500 units + 1.4M ft^2 non-residential	8,050 units + 1.7M ft^2 non-residential	8,050 units + 1.7M ft^2 non-residential	8,050 units + 1.7M ft^2 non-residential	**10,000** units + 1.7M ft^2 non-residential	**12,000** units + 1.7M ft^2 non-residential	**14,000** units + 1.7M ft^2 non-residential	**16,000** units + 1.7M ft^2 non-residential
Serson	--	0%	0%	100%	0%	100%			
Total	**Existing Traffic Only**	**10,000 units**	**11,750 units**	**13,350 units**	**13,350 units**	**15,300 units**	**17,300 units**	**19,300 units**	**21,300 units**

6.2 PROPOSED ROAD IMPROVEMENTS

A summary of the road improvements considered for each scenario is outlined below.

6.2.1 September 2023 BA Group Report

It is important to note that in consideration of the traffic capacity analysis, in addition to the road improvements planned for Phase 1 and 2 (extension of Ogden Avenue from Lakeshore Road East to Rangeview Road), **either** the connection of Haig Boulevard (Scenario 3A) **or** the dual northbound left-turn phase at Lakeshore Road East at Lakefront Promenade (Scenario 3B), would be required to accommodate 13,350 residential units.

Scenario 1

The road improvements considered to be complete as part of Scenario 1 are as follows:

- BRT on Lakeshore Road East;
- Construction of westbound right-turn lane at Cawthra Road and Lakeshore Road East;
- Construction of westbound right-turn lane at Dixie Road and Lakeshore Road East;
- Construction of eastbound right-turn lane at Lakefront Promenade and Lakeshore Road East;
- Northbound lanes reconfigured at Lakefront Promenade and Lakeshore Road East to include a dedicated left-turn lane and share through/right lane;
- Construction of eastbound right-turn lane at Hydro Road and Lakeshore Road East;
- Northbound lanes reconfigured at Hydro Road and Lakeshore Road East to include a dedicated left-turn lane and a shared left/through/right lane;
- Signalization of Hydro Road and Lakeshore Road East intersection, as per Lakeshore Connecting Communities BRT roll plan drawings.

Scenario 2

The road improvements considered to be complete as part of Scenario 2 include the road improvements proposed as part of Scenario 1, in addition to the completion of the extension of Ogden Avenue from Lakeshore Road East to Rangeview Road.

Scenario 3A

The road improvements considered to be complete as part of Scenario 3A include the road improvements proposed a part of Scenario 1 & 2, in addition to the completion of the connection of Haig Boulevard to Lakeshore Road East.

Scenario 3B

The road improvements considered to be complete as part of Scenario 3A include the road improvements proposed a part of Scenario 1 & 2, in addition to the implementation of a dual northbound left-turn phase on Lakeshore Road East at Lakefront Promenade.

6.2.2 Updated BA Group Report

The updated BA Group traffic analysis for the new analysis scenarios (Scenarios 4, 5, 6, 7A and 7B) considers that the following road improvements would be completed.

- BRT on Lakeshore Road East;
- Construction of dual eastbound left-turn lanes on Lakeshore Road East at Cawthra Road;
- Construction of westbound right-turn lane at Cawthra Road and Lakeshore Road East;
- Construction of westbound right-turn lane at Dixie Road and Lakeshore Road East;
- Construction of eastbound right-turn lane at Lakefront Promenade and Lakeshore Road East;
- Northbound lanes reconfigured at Lakefront Promenade and Lakeshore Road East to include a dedicated left-turn lane and share through/right lane;
- Construction of eastbound right-turn lane at Hydro Road and Lakeshore Road East;
- Northbound lanes reconfigured at Hydro Road and Lakeshore Road East to include a dedicated left-turn lane and a shared left/through/right lane;
- Signalization of Hydro Road and Lakeshore Road East intersection, as per Lakeshore Connecting Communities BRT roll plan drawings.
- The extension of Ogden Avenue from Lakeshore Road East to Rangeview Road.
- The connection of Haig Boulevard to Lakeshore Road East.
- Implementation of a dual northbound left-turn phase on Lakeshore Road East at Lakefront Promenade.

6.3 APPROACH & METHODOLOGY

6.3.1 Study Horizons

The traffic analysis methodology for September 2023 BA Group Report analysis (Scenarios 1, 2, 3A & 4B) generally aligned with the methodology within TYLin's (formerly The Municipal Infrastructure Group) April 2021 Traffic Considerations Report Addendum ("the 2021 April TYLin report"). The 2031 and 2041 horizons were used for the traffic analysis in order to be consistent with the 2021 April TYLin report. As the actual timing of the developments is expected to vary, the roadway improvements and the overall number of residential units, were key components of the analysis.

The updated BA Group traffic analysis in this report for Scenarios 4, 5, 6, 7A & 7B includes a modified approach for new analysis scenarios (Scenarios 4, 5, 6, 7A and 7B). The new scenarios consider an iterative approach to consider Lakeview beyond 8,050 units i.e. 10,000 units, 12,000 units, 14,000 units with a maximum of 16,000 units. The study horizon for all of the new scenarios is 2041.

6.3.2 Area Travel Mode Share

6.3.2.1 Travel Mode Share Considered in September 2023 BA Group Report

The existing area travel mode share did not consider the implementation of the BRT along Lakeshore Road East while the future area travel mode share included the implementation of the BRT as summarized in **Table 8** and **Table 9,** respectively. It is noted that with the implementation of the BRT, the auto driver mode share is expected to decrease from 60% (AM peak)/ 61% (PM peak) to 50% during both peak periods of the day. Although the future travel mode share for cycling is stated as 0% in **Table 9**, in the initial BA Group 2022 Report for the purpose of the travel demand assessment, the future cycling travel mode share was adjusted to 2% to account for cycling trips that would likely be generated by the sites being considered. As part of this adjustment, the auto passenger travel mode share was reduced by 2% for each time period. The updated future area travel mode share that includes the BA Group adjustments is provided in **Table 10**.

TABLE 8 AREA TRAVEL MODE SHARE (BEFORE BRT)

Mode of Travel	Lakeview		Port Credit		Average	
	AM	PM	AM	PM	AM	PM
Transit	11%	21%	28%	33%	20%	27%
Auto Driver	**59%**	**61%**	**61%**	**61%**	**60%**	**61%**
Auto Passenger	27%	14%	6%	4%	16%	9%
Walk	3%	4%	5%	2%	4%	3%
Cycle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: Source: TYLin April 2021 report, Table 3.1, Page 17.

TABLE 9 AREA TRAVEL MODE SHARE (WITH BRT)

Mode of Travel	2016 TTS Average		50% Auto Driver		Difference	
	AM	PM	AM	PM	AM	PM
Transit	20%	27%	25%	35%	5%	8%
Auto Driver	**60%**	**61%**	**50%**	**50%**	**-10%**	**-11%**
Auto Passenger	16%	9%	20%	11%	4%	2%
Walk	4%	3%	5%	4%	1%	1%
Cycle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**0%**	**0%**

Note: Source: TYLin April 2021 report, Table 2.3, Page 87.

TABLE 10 ADJUSTED AREA TRAVEL MODE SHARE[1] (WITH BRT)

Mode of Travel	2016 TTS Average		50% Auto Driver		Difference	
	AM	PM	AM	PM	AM	PM
Transit	20%	27%	25%	35%	5%	8%
Auto Driver	**60%**	**61%**	**50%**	**50%**	**-10%**	**-11%**
Auto Passenger	14%	7%	18%	9%	4%	2%
Walk	4%	3%	5%	4%	1%	1%
Cycle	2%	2%	2%	2%	2%	2%
Total	**100%**	**100%**	**100%**	**100%**	**0%**	**0%**

Note:
1. BA Group adjusted Table 2.3 in the TYLin April 2021 report and increased the cycling mode share to 2% for all time periods and decreased the auto passenger share by 2% for all time periods.

6.3.2.1 Travel Mode Share Considered in Updated BA Group Report

To consider Lakeview with up to 16,000 units and to reflect an evolving reduction in the auto driver mode share, five new scenarios have been created for the traffic analysis to evaluate road network performance with Lakeview in 2,000 residential unit increment increases. These new scenarios have been created in addition to the previous Scenarios 1, 2, 3A & 3B that were considered in previous BA Group reports. The five new traffic analysis scenarios are summarized in **Table 11**. Scenario 7, the ultimate condition that considers Rangeview with 5,300 units and Lakeview with 16,000 units, has been assessed with 40% (Scenario 7A) and 35% (Scenario 7B) auto driver mode share.

It is expected that as the proposed developments are built-out, in consideration of evolving parking policies that will decrease parking supply, along with and improvements to the active transportation and transit network, the auto driver mode share related to both Rangeview and Lakeview will decrease. To better reflect what is expected to be an evolving reduced auto mode share within the analysis, BA Group has adopted an incremental approach to reducing the auto driver mode share as the development of Lakeview advances. The incremental decreases associated with the development scenarios are summarized in **Table 11**.

It is important to note that there is a strong correlation between the supply of parking and auto driver mode share. Details that support how parking supply reduces auto driver mode share were undertaken by BA in the Yonge and Eglinton area of Toronto and are provided in **Appendix F**. Given the City's recent directive to

decrease parking rates adjacent to existing higher order transit stations, it should be expected that new developments in the future Lakeshore BRT areas will consider reduced parking rates that are expected to result in reduced auto driver mode shares.

TABLE 11 AUTO DRIVER MODE SHARE

		Auto Driver Mode Shares Used in Rangeview/ Lakeview Traffic Analysis								
BA Group		Scenario 1	Scenario 2	Scenario 3A	Scenario 3B	Scenario 4	Scenario 5	Scenario 6	Scenario 7A	Scenario 7B
	Rangeview (units)	2,500	3,700	5,300	5,300	5,300	5,300	5,300	5,300	5,300
	Lakeview (units)	7,500	8,050	8,050	8,050	10,000	12,000	14,000	16,000	16,000
	Total Units	**10,000**	**11,750**	**13,350**	**13,350**	**15,300**	**17,300**	**19,300**	**21,300**	**21,300**
	Auto driver mode share	**50%**	**50%**	**50%**	**50%**	**46%**	**43%**	**40%**	**40%**	**35%**
TYLin		Scenario 1	Scenario 2	N/A	N/A	N/A	N/A	Scenario 3	Scenario 4A	Scenario 4B
	Rangeview (units)	555	2,500					3,700	5,300	5,300
	Lakeview (units)	8,050	8,788					16,000	16,000	16,000
	Total Units	**8,605**	**11,288**					**19,700**	**21,300**	**21,300**
	Auto driver mode share	**55.50%**	**51%**					**45%**	**45%**	**40%**

The Region of Peel's Transportation Master plan sets out a target to achieve a 55% sustainable mode share in Mississauga by 2041. However, as this target represents a City-wide average, the sustainable mode share within higher order transit corridors is expected to be greater than 55%, with a correspondingly lower auto driver mode share. It is therefore reasonable to expect that the auto driver mode share in the Lakeview area could be a low as 40% to 35%.

The existing travel mode shares of comparable areas, based on home-based trips including apartment and townhouse dwelling types, are summarized in **Table 12**. Using 2016 TTS data, the travel mode shares within areas of Mississauga and Toronto, in addition to four comparable Toronto neighbourhoods, were determined. The zones used to delineate the comparable areas are summarized in **Appendix F.**

At the request of City Staff, BA Group also assessed the existing travel mode share of Liberty Village as a proxy for the Site. Liberty Village's travel mode share patterns were assessed using 2016 TTS data (TTS Zone 89). As summarized in **Table 12,** the auto driver share is 38% in the AM and 33% in the PM. These auto driver mode shares generally align with the proposed mode share for Rangeview and Lakeview of 40% to 35% that BA Group is proposing for the ultimate future condition (Rangeview with 5,300 units and Lakeview with 16,000 units).

TABLE 12 TRAVEL MODE SHARE COMPARISON BY AREA

Mode	Municipality / Area					
	Peel Region	City of Toronto	Yonge-Eglinton (Toronto)	North York Centre (Toronto)	Kipling / Six Point / Islington (Toronto)	Liberty Village (Toronto)
AM Peak Home-based Trips						
Auto Driver	**57%**	**35%**	**24%**	**31%**	**35%**	**38%**
Auto Passenger	16%	9%	2%	7%	7%	8%
Transit	17%	39%	57%	52%	50%	38%
Active Transportation	10%	17%	17%	10%	8%	16%
PM Peak Home-based Trips						
Auto Driver	**65%**	**37%**	**25%**	**34%**	**41%**	**33%**
Auto Passenger	14%	9%	5%	9%	8%	9%
Transit	17%	38%	54%	48%	46%	36%
Active Transportation	4%	16%	16%	9%	5%	22%

Notes:
1. Mode share based on home-based trip made from apartment and townhouse dwelling types.

6.3.3 Existing Traffic Volumes

In addition to the analysis scenarios previously described, the BA September 2023 included traffic analysis an assessment of existing conditions. The existing lane configuration and traffic control is provided in **Figure 15**. The traffic volumes used within the analysis for existing conditions were taken directly from the 2019 TYLin report and are illustrated in **Figure 16.** It is noted that this updated report continues to reference the 2019 TYLin volumes for Scenarios 1, 2, 3A & 3B submitted in the 2023 BA Group report and that the existing conditions have not been reassessed as part of this updated report.

The updated traffic analysis for Scenarios 4, 5, 6, 7A & 7B was based on updated traffic volumes collected by Spectrum Data on behalf of BA Group in 2022. The 2022 traffic volumes collected by Spectrum data are provided in **Appendix G** along with a traffic volume figure for 2022 existing conditions. The City has noted in their response to BA Group's Terms of Reference that the 2022 traffic counts need to be updated. BA Group has made arrangements for traffic data to be collected in the study area in 2024 such that all future traffic analysis undertaken for the Site will be based on the 2024 traffic counts.

6.3.4 Background Traffic Volumes

6.3.4.1 September 2023 BA Group Report

To determine the background traffic volumes for this study, traffic volume layers, inclusive of Site traffic volumes and background traffic volumes, were taken from the April 2021 TYLin Report. These traffic volume layers were then adjusted based upon the following:

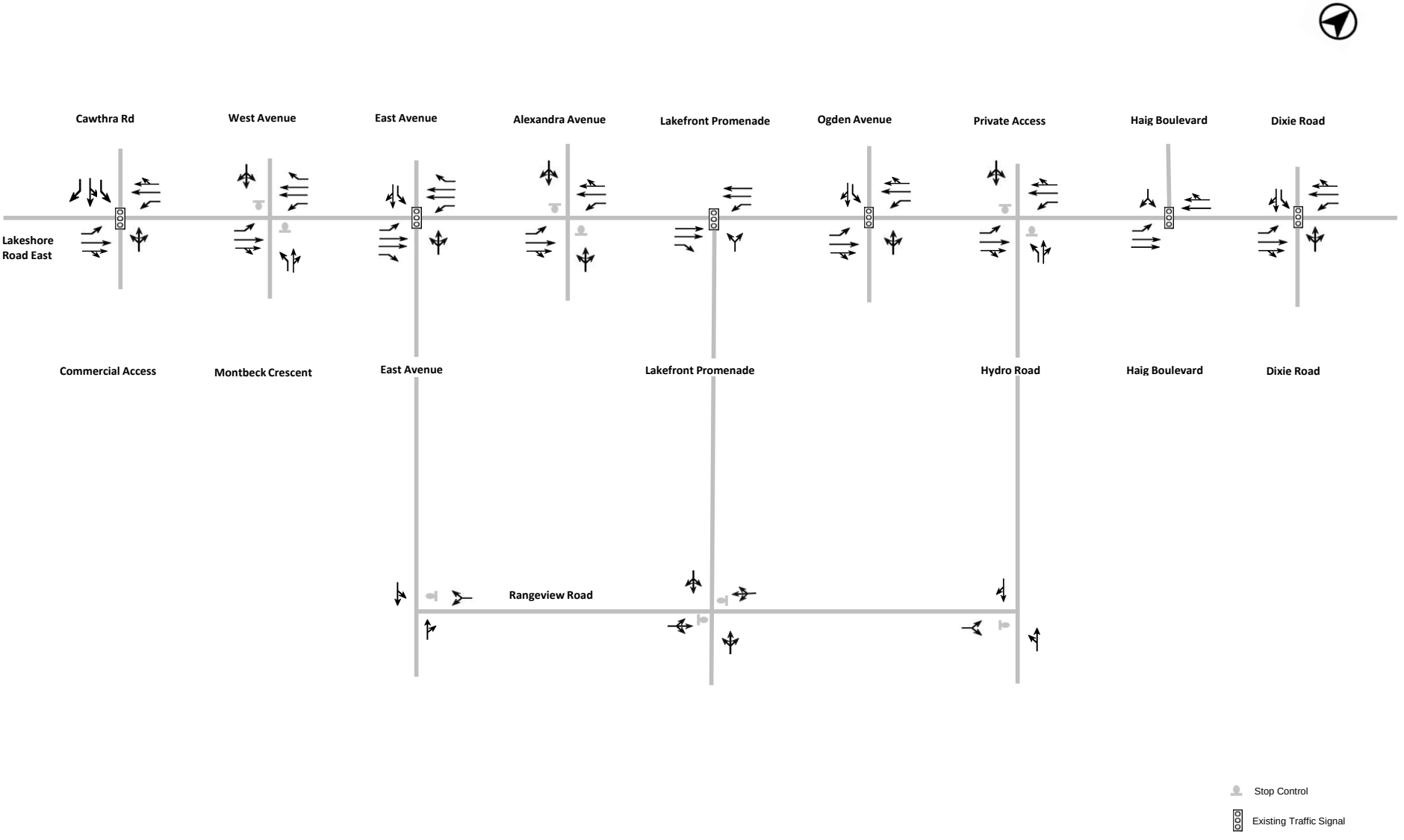
- Development statistics considered by scenario;
- Driveway removals; and
- Proposed road network/ access points.
- Consistent with updated analysis

Traffic volume layers were then created for both the Rangeview and Lakeview Village sites that could be added to the future background layers.

A key component of the September 2023 BA Group Report, included a background travel demand assessment with a corridor reduction exercise that estimated how the planned BRT along Lakeshore Road East could be expected to reduce traffic volumes. As part of this exercise, a total of 200 vehicles per hour were removed from through traffic volumes along Lakeshore Road East, in the peak direction only, for both the morning and afternoon peak hour. The traffic volumes were then balanced and diverted as appropriate, depending on the road network being included for each scenario, thus the diversion and balancing undertaken differs by scenario.

6.3.4.1 Updated BA Group Report

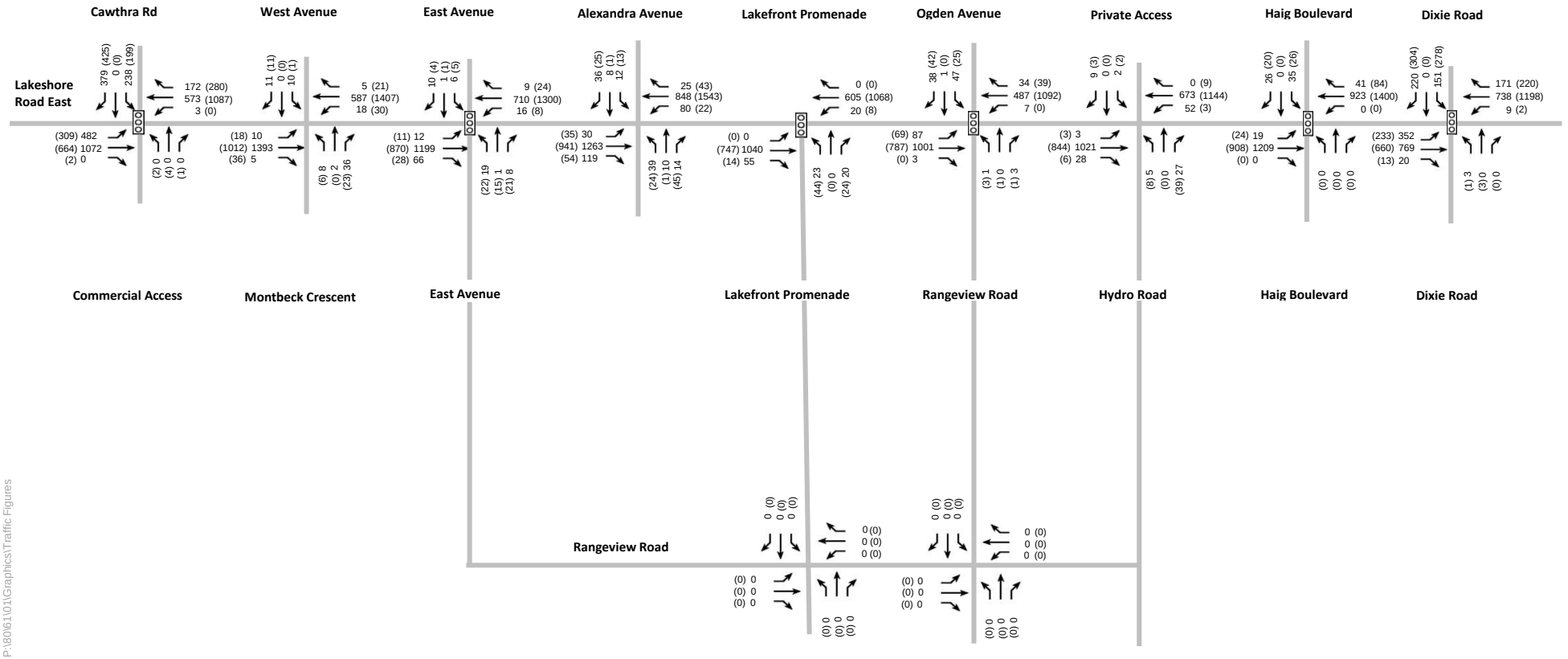
In this updated report, vehicles were not removed from Lakeshore in the Peak direction. However, to align with the December 2023 TYLin Report, for Scenarios 4, 5, 6, 7A & 7B, the non-residential GFA for Lakeview was reduced from 2.1 to 1.7 M ft^2. The remaining parameters remain unchanged.



Date Plotted: 30/04/2024 Filename P:\80161\01\Graphics\Traffic Figures

FIGURE 15 EXISTING LANE CONFIGURATION (2021)

RANGEVIEW ESTATES



Date Plotted: 28/08/2023 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 16 EXISTING TRAFFIC VOLUMES (2021)

6.4 MULTI-MODAL TRAVEL DEMAND

In order to determine the travel demand for each scenario, trip rates were established from the April 2021 TYLin report. Relevant excerpts from the April 2021 TYLin report are provided in **Appendix H**. Once the number of vehicle trips was determined, the future travel mode shares (with BRT) from **Table 10**, were applied to each scenario to establish the multi-modal travel demand. It is noted that the travel demand for the BA Group traffic analysis includes a total non-residential GFA of 2.1 million ft^2, inclusive of the proposed office, recreational community centre, retail and hotel, in order to align with the traffic volume layers included with the April 2021 TYLin study. Since completion of the April 2021 TYLin report, as per TYLin's discussions with City Staff, it was agreed that the recreational community centre would likely be an off-peak generator, hence the traffic analysis is conservative as the travel demand for all proposed non-residential uses has been considered.

The trip travel demand approach for Scenarios 1, 2, 3A & 3B remains consistent and has not been updated for this report. The methodology for the updated analysis for Scenarios 4, 5, 6, 7A & 7B has however been modified when compared to the previous approach. The number of trips established in the TYLin report was used in conjunction with a modified auto driver mode share in **Table 11** to determine the auto driver trip rate. Additionally, to align with the December 2023 TYLin Report, the Lakeview background non-residential GFA was decreased from 2.1 to 1.7 million ft^2.

6.4.1 September 2023 BA Group Report Travel Demand

6.4.1.1 Travel Demand: Scenario 1 – 2,500 Rangeview Residential Units

As summarized in **Table 13**, in consideration of Rangeview with 2,500 residential units and Lakeview Village with 7,500 residential units + 67% development of the non-residential, the combined sites are expected to generate a total of 2,890 and 3,054 two-way vehicle trips during the morning and afternoon peak period, respectively.

TABLE 13 VEHICLE TRIPS: SCENARIO 1 – 2,500 RANGEVIEW UNITS

Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	2,500 units	56	413	469	293	112	405
Office	0%	0	0	0	0	0	0
Retail	0%	0	0	0	0	0	0
Total		**56**	**413**	**469**	**293**	**112**	**405**
Lakeview Village							
Residential	7,500 units	185	1,283	1,468	938	379	1,317
Non-Residential[1]	67% (1.4M ft^2)	669	285	953	496	835	1,331
Total		**854**	**1,568**	**2,422**	**1,434**	**1,215**	**2,649**
Serson							
Office	0%	0	0	0	0	0	0
Research	0%	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**
All Sites Combined							
Total		**910**	**1,980**	**2,890**	**1,728**	**1,326**	**3,054**

Notes:
1. 67% of the total Lakeview Village non-residential development of 2.1 million ft^2 is 1.4 million ft^2.

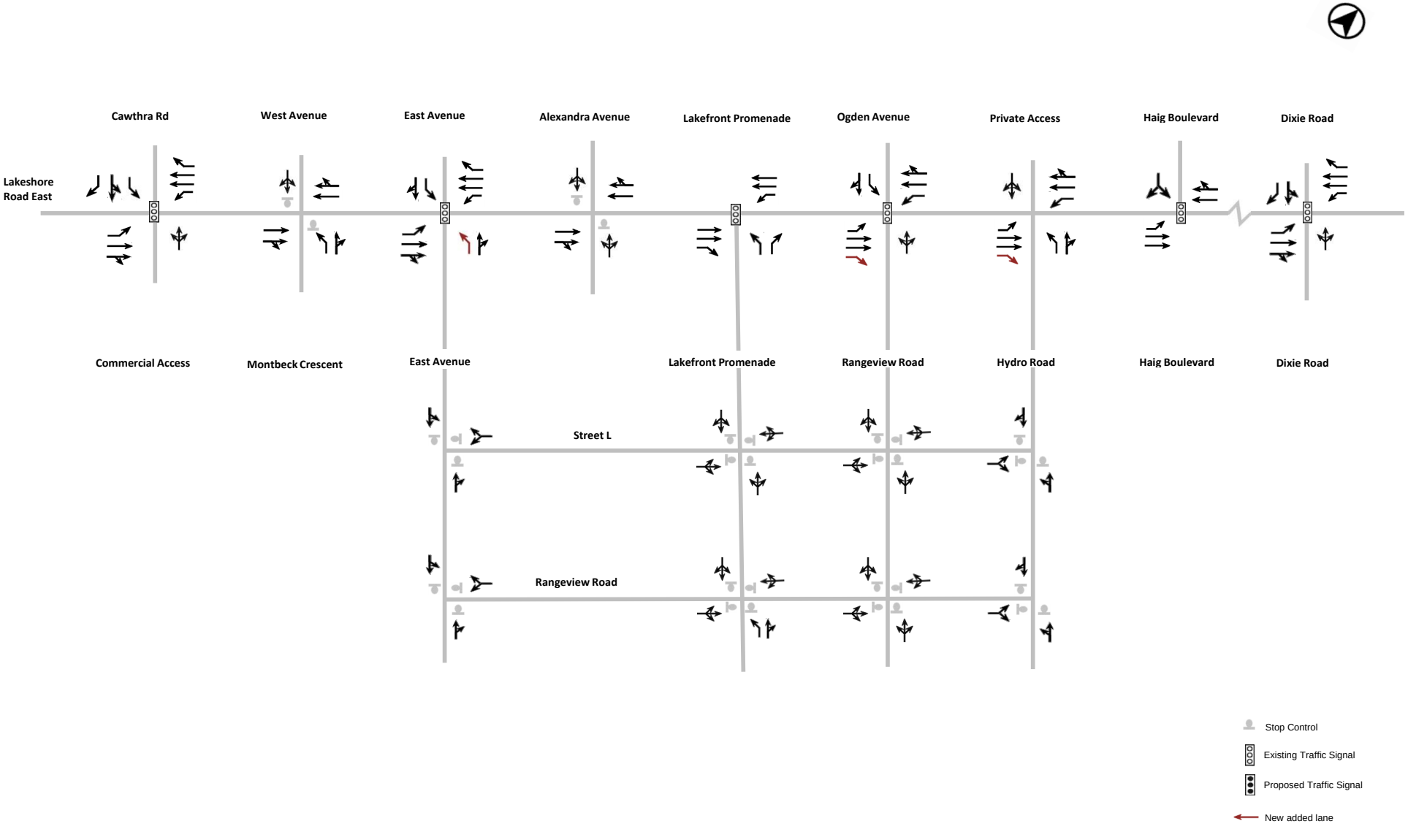
The Scenario 1 lane configuration and traffic control is provided in **Figure 17**. Figures that illustrate the Scenario 1 traffic volumes are provided as follows:

- **Figure 18**: Scenario 1: 2031 Rangeview Site Traffic Volumes (2,500 units)
- **Figure 19**: Scenario 1: 2031 Lakeview Village Site Traffic Volumes (7,500 units)
- **Figure 20**: Scenario 1: 2031 Rangeview + Lakeview Village Site Traffic Volumes (10,000 units)
- **Figure 21**: Scenario 1: 2031 Future Total Traffic Volumes (10,000 units)

As summarized in **Table 14**, Scenario 1 (2,500 Rangeview units) is expected to generate 1,445 and 2,138 two-way transit trips, during the morning and afternoon peak period respectively. There are expected to be 1,040 and 550 two-way auto passenger trips, during the morning and afternoon peak period respectively and 289 and 244 two-way walking trips, during the morning and afternoon peak period respectively. With the adjusted travel mode shares for cycling trips, there are expected to be 116 and 122 two-way cycling trips, during the morning and afternoon peak period respectively.

TABLE 14 MULTI-MODAL TRAVEL DEMAND: SCENARIO 1 – 2,500 RANGEVIEW UNITS

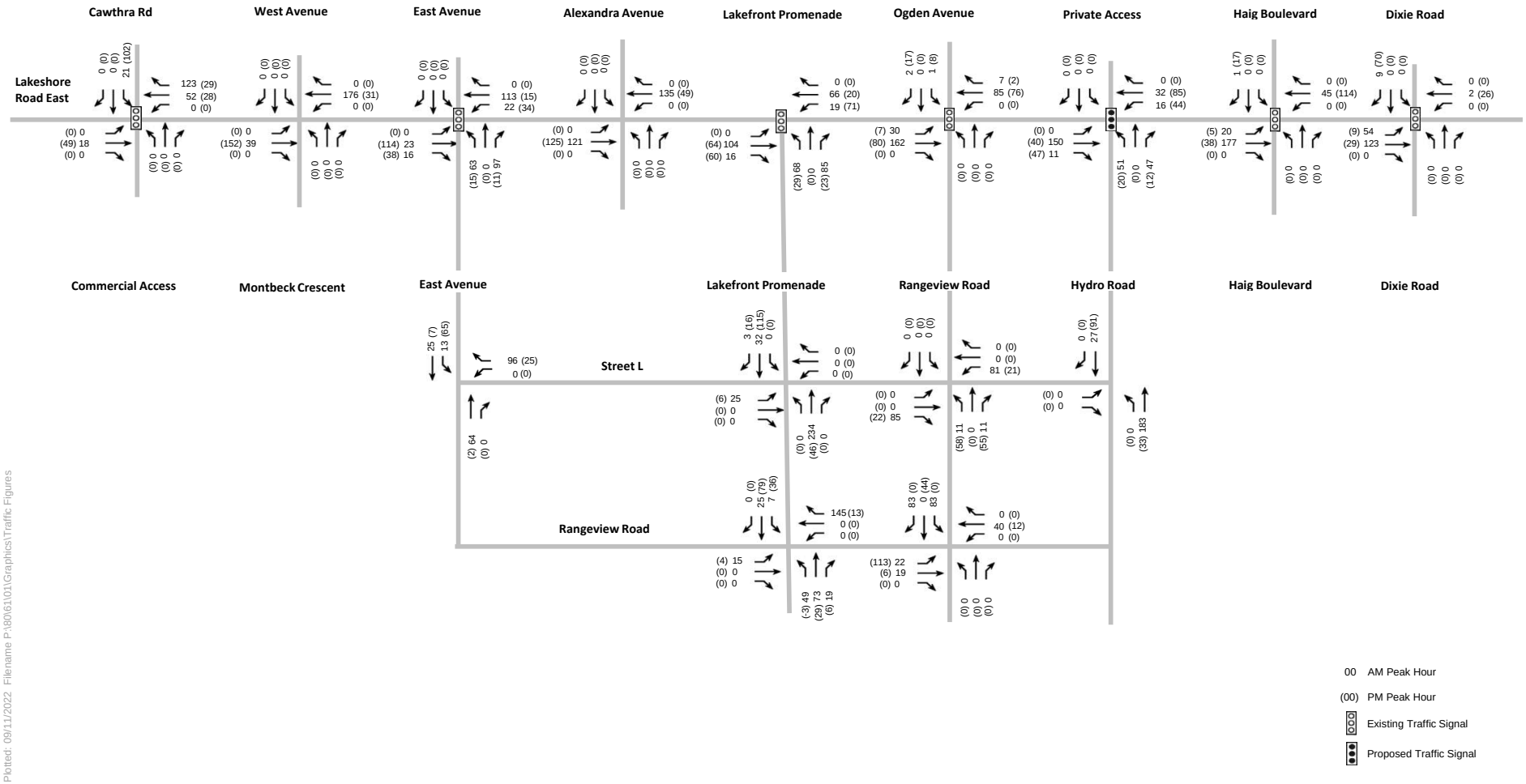
Mode of Travel	Morning			Afternoon		
	In	Out	2-Way	In	Out	2-Way
Transit	455	990	1,445	1,209	928	2,138
Auto Driver	910	1,980	2,890	1,728	1,326	3,054
Auto Passenger	328	713	1,040	311	239	550
Walk	91	198	289	138	106	244
Cycle	36	79	116	69	53	122
Total	**1,820**	**3,961**	**5,781**	**3,455**	**2,653**	**6,108**



Date Plotted: 30/04/2024 Filename P:\8061\01\Graphics\Traffic Figures_DMA

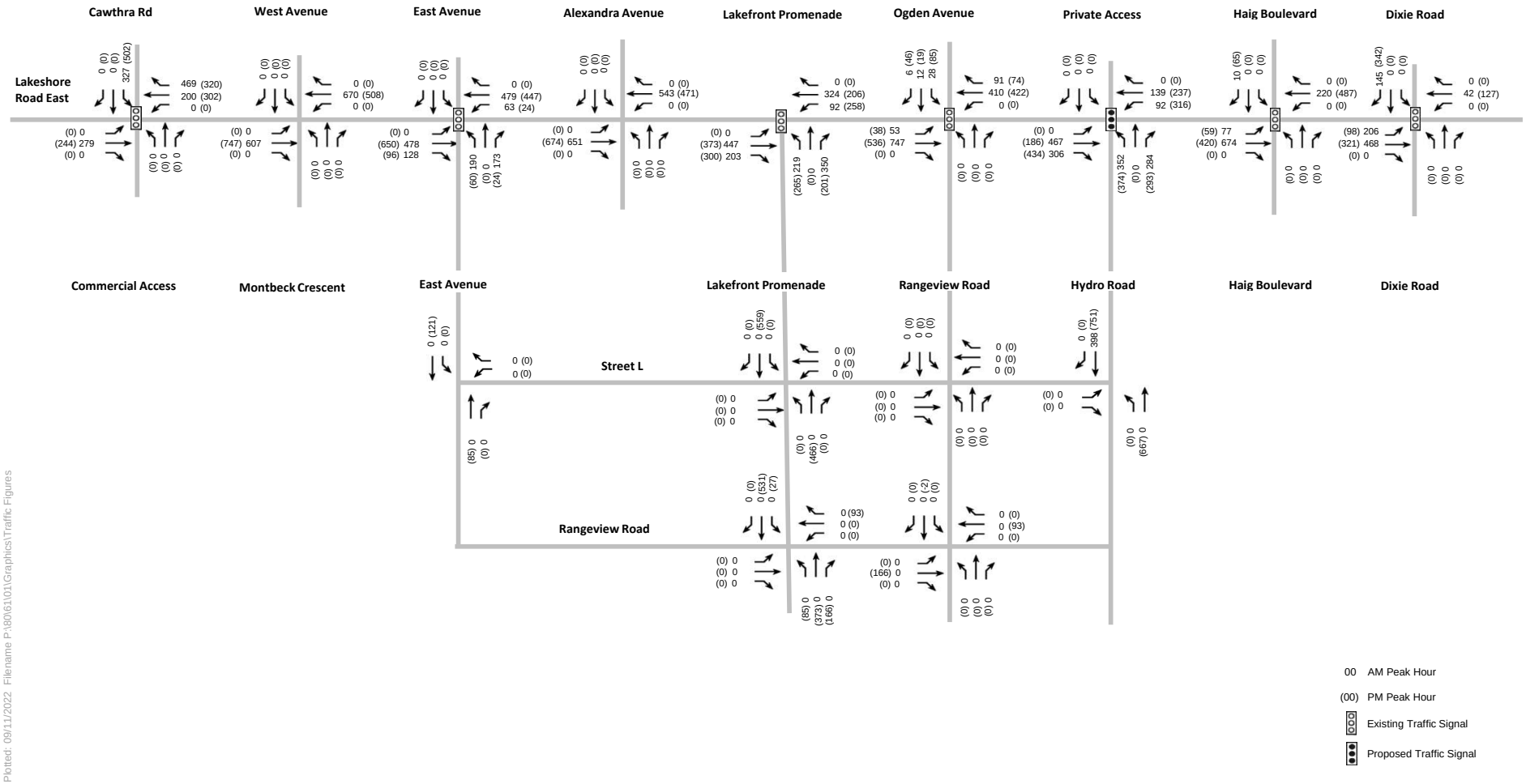
FIGURE 17 SCENARIO 1 LANE CONFIGURATION & TRAFFIC CONTROL (2031)

RANGEVIEW ESTATES



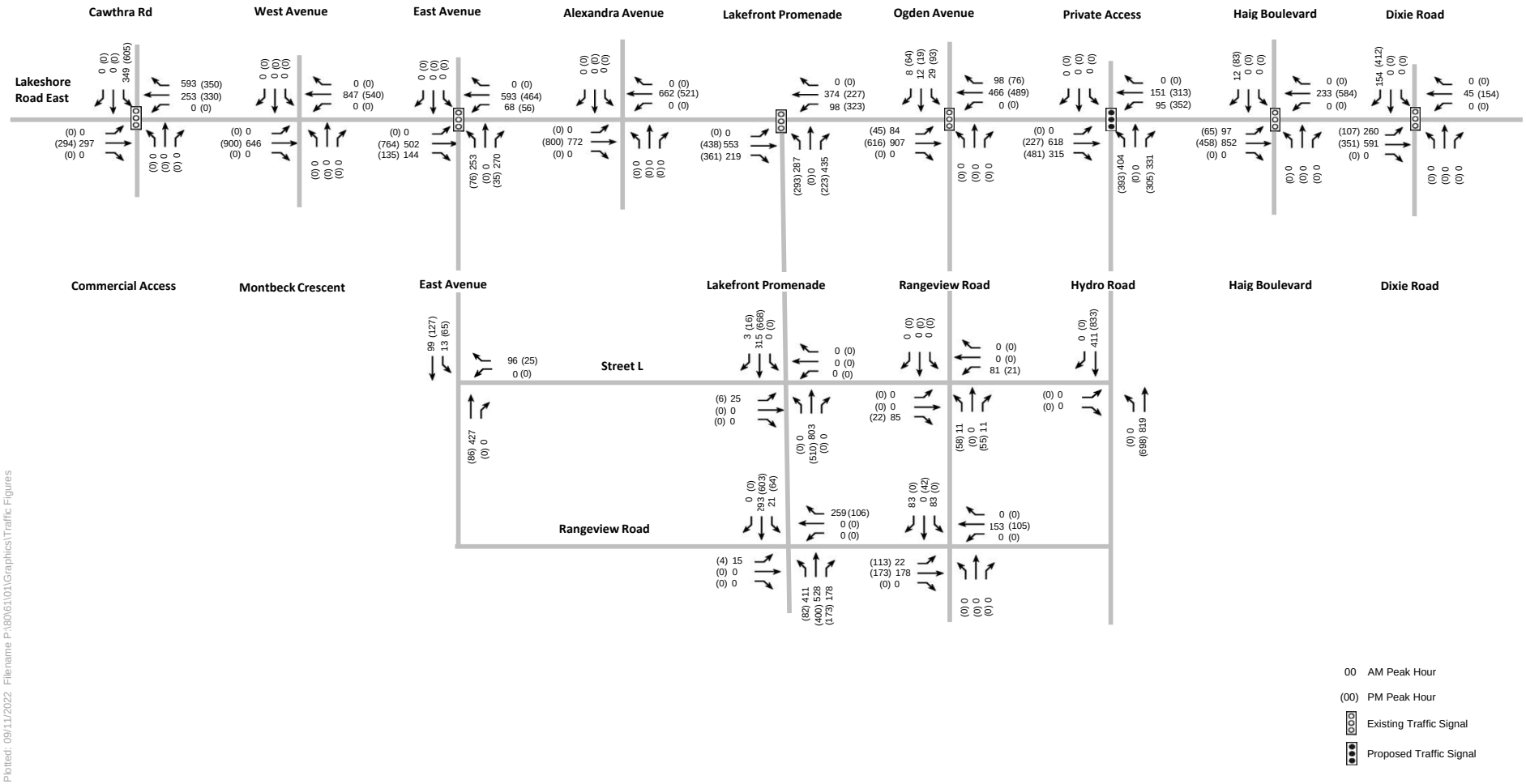
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 18 - SCENARIO 1 2031 RANGEVIEW SITE TRAFFIC VOLUMES (2,500 UNITS)



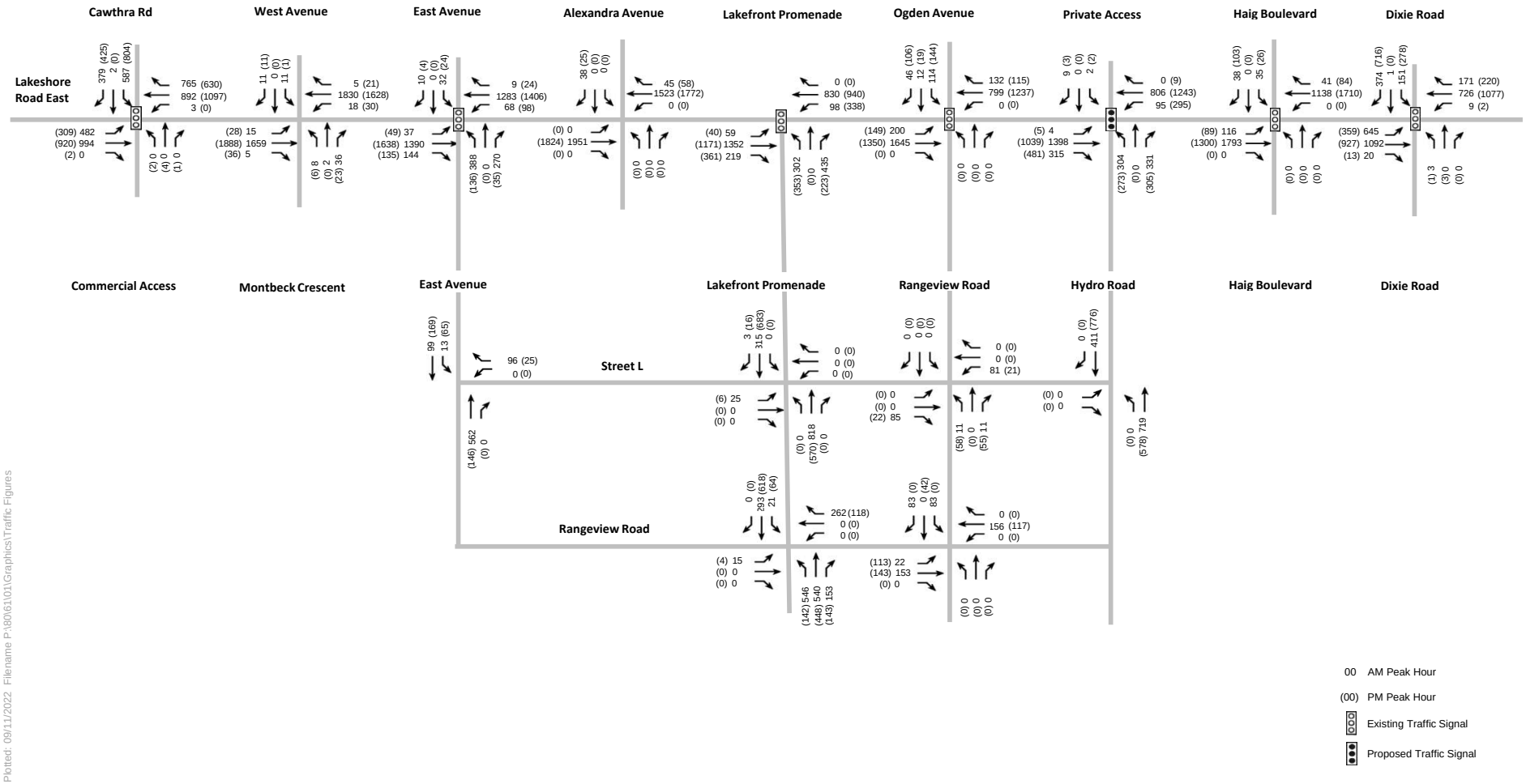
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 19 - SCENARIO 1 2031 LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (7,500 UNITS)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 20 - SCENARIO 1 2031 RANGEVIEW + LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (10,000 UNITS)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 21 - SCENARIO 1 2031 FUTURE TOTAL TRAFFIC VOLUMES (10,000 UNITS)

6.4.1.2 Travel Demand: Scenario 2 – 3,700 Rangeview Residential Units (with Ogden)

As summarized in **Table 15**, in consideration of Rangeview with 3,700 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,841 and 4,229 two-way vehicle trips during the morning and afternoon peak period, respectively.

TABLE 15 VEHICLE TRIPS: SCENARIO 2 – 3,700 RANGEVIEW UNITS (WITH OGDEN)

Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	3,700 units	83	611	694	449	172	621
Office	100% (47,500 ft^2)	33	4	37	1	22	23
Retail	100% (47,500 ft^2)	64	40	104	91	84	174
Total		**179**	**656**	**835**	**540**	**278**	**818**
Lakeview Village							
Residential	8,050 units	199	1,377	1,576	1,007	407	1,414
Non-Residential	100% (2.1M ft^2)	1,003	427	1,430	744	1,253	1,997
Total		**1,202**	**1,804**	**3,006**	**1,751**	**1,660**	**3,411**
Serson							
Office	0%	0	0	0	0	0	0
Research	0%	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**
All Sites Combined							
Total		**1,381**	**2,460**	**3,841**	**2,291**	**1,938**	**4,229**

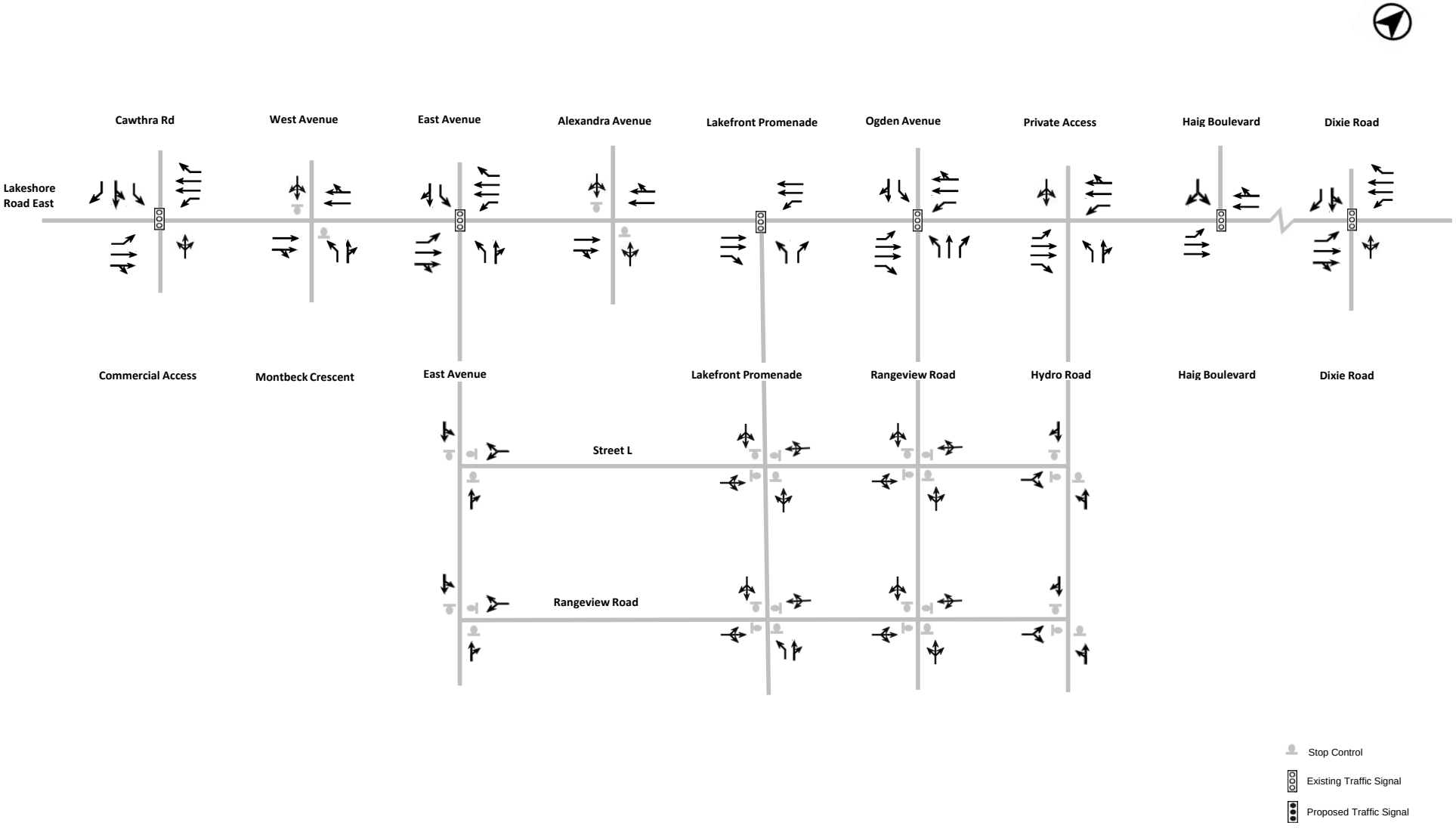
The Scenario 2 lane configuration and traffic control is provided in **Figure 22**. Figures that illustrate the Scenario 2 traffic volumes are provided as follows:

- **Figure 23**: Scenario 1: 2041 Rangeview Site Traffic Volumes (3,700 units)
- **Figure 24**: Scenario 1: 2041 Lakeview Village Site Traffic Volumes (8,050 units)
- **Figure 25**: Scenario 1: 2041 Rangeview + Lakeview Village Site Traffic Volumes (11,750 units)
- **Figure 26**: Scenario 1: 2041 Future Total Traffic Volumes (11,750 units)

As summarized in **Table 16**, Scenario 2 (3,700 Rangeview units) is expected to generate 1,921 and 2,961 two-way transit trips, during the morning and afternoon peak period respectively. There are expected to be 1,383 and 761 two-way auto passenger trips, during the morning and afternoon peak period respectively and 384 and 338 two-way walking trips, during the morning and afternoon peak period respectively. With the adjusted travel mode shares for cycling trips, there are expected to be 154 and 169 two-way cycling trips, during the morning and afternoon peak period respectively.

TABLE 16 MULTI-MODAL TRAVEL DEMAND: SCENARIO 2 – 3,700 RANGEVIEW UNITS (WITH OGDEN)

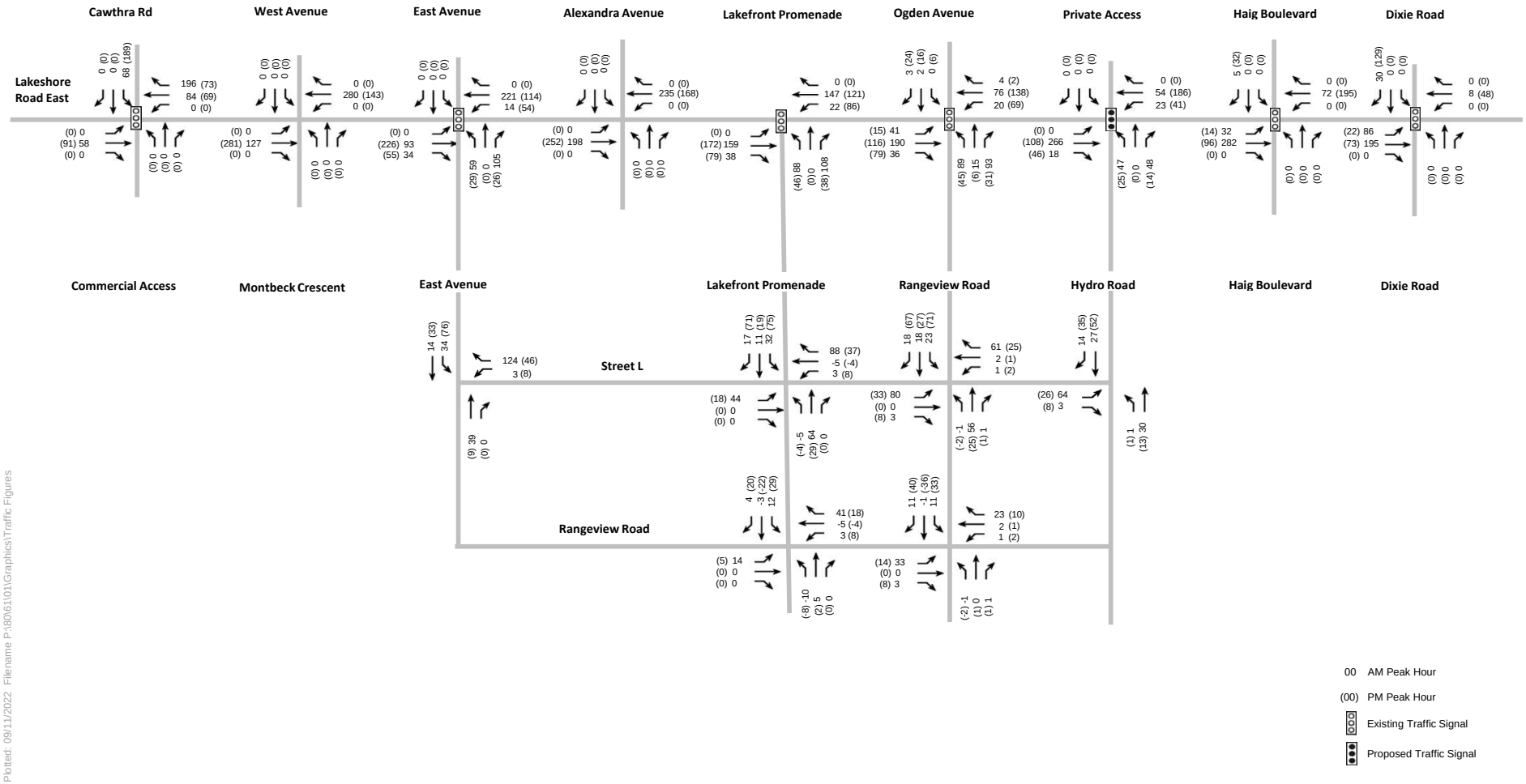
Mode of Travel	Morning			Afternoon		
	In	Out	2-Way	In	Out	2-Way
Transit	691	1,230	1,921	1,604	1,357	2,961
Auto Driver	1,381	2,460	3,841	2,291	1,938	4,229
Auto Passenger	497	886	1,383	412	349	761
Walk	138	246	384	183	155	338
Cycle	55	98	154	92	78	169
Total	**2,763**	**4,919**	**7,682**	**4,582**	**3,876**	**8,459**



Date Plotted: 30/04/2024 Filename P:\8061\01\Graphics\Traffic Figures_DMA

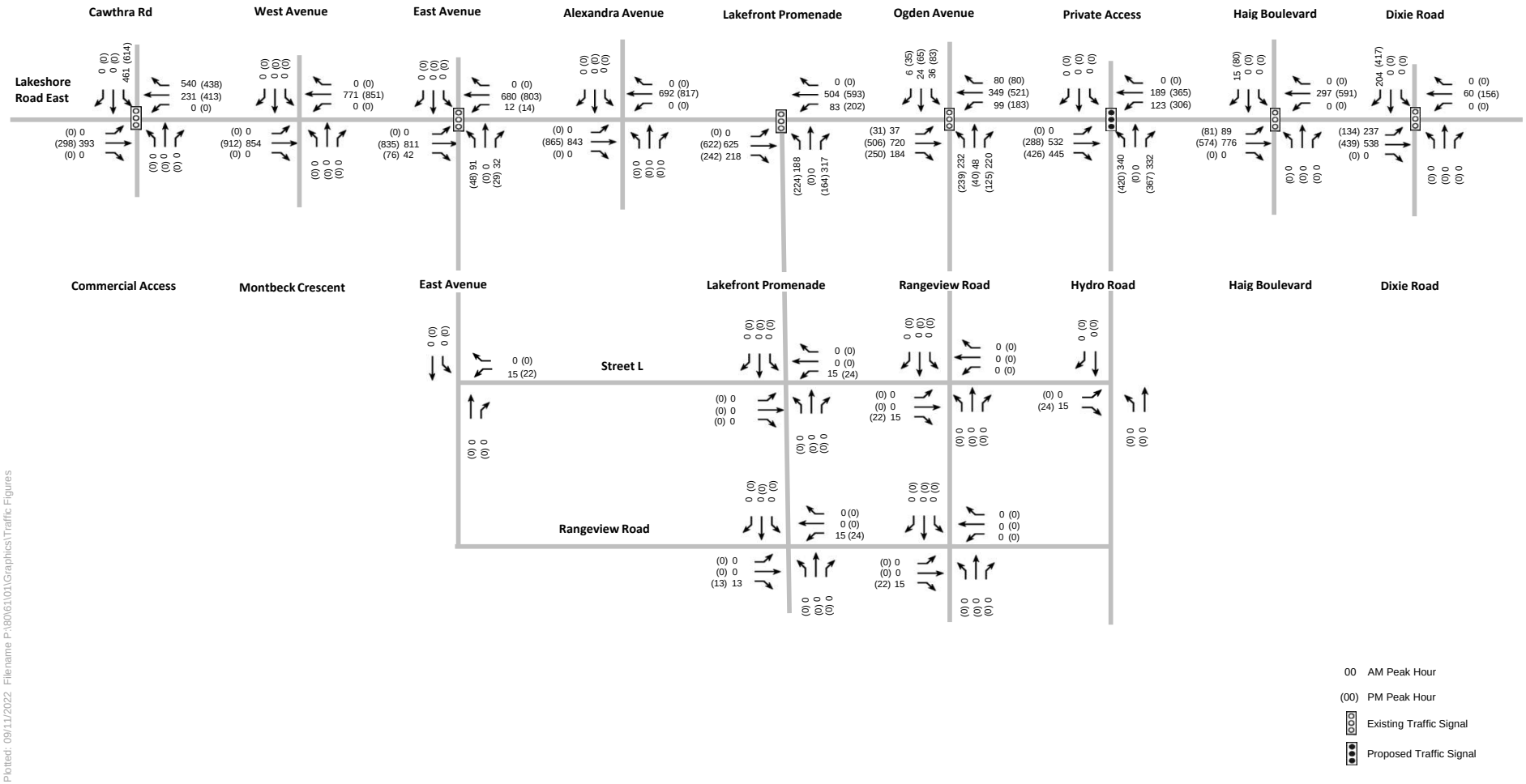
FIGURE 22 SCENARIO 2 LANE CONFIGURATION & TRAFFIC CONTROL (2041)

RANGEVIEW ESTATES



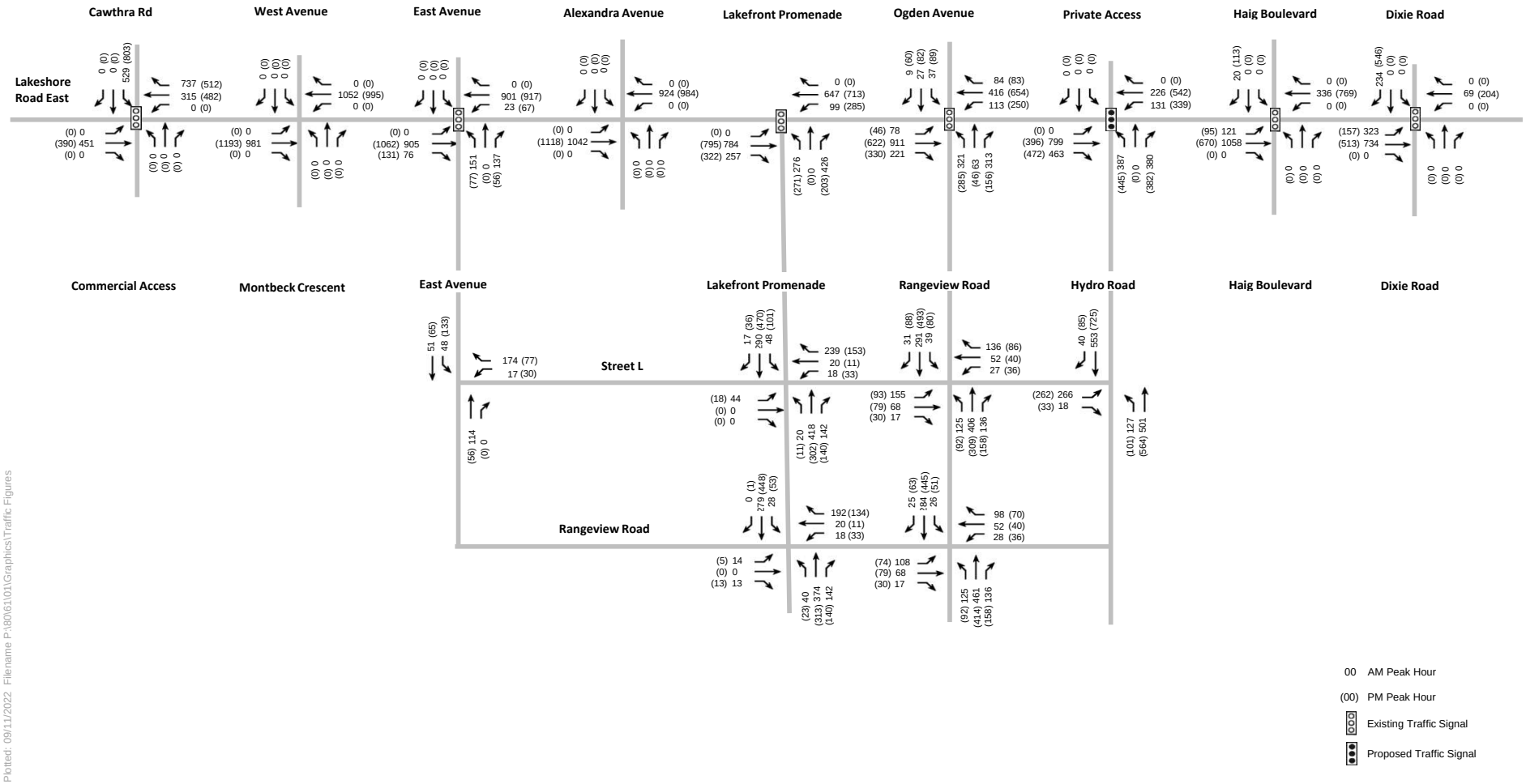
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 23 - SCENARIO 2 2041 RANGEVIEW SITE TRAFFIC VOLUMES (3,700 UNITS)



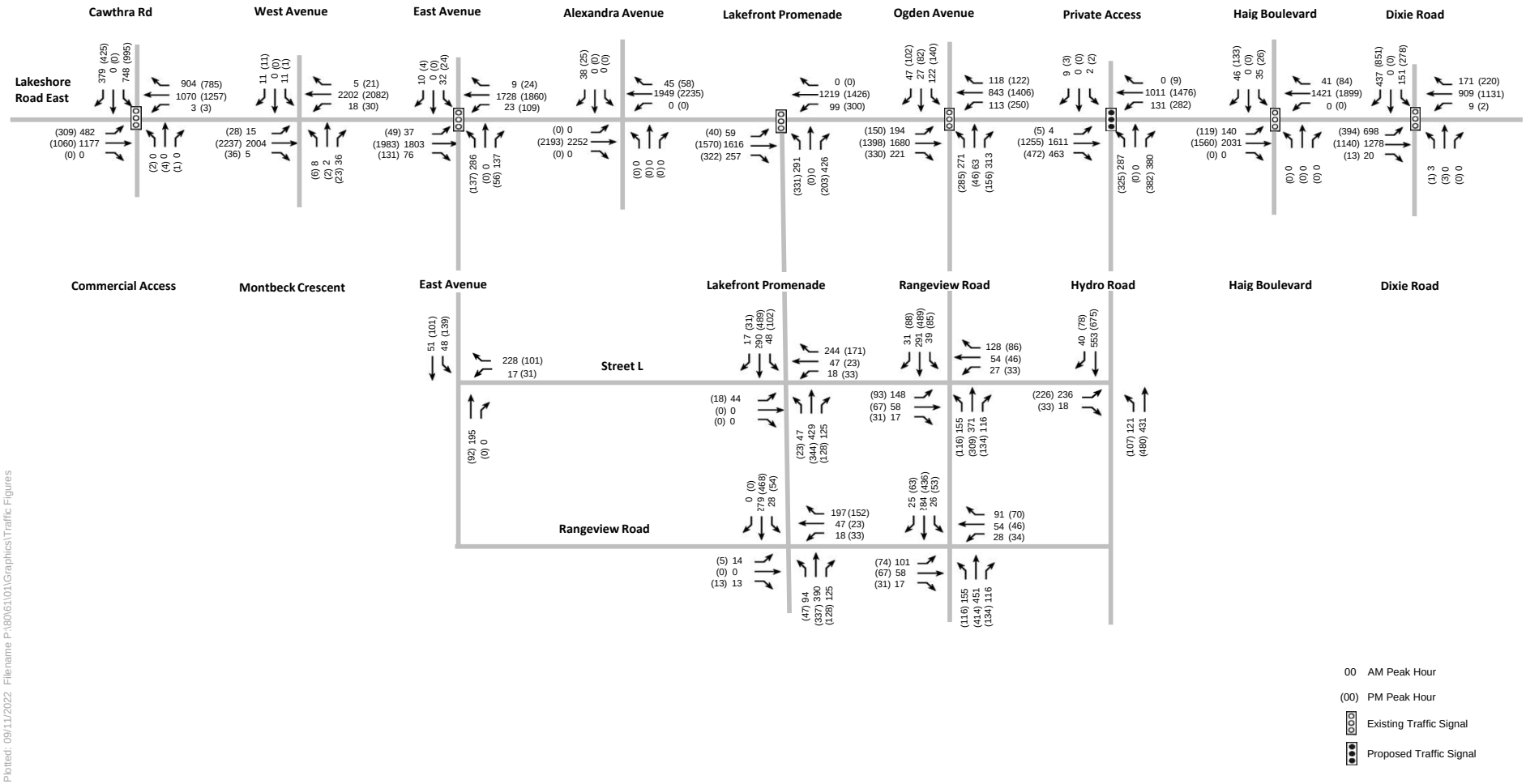
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 24 - SCENARIO 2 2041 LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (8,050 UNITS)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 25 - SCENARIO 2 2041 RANGEVIEW + LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (11,750 UNITS)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 26 - SCENARIO 2 2041 FUTURE TOTAL TRAFFIC VOLUMES (11,750 UNITS)

6.4.1.3 Travel Demand: Scenario 3A – 5,300 Rangeview Residential Units (with Haig)

As summarized in **Table 17**, with the connection of Haig Boulevard, in consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential and 100% of the Serson lands developed, the combined sites are expected to generate a total of 4,337 and 4,739 two-way vehicle trips, during the morning and afternoon peak period, respectively.

TABLE 17 VEHICLE TRIPS: SCENARIO 3A – 5,300 RANGEVIEW UNITS (WITH HAIG)

Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300 units	118	876	995	656	253	909
Office	100% (47,500 ft^2)	33	4	37	1	22	23
Retail	100% (47,500 ft^2)	61	40	101	91	84	174
Total		**213**	**920**	**1,132**	**748**	**359**	**1,106**
Lakeview Village							
Residential	8,050 units	199	1,377	1576	1,007	407	1,414
Non-Residential	100% (2.1M ft^2)	1,003	427	1,430	744	1,253	1,997
Total		**1,202**	**1,804**	**3,006**	**1,751**	**1,660**	**3,411**
Serson							
Office	100% (224,500 ft^2)	116	19	135	24	118	142
Research	100% (224,500 ft^2)	48	16	64	12	68	80
Total		**164**	**35**	**199**	**36**	**186**	**222**
All Sites Combined							
Total		**1,579**	**2,759**	**4,337**	**2,535**	**2,205**	**4,739**

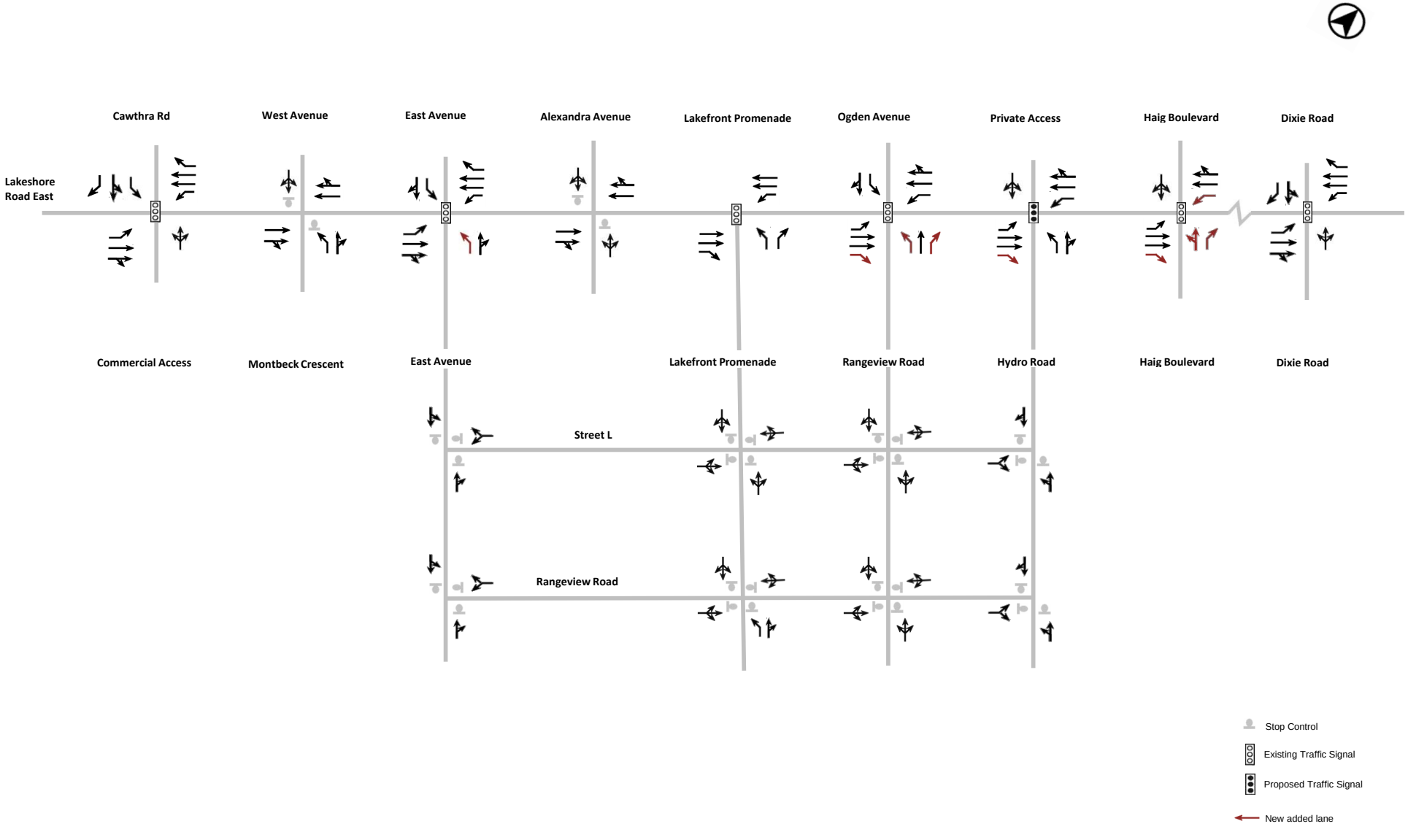
The Scenario 3A lane configuration and traffic control is provided in **Figure 27.** Figures that illustrate the Scenario 3A traffic volumes are provided as follows:

- **Figure 28**: Scenario 3A: 2041 Rangeview Site Traffic Volumes (5,300 units + Haig)
- **Figure 29**: Scenario 3A: 2041 Lakeview Village Site Traffic Volumes (8,050 units + Haig)
- **Figure 30**: Scenario 3A: 2041 Serson Site Traffic Volumes (8,050 units + Haig)
- **Figure 31**: Scenario 3A: 2041 Rangeview + Lakeview Village Site Traffic Volumes (13,350 units + Haig)
- **Figure 32:** Scenario 3A: 2041 Future Total Traffic Volumes (13,350 units + Haig)

As summarized in **Table 18**, Scenario 3A (5,300 Rangeview units with Haig) is expected to generate 2,169 and 3,318 two-way transit trips, during the morning and afternoon peak period respectively. There are expected to be 1,561 and 853 two-way auto passenger trips, during the morning and afternoon peak period respectively and 434 and 379 two-way walking trips, during the morning and afternoon peak period respectively. With the adjusted travel mode shares for cycling trips, there are expected to be 173 and 190 two-way cycling trips, during the morning and afternoon peak period respectively.

TABLE 18 MULTI-MODAL TRAVEL DEMAND: SCENARIO 3A – 5,300 RANGEVIEW UNITS (WITH HAIG)

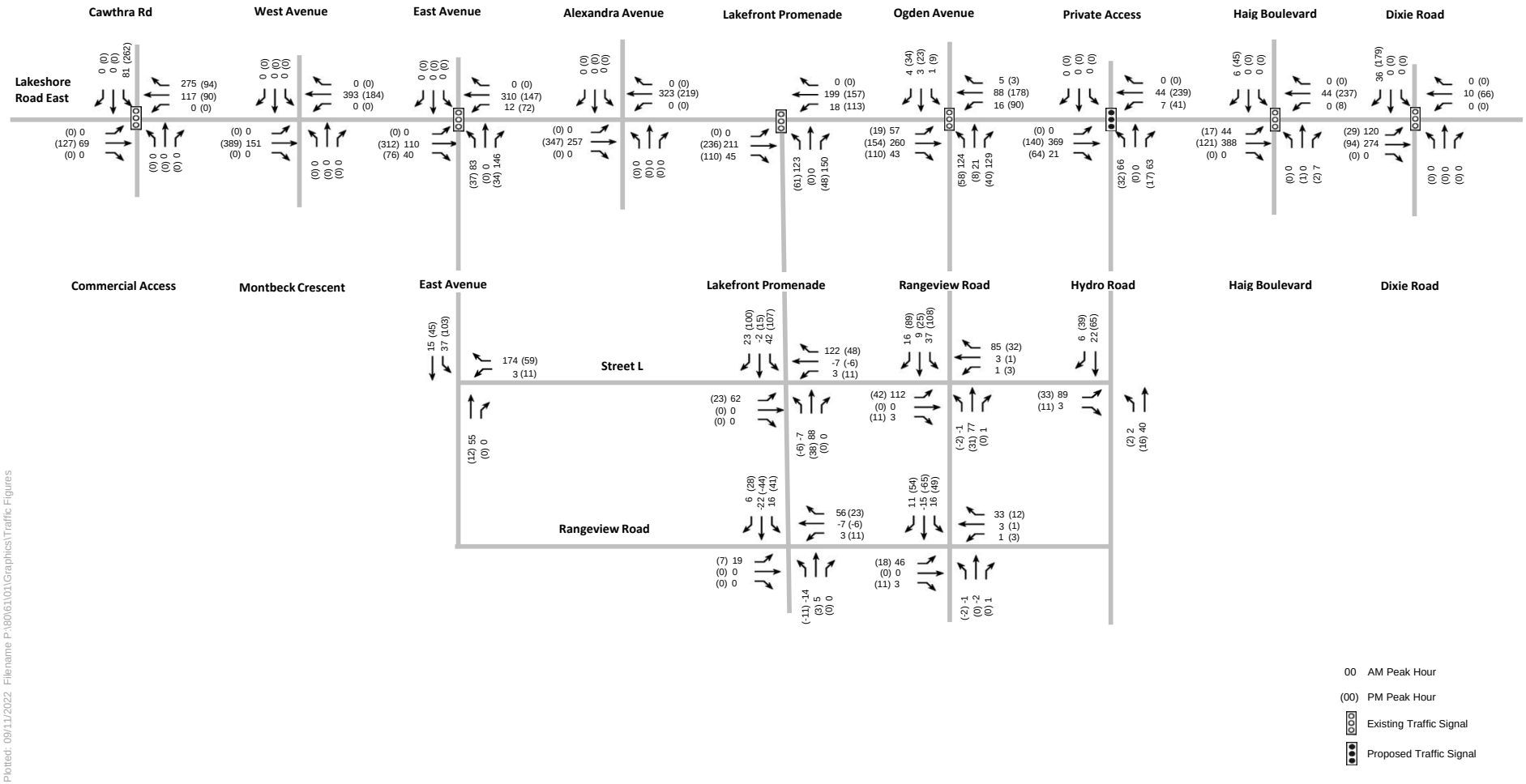
Mode of Travel	Morning			Afternoon		
	In	Out	2-Way	In	Out	2-Way
Transit	789	1,379	2,169	1,774	1,543	3,318
Auto Driver	1,579	2,759	4,337	2,535	2,205	4,739
Auto Passenger	568	993	1,561	456	397	853
Walk	158	276	434	203	176	379
Cycle	63	110	173	101	88	190
Total	**3,157**	**5,518**	**8,675**	**5,069**	**4,410**	**9,479**



Date Plotted: 30/04/2024 Filename P:\8061\01\Graphics\Traffic Figures_DMA

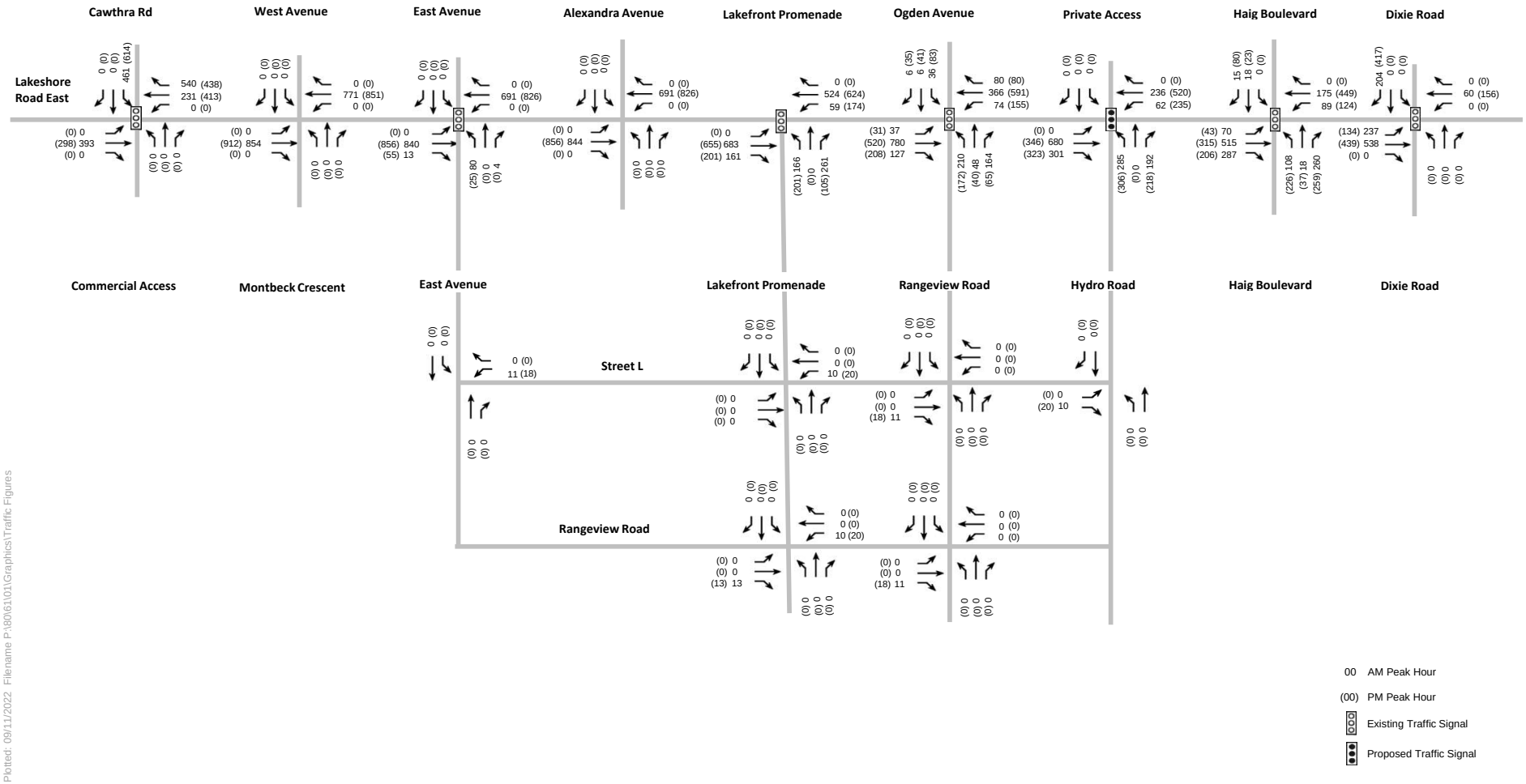
FIGURE 27 SCENARIO 3A LANE CONFIGURATION & TRAFFIC CONTROL (2041)

RANGEVIEW ESTATES



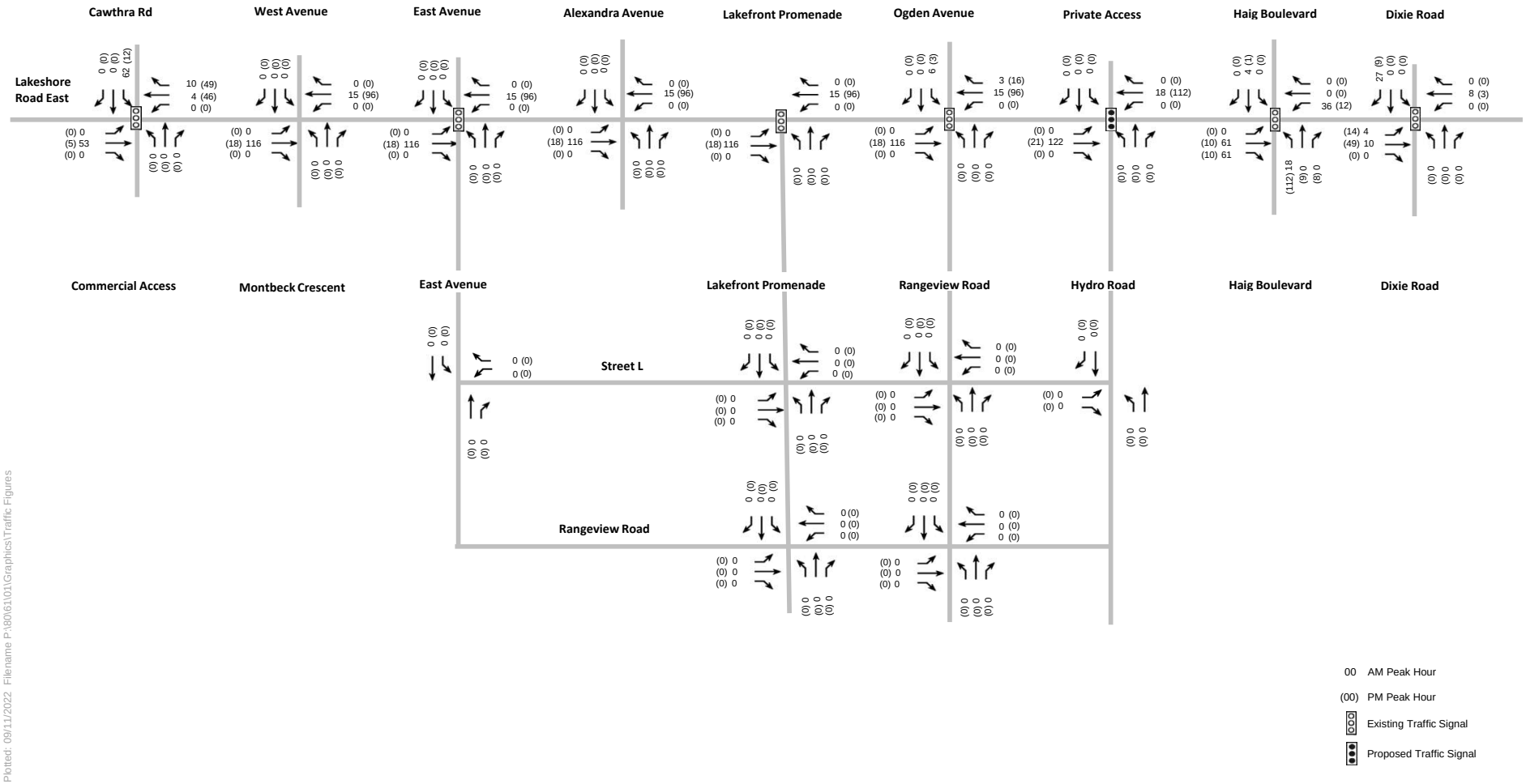
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 28 - SCENARIO 3A 2041 RANGEVIEW SITE TRAFFIC VOLUMES (5,300 UNITS + HAIG)



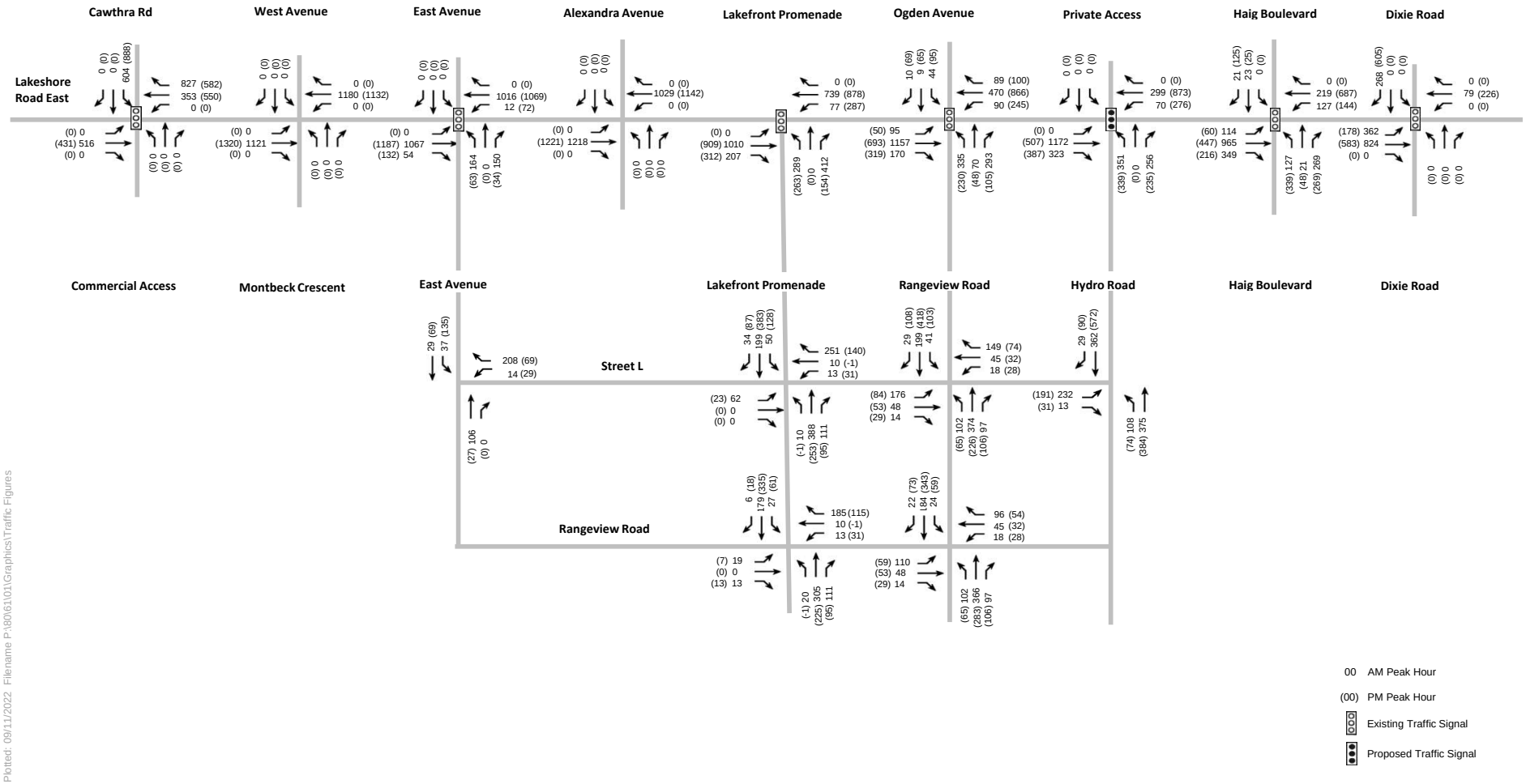
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 29 - SCENARIO 3A 2041 LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (8,050 UNITS + HAIG)



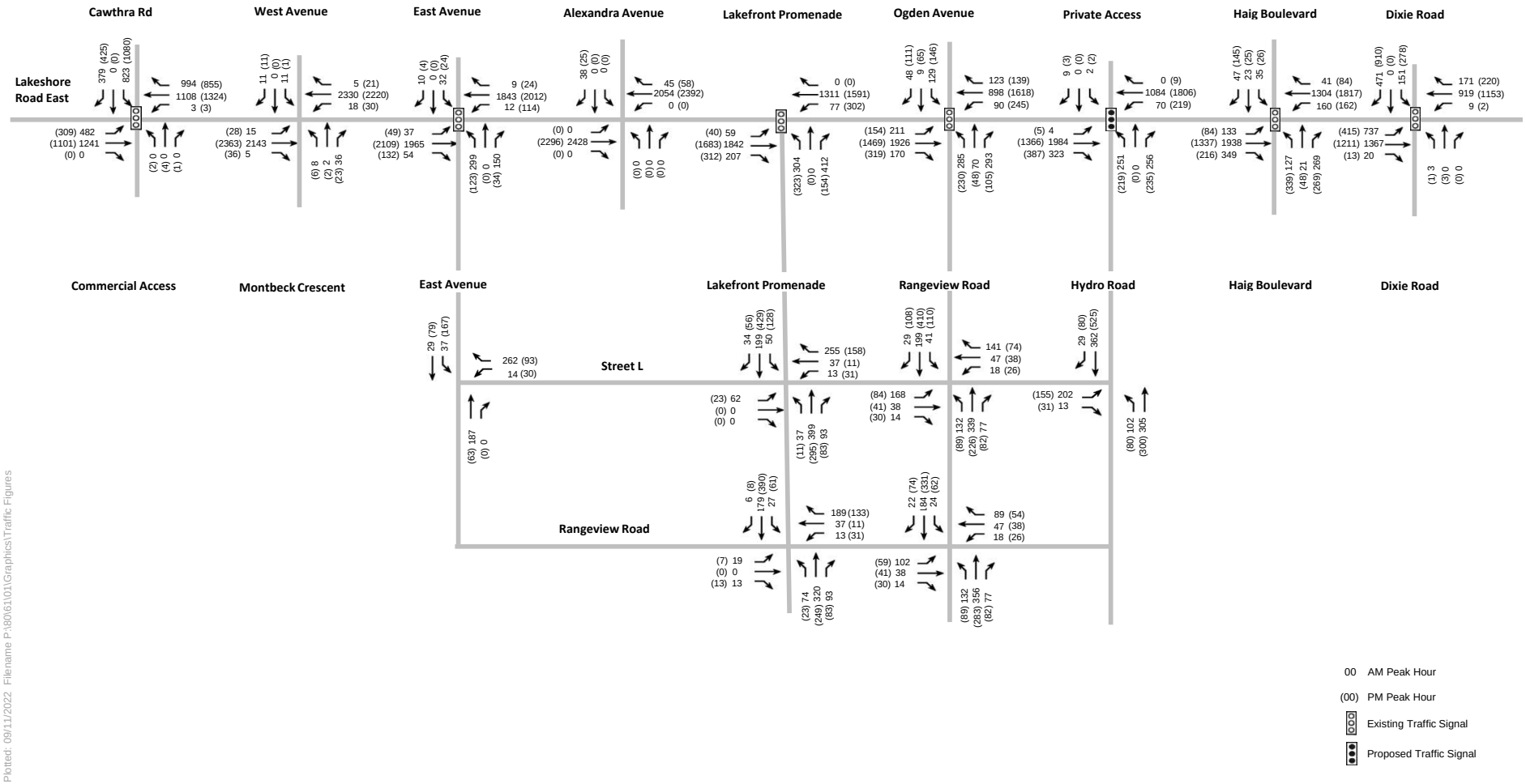
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 30 - SCENARIO 3A 2041 SERSON SITE TRAFFIC VOLUMES (+ HAIG)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 31 - SCENARIO 3A 2041 RANGEVIEW + LAKEVIEW VILLAGE + SERSON SITE TRAFFIC VOLUMES (13,350 UNITS + HAIG)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 32 - SCENARIO 3A 2041 FUTURE TOTAL TRAFFIC VOLUMES (13,350 UNITS + HAIG)

6.4.1.4 Travel Demand: Scenario 3B – 5,300 Rangeview Residential Units (Dual left turns but no Haig)

Scenario 3B includes the implementation of a dual northbound left-turn on Lakefront Promenade at Lakeshore Road East. As the traffic analysis determined that additional capacity would be required for northbound left-turning vehicles leaving both the Rangeview and Lakeview Village sites, to travel westbound along Lakeshore Road East, the dual left-turn lane option, without the connection of Haig Boulevard, was deemed to be beneficial from a phasing and traffic operations perspective.

As summarized in **Table 19**, with the implementation of the northbound dual left-turn on Lakefront Promenade at Lakeshore Road East, in consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 4,138 and 4,517 two-way vehicle trips, during the morning and afternoon peak period, respectively.

TABLE 19 VEHICLE TRIPS: SCENARIO 3B – 5,300 RANGEVIEW UNITS (DUAL LEFT)

Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	118	876	995	656	253	909
Office	100% (47,500 ft^2)	33	4	37	1	22	23
Retail	100% (47,500 ft^2)	61	40	101	91	84	174
Total		**213**	**920**	**1,132**	**748**	**359**	**1,106**
Lakeview Village							
Residential	8,050	199	1,377	1,576	1,007	407	1,414
Non-Residential	100% (2.1M ft^2)	1,003	427	1,430	744	1,253	1,997
Total		**1,202**	**1,804**	**3,006**	**1,751**	**1,660**	**3,411**
Serson							
Office	0%	0	0	0	0	0	0
Research	0%	0	0	0	0	0	0
Total		0	0	0	0	0	0
All Sites Combined							
Total		**1,415**	**2,724**	**4,138**	**2,499**	**2,019**	**4,517**

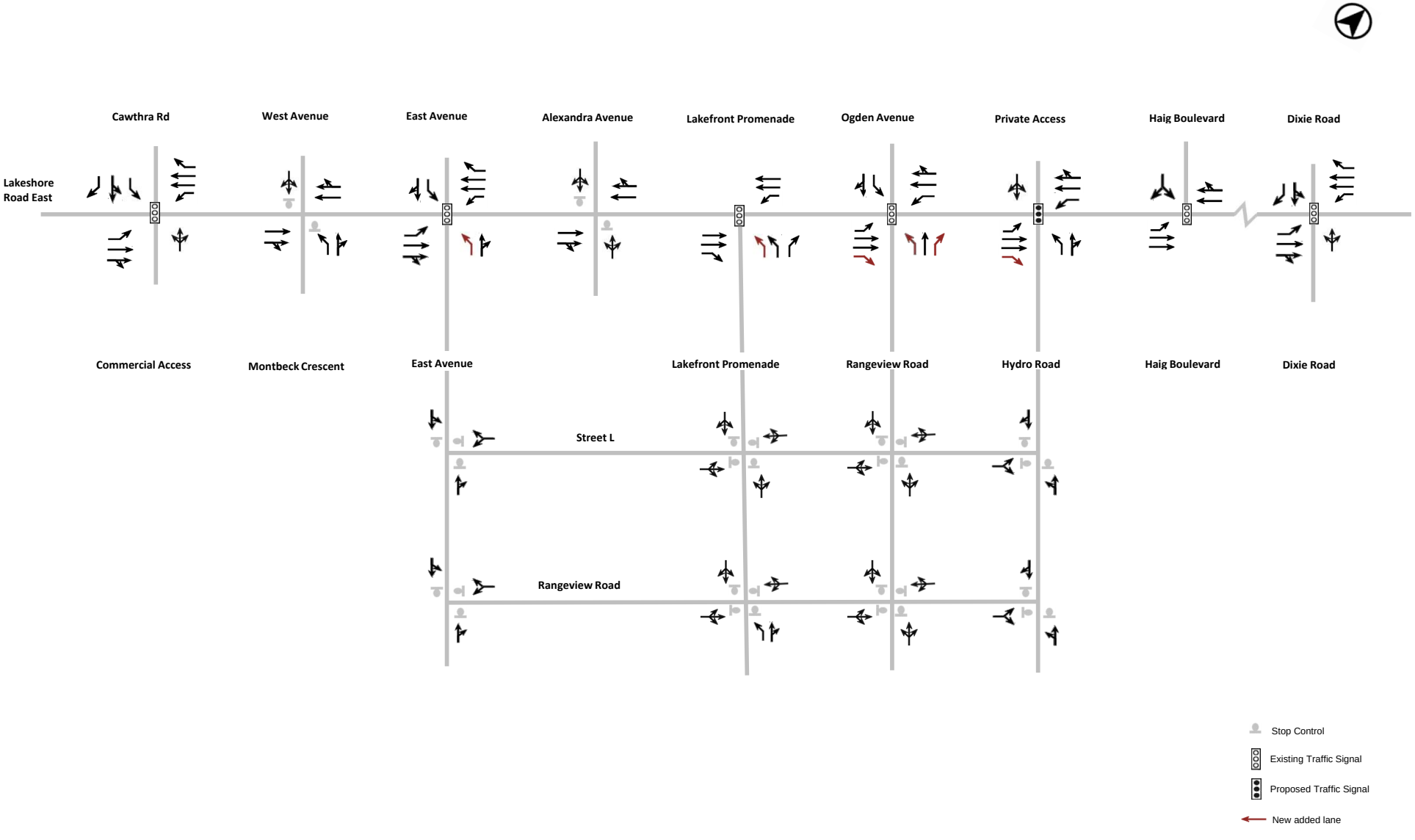
The Scenario 3B lane configuration and traffic control are provided in **Figure 33**. Figures that illustrate the Scenario 3B traffic volumes are provided as follows:

- **Figure 34**: Scenario 3B: 2041 Rangeview Site Traffic Volumes (5,300 units + Dual Left)
- **Figure 35**: Scenario 3B: 2041 Lakeview Village Site Traffic Volumes (8,050 units + Dual Left)
- **Figure 36**: Scenario 3B: 2041 Rangeview + Lakeview Village Site Traffic Volumes (13,350 units + Dual Left)
- **Figure 37**: Scenario 3B: 2041 Future Total Traffic Volumes (13,350 units + Dual Left)

As summarized in **Table 20**, Scenario 3B (5,300 Rangeview units with dual left) is expected to generate 2,069 and 3,162 two-way transit trips, during the morning and afternoon peak period respectively. There are expected to be 1,490 and 813 two-way auto passenger trips, and 414 and 361 two-way walking trips, during the morning and afternoon peak period respectively. With the adjusted travel mode shares for cycling trips, there are expected to be 166 and 181 two-way cycling trips, during the morning and afternoon peak period respectively.

TABLE 20 MULTI-MODAL TRAVEL DEMAND: SCENARIO 3B – 5,300 RANGEVIEW UNITS (WITH DUAL LEFT)

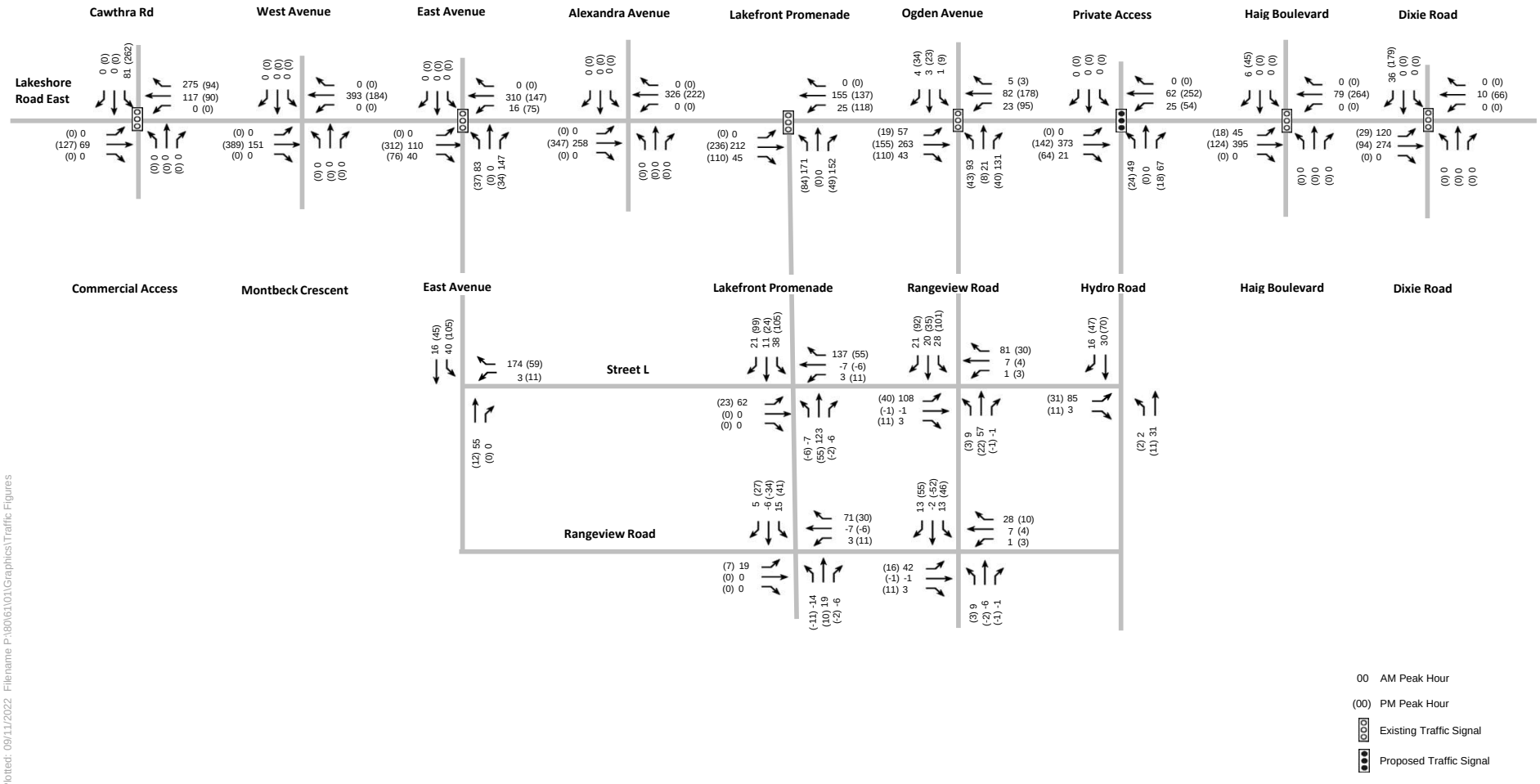
Mode of Travel	Morning			Afternoon		
	In	Out	2-Way	In	Out	2-Way
Transit	707	1,362	2,069	1,749	1,413	3,162
Auto Driver	1,415	2,724	4,138	2,499	2,019	4,517
Auto Passenger	509	981	1,490	450	363	813
Walk	141	272	414	200	162	361
Cycle	57	109	166	100	81	181
Total	**2,829**	**5,448**	**8,277**	**4,997**	**4,038**	**9,035**



Date Plotted: 30/04/2024 Filename P:\8061\01\Graphics\Traffic Figures_DMA

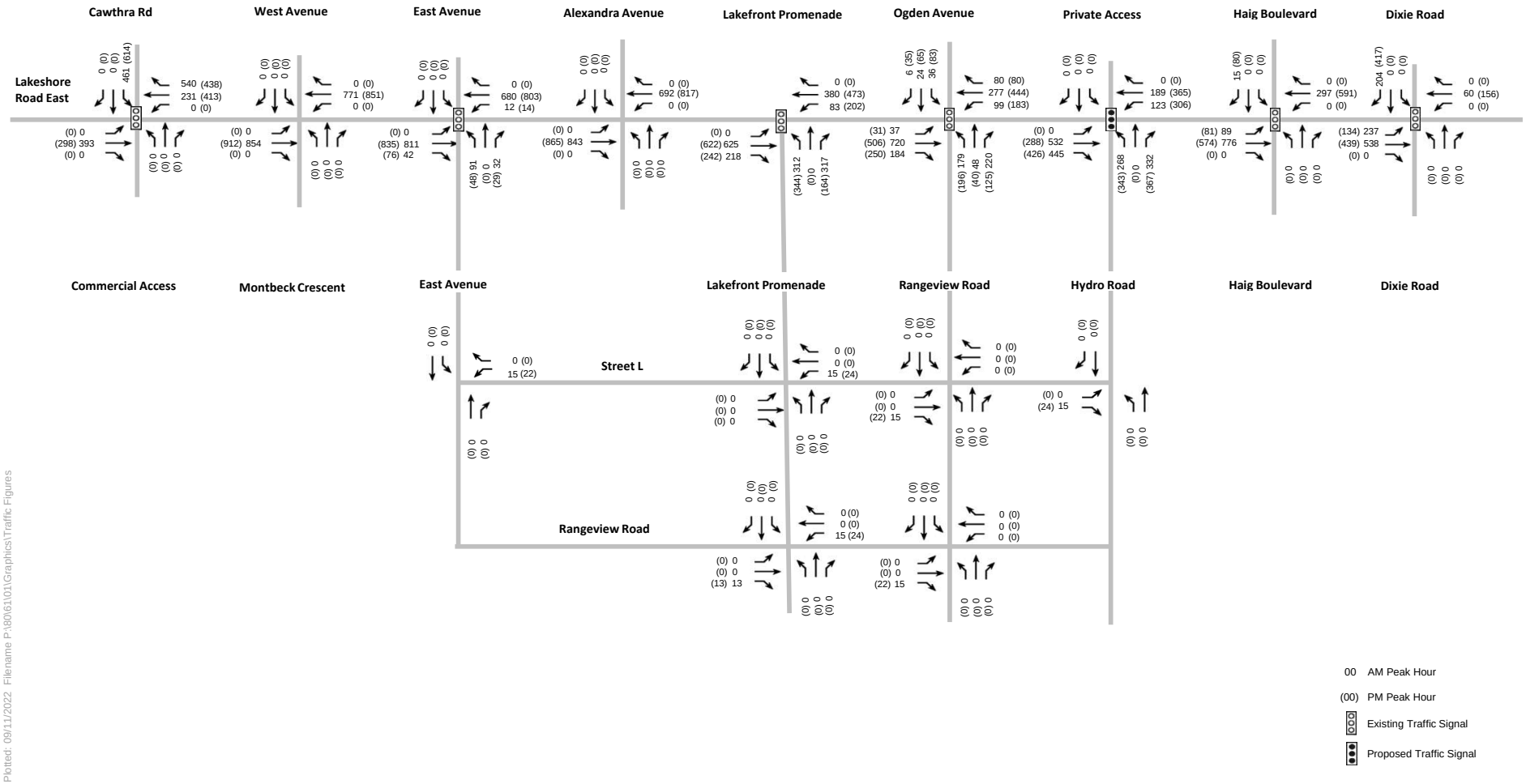
FIGURE 33 SCENARIO 3B LANE CONFIGURATION & TRAFFIC CONTROL (2041)

RANGEVIEW ESTATES



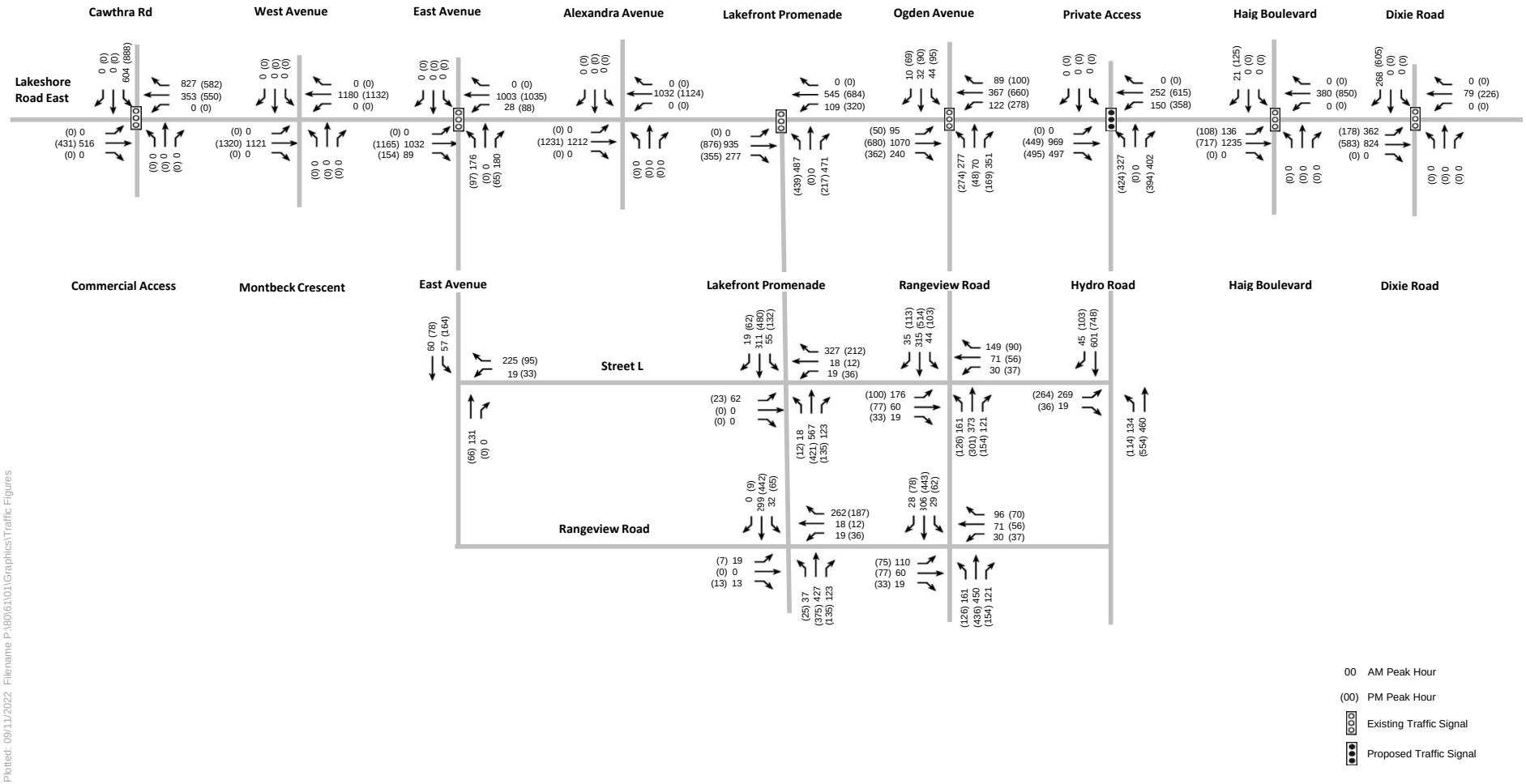
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 34 - SCENARIO 3B 2041 RANGEVIEW SITE TRAFFIC VOLUMES (5,300 UNITS + DUAL LEFT)



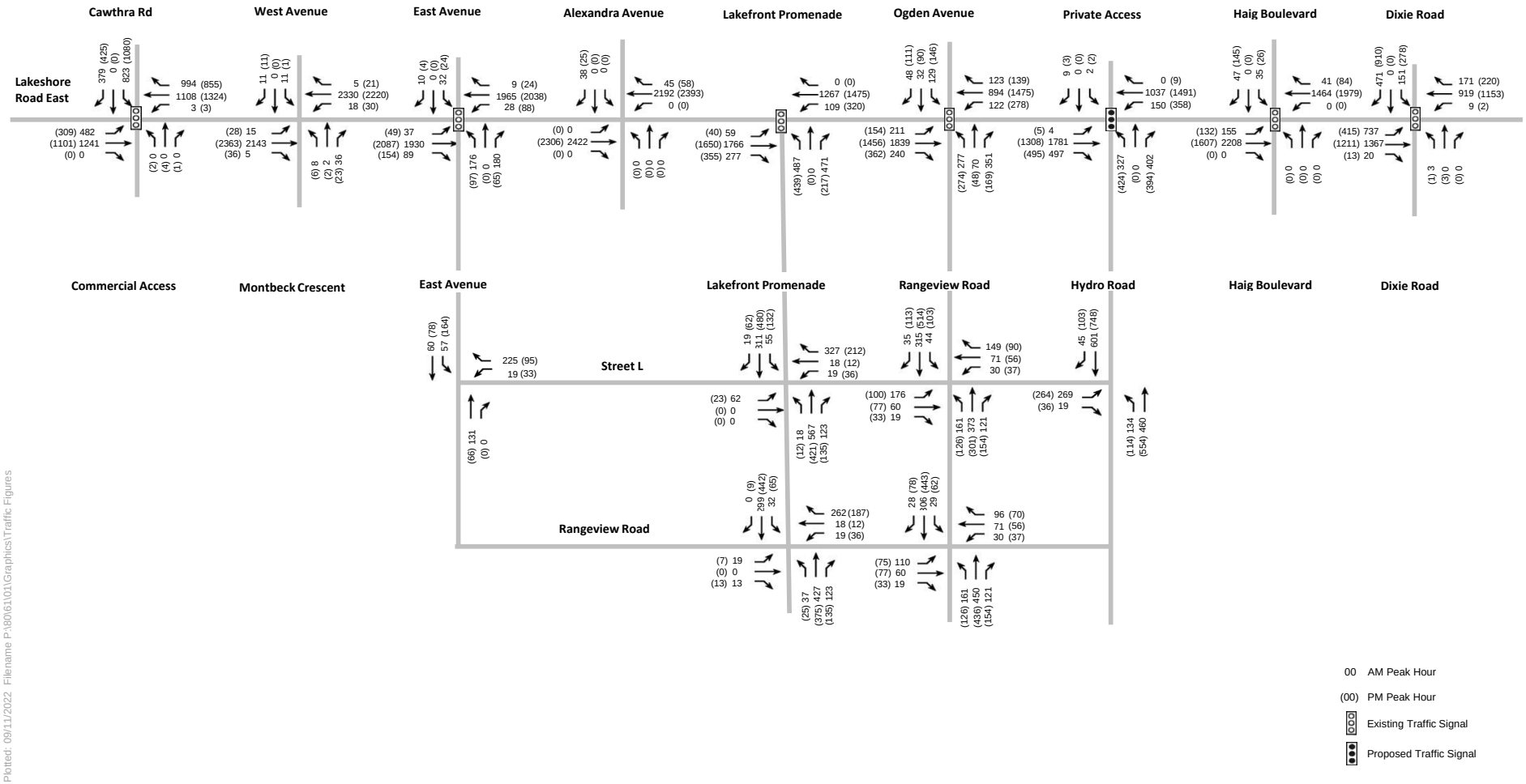
Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 35 - SCENARIO 3B 2041 LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (8,050 UNITS + DUAL LEFT)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 36 - SCENARIO 3B 2041 RANGEVIEW + LAKEVIEW VILLAGE SITE TRAFFIC VOLUMES (13,350 UNITS + DUAL LEFT)



Date Plotted: 09/11/2022 Filename P:\80\61\01\Graphics\Traffic Figures

FIGURE 37 - SCENARIO 3B 2041 FUTURE TOTAL TRAFFIC VOLUMES (13,350 UNITS + DUAL LEFT)

6.4.2 Updated BA Group Scenarios

6.4.2.1 Travel Demand: Scenario 4 – 5,300 Rangeview Residential Units and 10,000 Lakeview Residential Units

TABLE 21 VEHICLE TRIPS: SCENARIO 4 – 5,300 RANGEVIEW UNITS AND 10,000 LAKEVIEW RESIDENTIAL UNITS

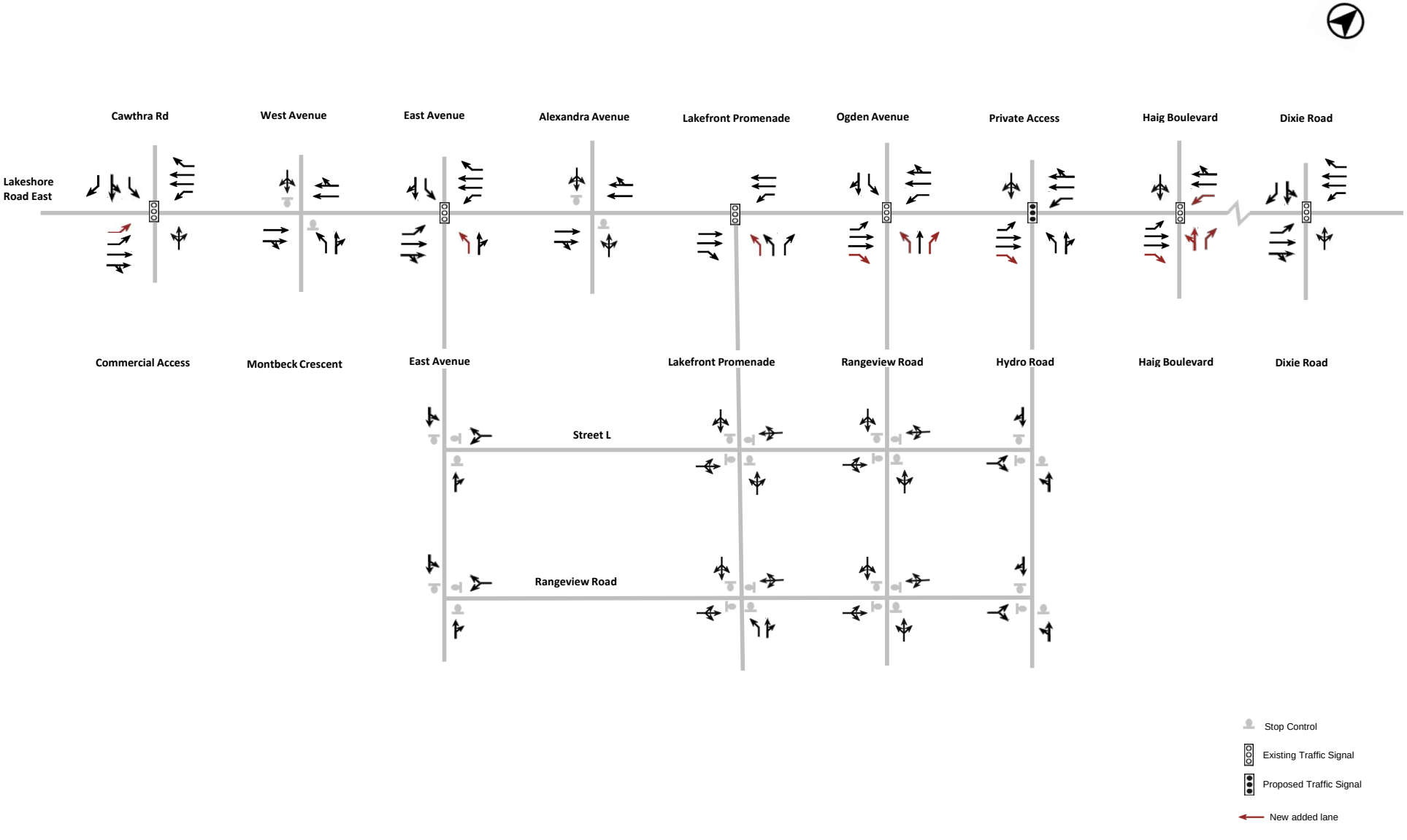
Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	109	806	915	604	233	837
Office	100% (47,500 ft^2)	30	4	34	1	20	21
Retail	100% (47,500 ft^2)	56	36	93	83	77	160
Total		**196**	**846**	**1,042**	**688**	**330**	**1,018**
Lakeview Village							
Residential	10,000	174	1261	1439	1283	534	1818
Non-Residential	100% (1.7M ft^2)	455	168	619	220	531	751
Total		**630**	**1,429**	**2,059**	**1,504**	**1,065**	**2,569**
Serson							
Office	100%	150	33	183	33	170	204
Research	0%	0	0	0	0	0	0
Total		**150**	**33**	**183**	**33**	**170**	**204**
All Sites Combined							
Total		**975**	**2,308**	**3,283**	**2,225**	**1,566**	**3,790**

The Scenario 4 - 7B lane configuration and traffic control is provided in **Figure 38**. Figures that illustrate the Scenario 4 traffic volumes are provided as follows:

- **Figure 39**: Scenario 4: 2041 Lakeview Village Site Traffic Volumes (10,000 units)
- **Figure 40**: Scenario 4: 2041 Rangeview + Lakeview Village Site Traffic Volumes (15,300 units)
- **Figure 41**: Scenario 4: 2041 Future Total Traffic Volumes (15,300 units)

TABLE 22 MULTI-MODAL TRAVEL DEMAND: SCENARIO 4 – 5,300 RANGEVIEW UNITS AND 10,000 LAKEVIEW RESIDENTIAL UNITS

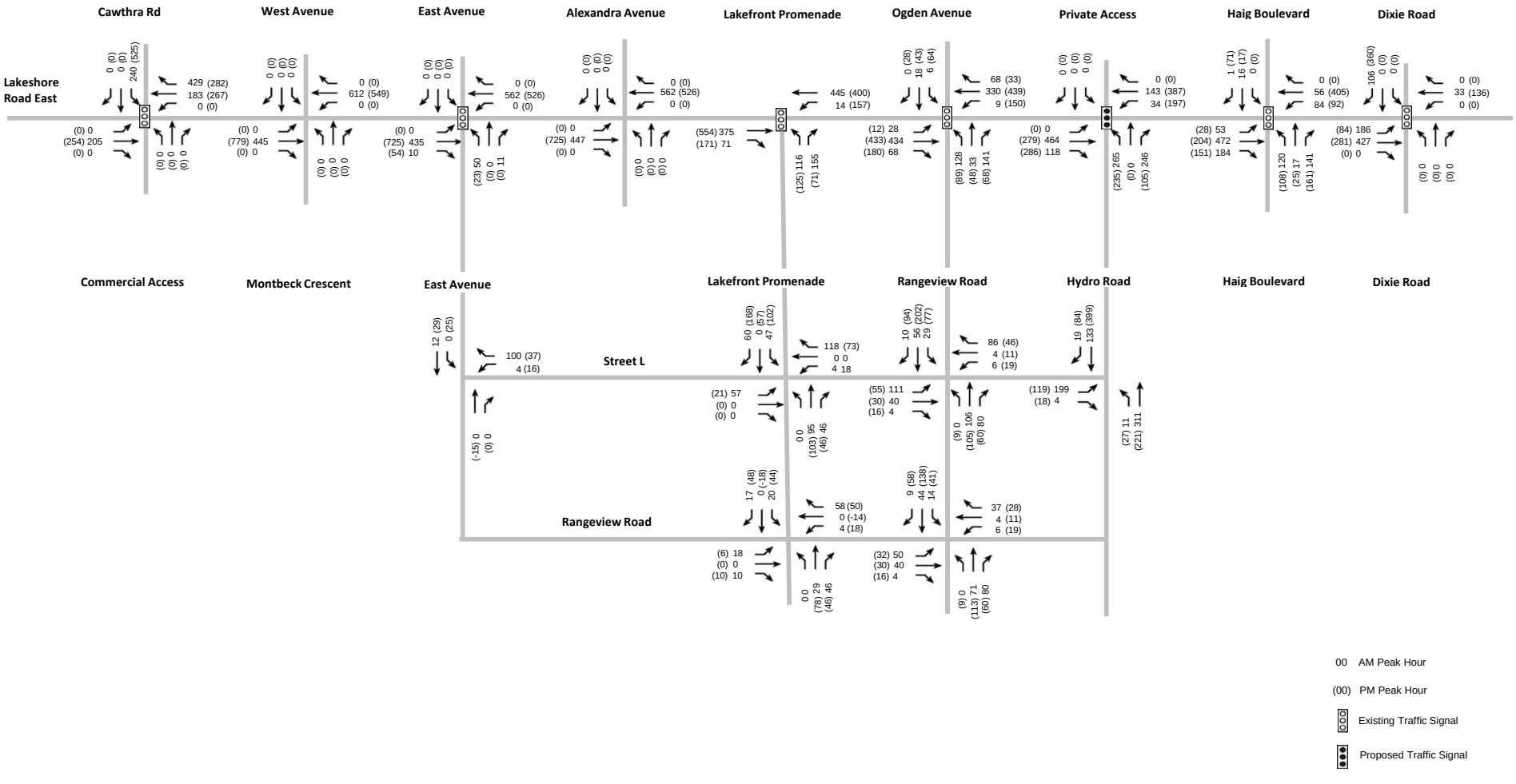
Mode of Transportation	Morning			Afternoon		
	Inbound	Outbound	2-way	Inbound	Outbound	2-way
Transit	572	1355	1,927	1,828	1,286	3,115
Auto Driver	975	2308	3,283	2,225	1,566	3,790
Auto Passenger	458	1,084	1,542	575	404	979
Walk	114	271	385	209	147	356
Cycle	0	0	0	0	0	0
Total	**2,119**	**5,018**	**7,137**	**4,836**	**3,403**	**8,240**



Date Plotted: 30/04/2024 Filename P:\8061\01\Graphics\Traffic Figures_DMA

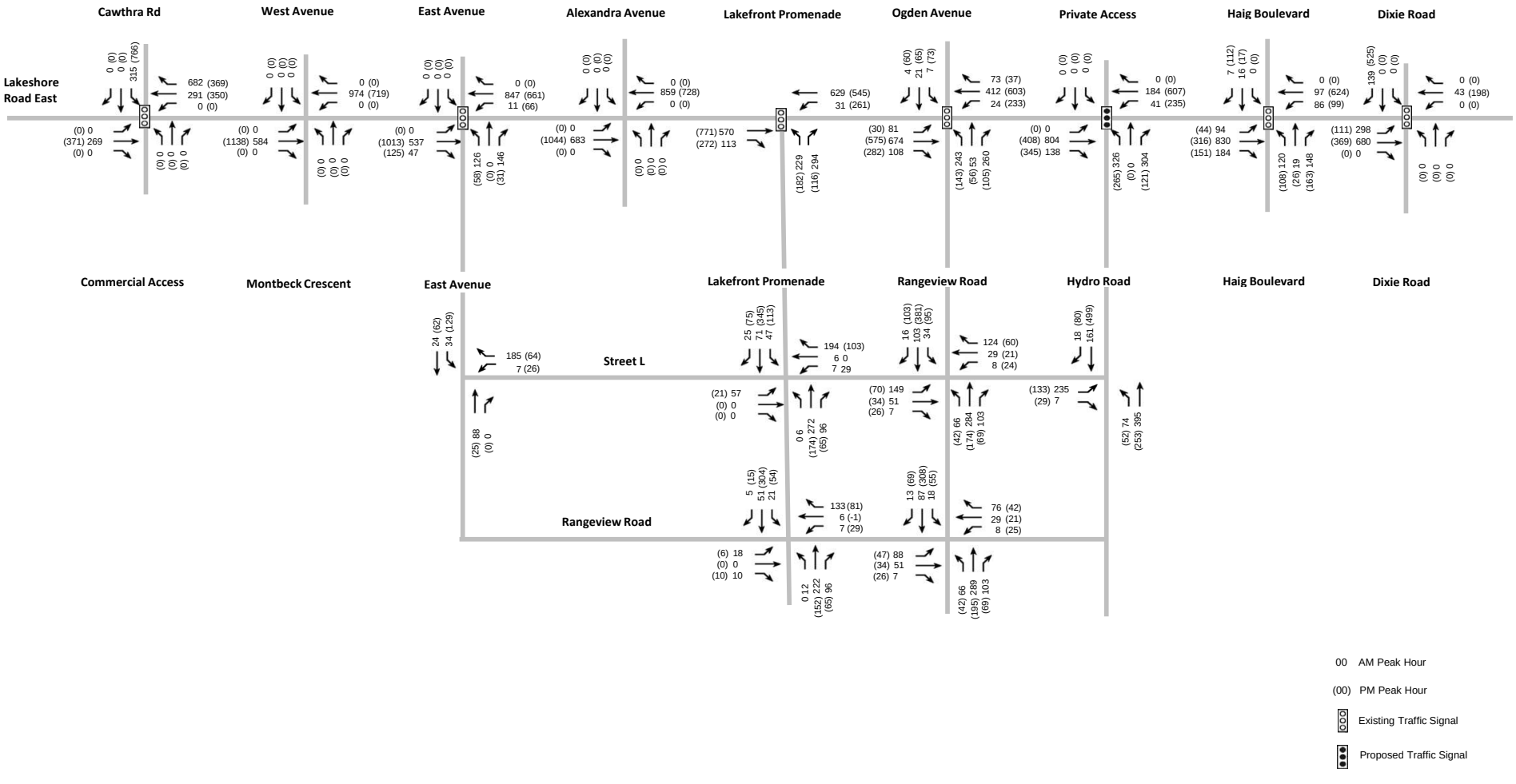
FIGURE 38 SCENARIO 4 – 7B LANE CONFIGURATION & TRAFFIC CONTROL (2041)

RANGEVIEW ESTATES



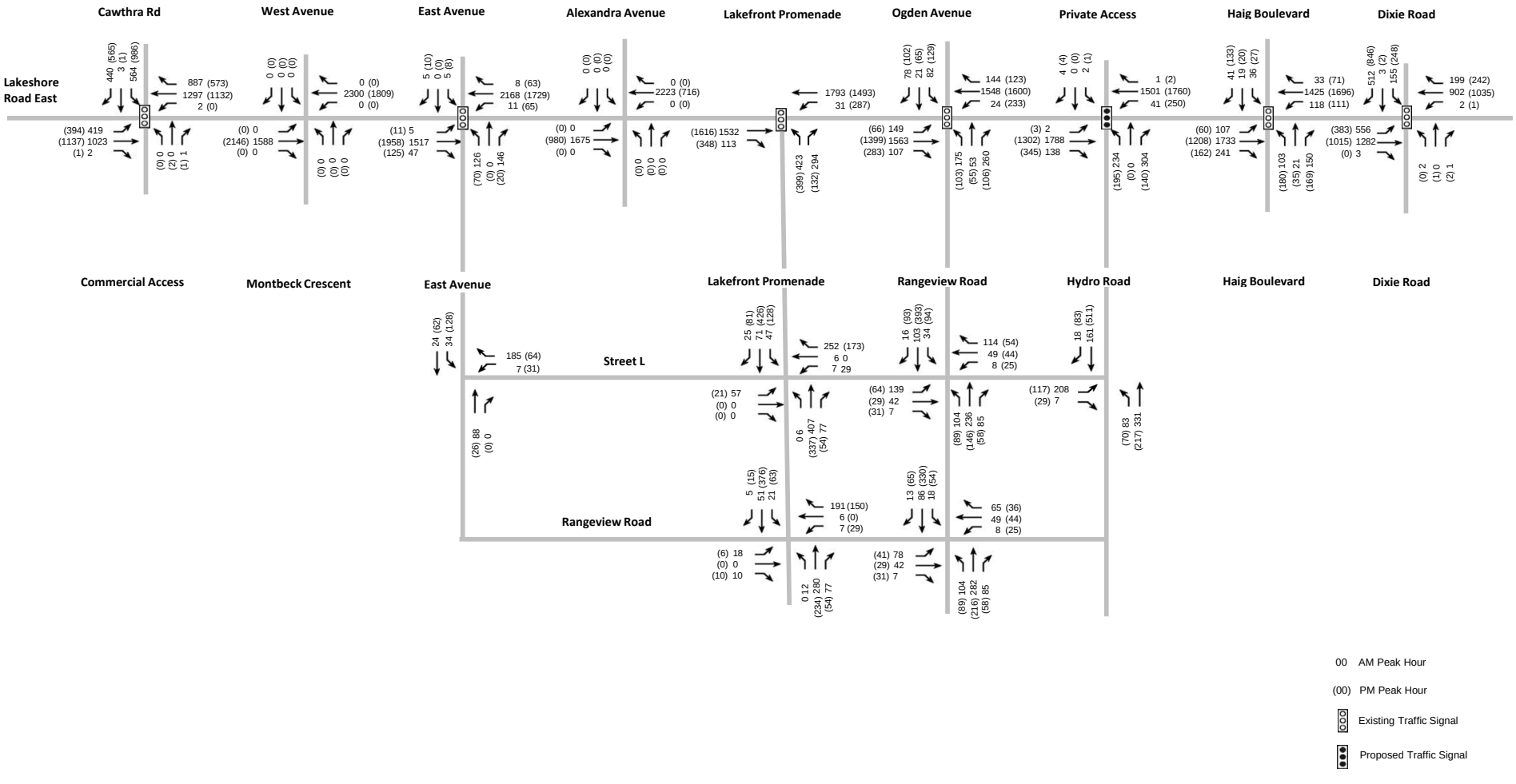
Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 39 - Scenario 4 2041 Lakeview Village Site Traffic Volumes (10,000 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 40 - Scenario 4 2041 Rangeview + Lakeview Village Site Traffic Volumes (15,300 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 41 - Scenario 4 Future Total Volumes (15,300 Units)

6.4.2.2 Travel Demand: Scenario 5 – 5,300 Rangeview Residential Units and 12,000 Lakeview Residential Units

TABLE 23 VEHICLE TRIPS: SCENARIO 5 – 5,300 RANGEVIEW UNITS AND 12,000 LAKEVIEW RESIDENTIAL UNITS

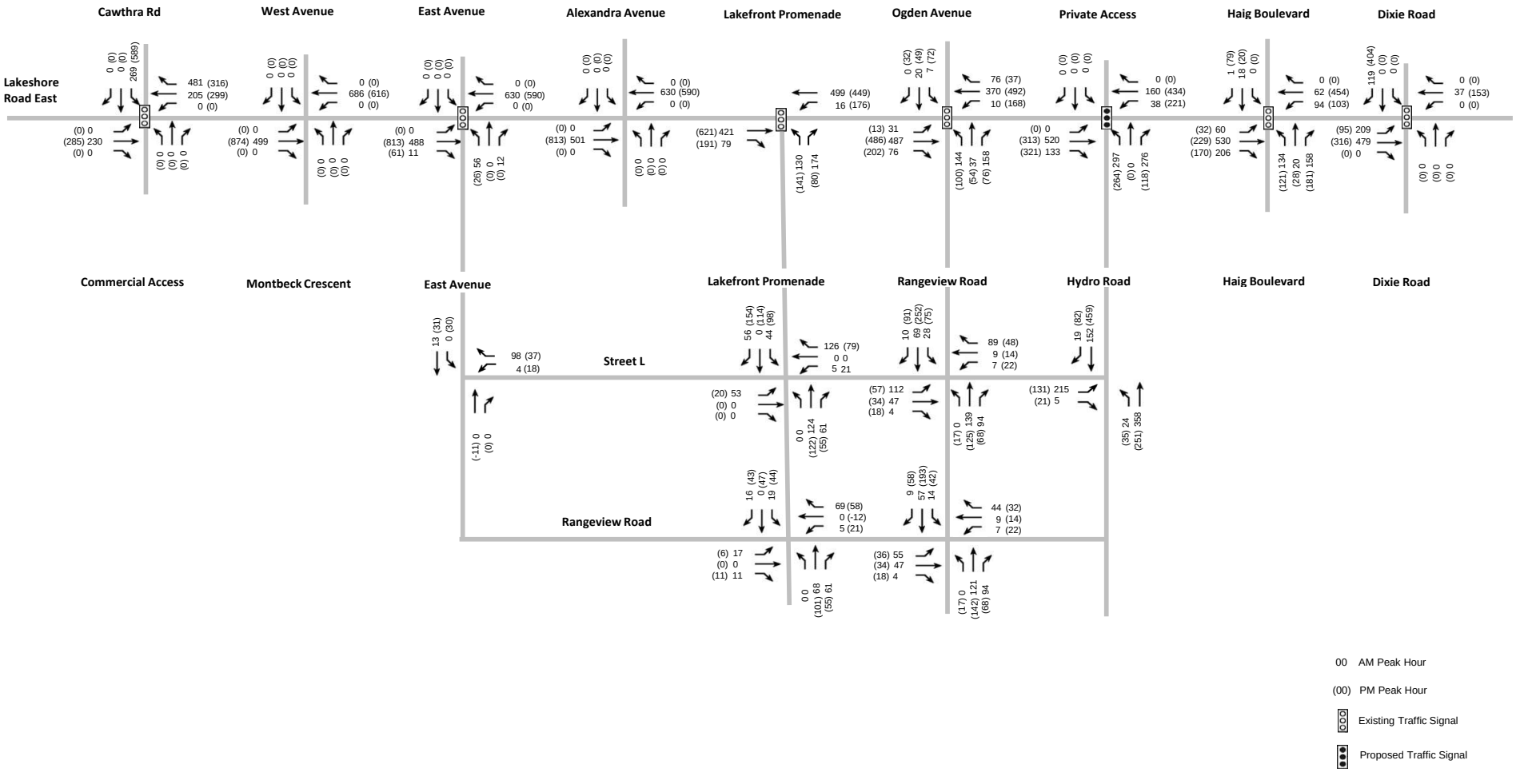
Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	102	754	855	564	218	782
Office	100% (47,500 ft^2)	28	3	32	1	19	20
Retail	100% (47,500 ft^2)	53	34	87	78	72	150
Total		**183**	**791**	**974**	**643**	**309**	**952**
Lakeview Village							
Residential	12,000	196	1414	1614	1440	599	2039
Non-Residential	100% (1.7M ft^2)	511	188	695	247	596	843
Total		**706**	**1,603**	**2,309**	**1,687**	**1,195**	**2,882**
Serson							
Office	100%	140	31	171	31	159	190
Research	0%	0	0	0	0	0	0
Total		**140**	**31**	**171**	**31**	**159**	**190**
All Sites Combined							
Total		**1,029**	**2,425**	**3,454**	**2,361**	**1,663**	**4,023**

The Scenario 4 - 7B lane configuration and traffic control is provided in **Figure 38.** Figures that illustrate the Scenario 5 traffic volumes are provided as follows:

- **Figure 42**: Scenario 5: 2041 Lakeview Village Site Traffic Volumes (12,000 units)
- **Figure 43**: Scenario 5: 2041 Rangeview + Lakeview Village Site Traffic Volumes (17,300 units)
- **Figure 44**: Scenario 5: 2041 Future Total Traffic Volumes (17,300 units)

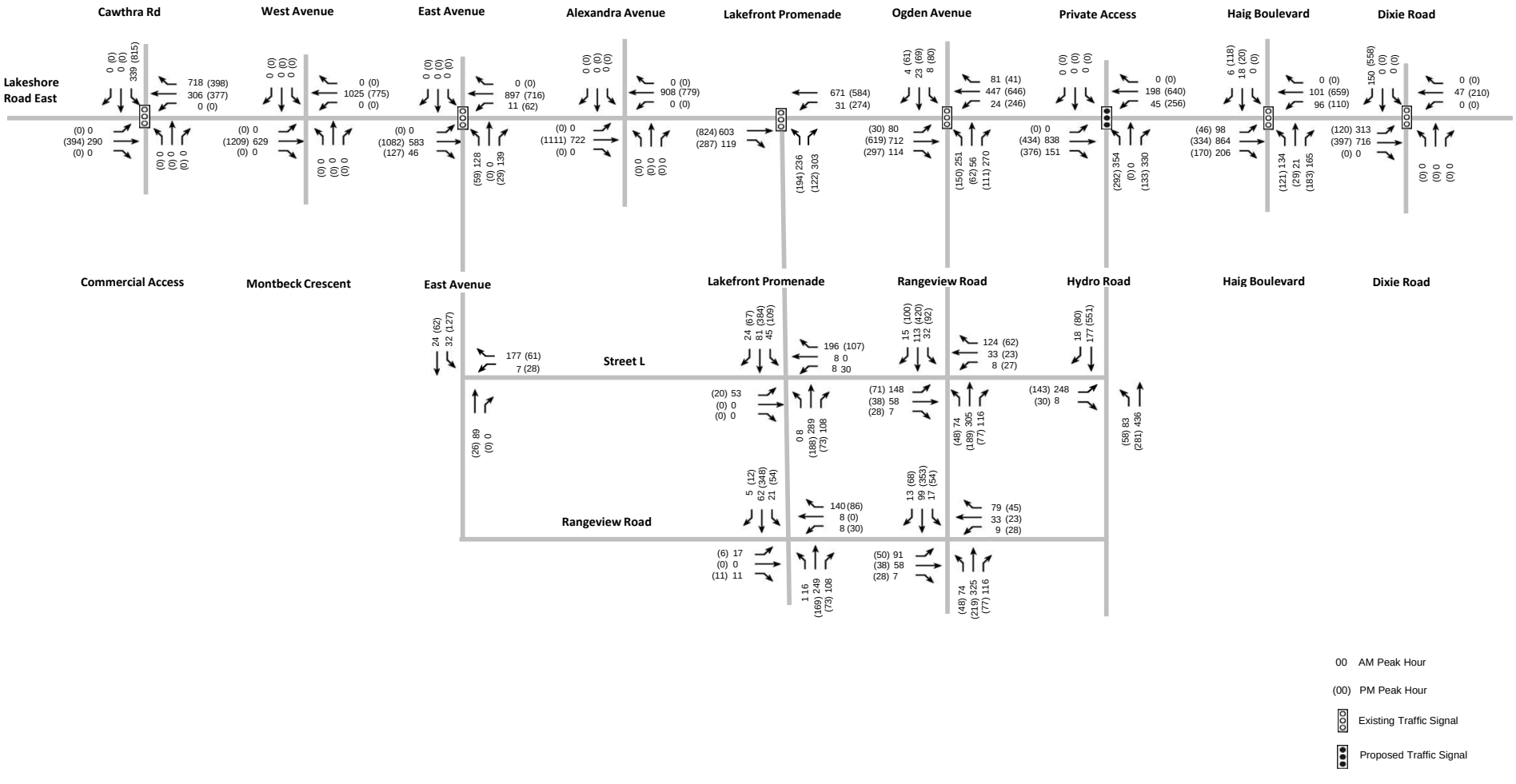
TABLE 24 MULTI-MODAL TRAVEL DEMAND: SCENARIO 5 – 5,300 RANGEVIEW UNITS AND 12,000 LAKEVIEW RESIDENTIAL UNITS

Mode of Transportation	Morning			Afternoon		
	Inbound	Outbound	2-way	Inbound	Outbound	2-way
Transit	682	1,607	2,289	2,191	1,543	3,733
Auto Driver	1,029	2,425	3,454	2,361	1,663	4,023
Auto Passenger	546	1,286	1,831	688	485	1,173
Walk	136	321	458	250	176	427
Cycle	0	0	0	0	0	0
Total	**2,393**	**5,640**	**8,032**	**5,490**	**3,866**	**9,357**



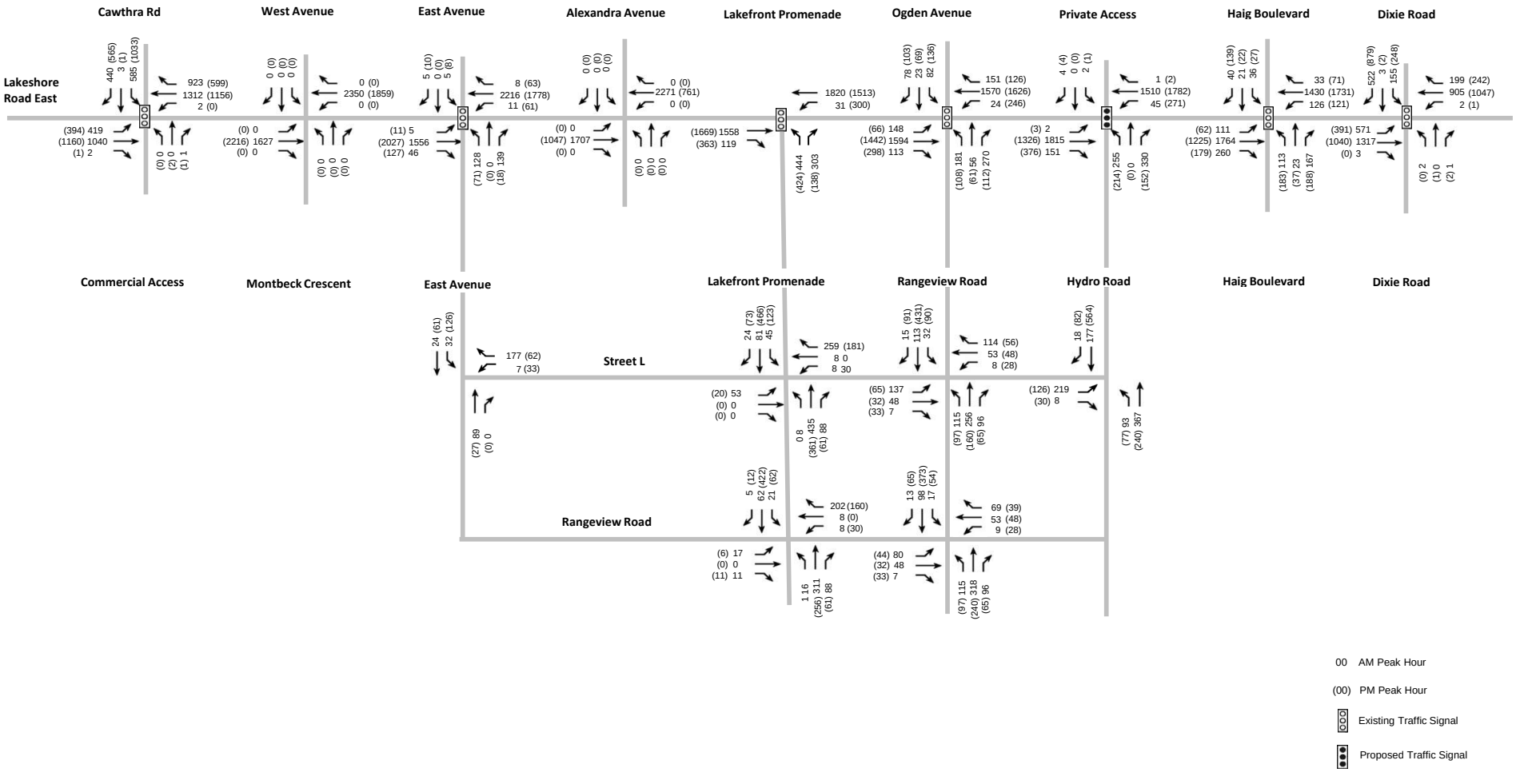
Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 42 - Scenario 5 2041 Lakeview Village Site Traffic Volumes (12,000 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 43 - Scenario 5 2041 Rangeview + Lakeview Village Site Traffic Volumes (17,300 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 44 - Scenario 5 Future Total Volumes (17,300 Units)

6.4.2.3 Travel Demand: Scenario 6 – 5,300 Rangeview Residential Units and 14,000 Lakeview Residential Units

TABLE 25 VEHICLE TRIPS: SCENARIO 6 – 5,300 RANGEVIEW UNITS AND 14,000 LAKEVIEW RESIDENTIAL UNITS

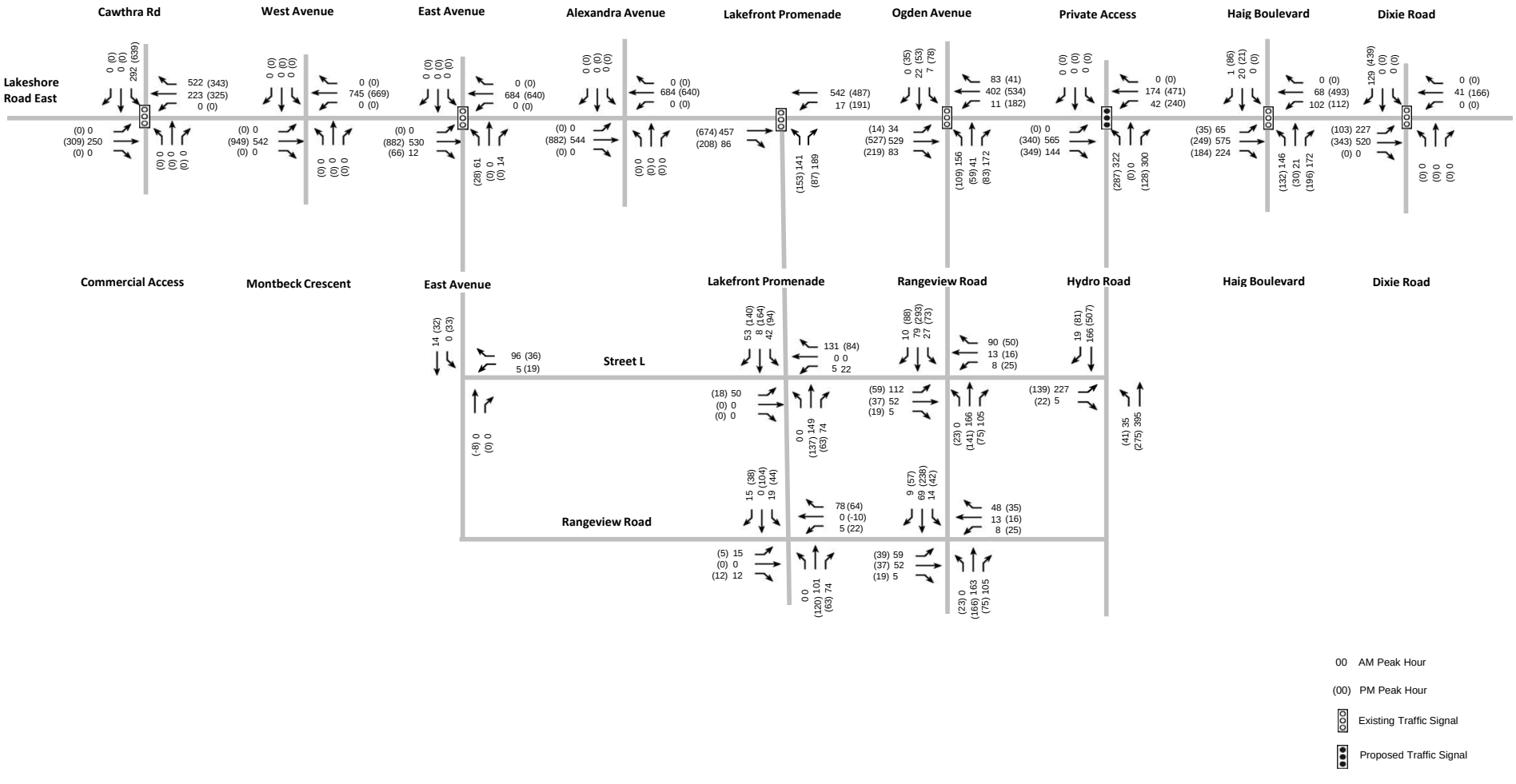
Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	95	701	796	525	202	727
Office	100% (47,500 ft^2)	26	3	30	1	18	18
Retail	100% (47,500 ft^2)	49	32	81	72	67	139
Total		**170**	**736**	**906**	**598**	**287**	**885**
Lakeview Village							
Residential	14,000	212	1535	1752	1562	650	2213
Non-Residential	100% (1.7M ft^2)	554	205	754	268	646	915
Total		**767**	**1,740**	**2,506**	**1,831**	**1,297**	**3,127**
Serson							
Office	100%	130	29	159	29	148	177
Research	0%	0	0	0	0	0	0
Total		**130**	**29**	**159**	**29**	**148**	**177**
All Sites Combined							
Total		**1,067**	**2,504**	**3,571**	**2,458**	**1,732**	**4,189**

The Scenario 4 - 7B lane configuration and traffic control is provided in **Figure 38**.Figures that illustrate the Scenario 6 traffic volumes are provided as follows:

- **Figure 45**: Scenario 6: 2041 Lakeview Village Site Traffic Volumes (14,000 units)
- **Figure 46**: Scenario 6: 2041 Rangeview + Lakeview Village Site Traffic Volumes (19,300 units)
- **Figure 47**: Scenario 6: 2041 Future Total Traffic Volumes (19,300 units)

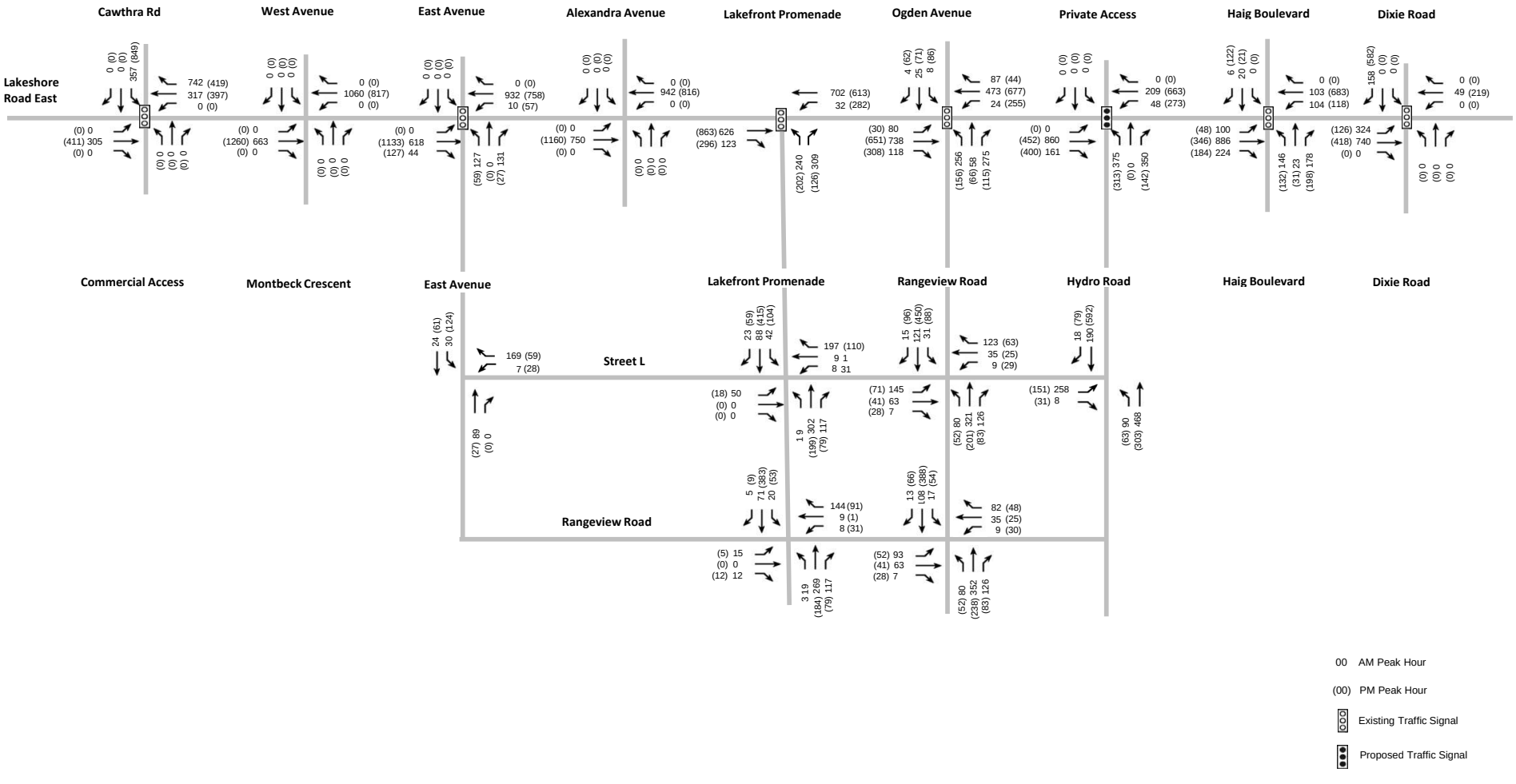
TABLE 26 MULTI-MODAL TRAVEL DEMAND: SCENARIO 6 – 5,300 RANGEVIEW UNITS AND 14,000 LAKEVIEW RESIDENTIAL UNITS

Mode of Transportation	Morning			Afternoon		
	Inbound	Outbound	2-way	Inbound	Outbound	2-way
Transit	800	1,878	2,678	2,580	1,818	4,399
Auto Driver	1,067	2,504	3,571	2,458	1,732	4,189
Auto Passenger	640	1,503	2,143	811	572	1,383
Walk	160	376	536	295	208	503
Cycle	0	0	0	0	0	0
Total	**2,666**	**6,261**	**8,927**	**6,144**	**4,330**	**10,474**



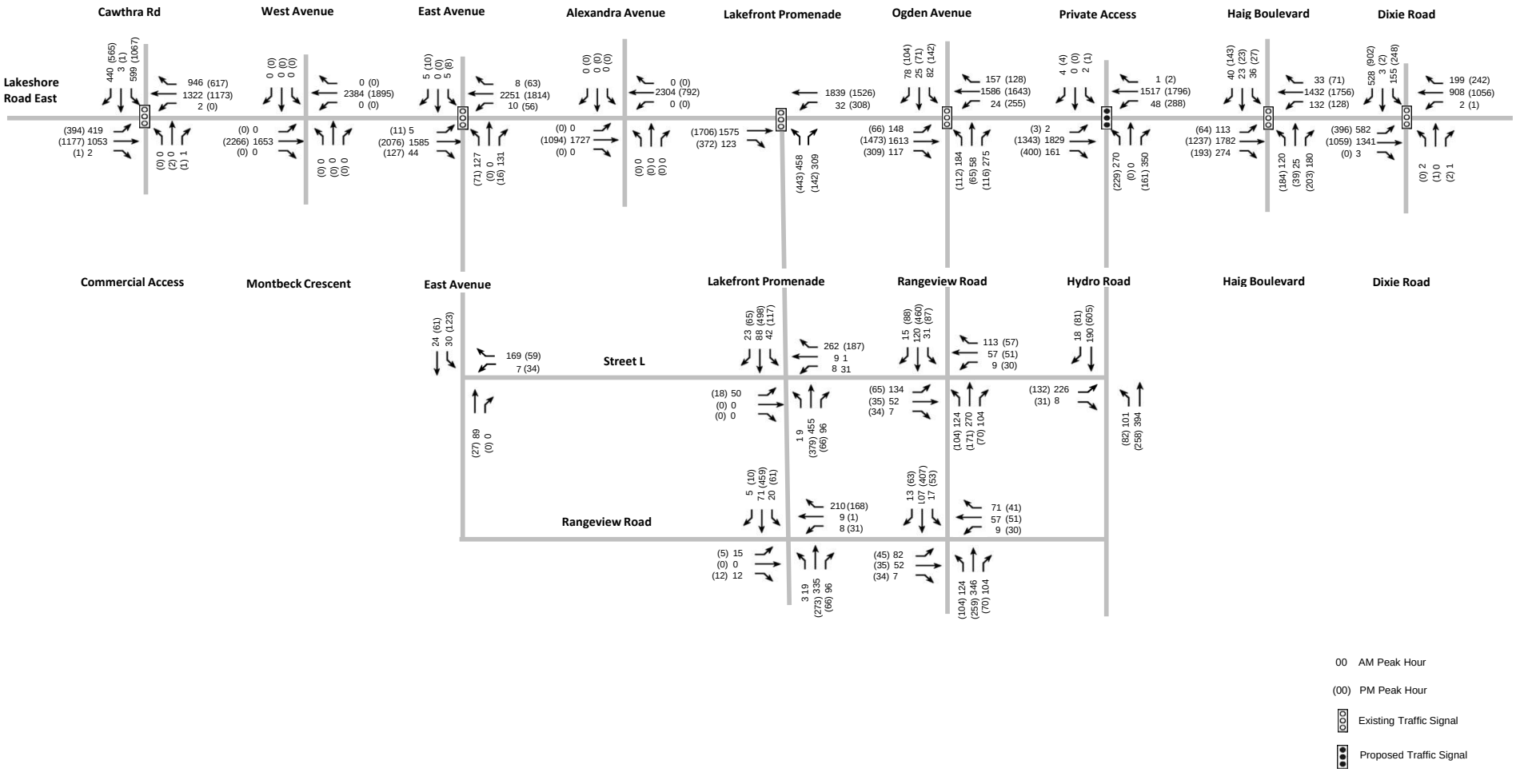
Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 45 - Scenario 6 2041 Lakeview Village Site Traffic Volumes (14,000 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 46 - Scenario 6 2041 Rangeview + Lakeview Village Site Traffic Volumes (19,300 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 47 - Scenario 6 Future Total Volumes (19,300 Units)

6.4.2.4 Travel Demand: Scenario 7A – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

TABLE 27 VEHICLE TRIPS: SCENARIO 7A – 5,300 RANGEVIEW UNITS AND 16,000 LAKEVIEW RESIDENTIAL UNITS

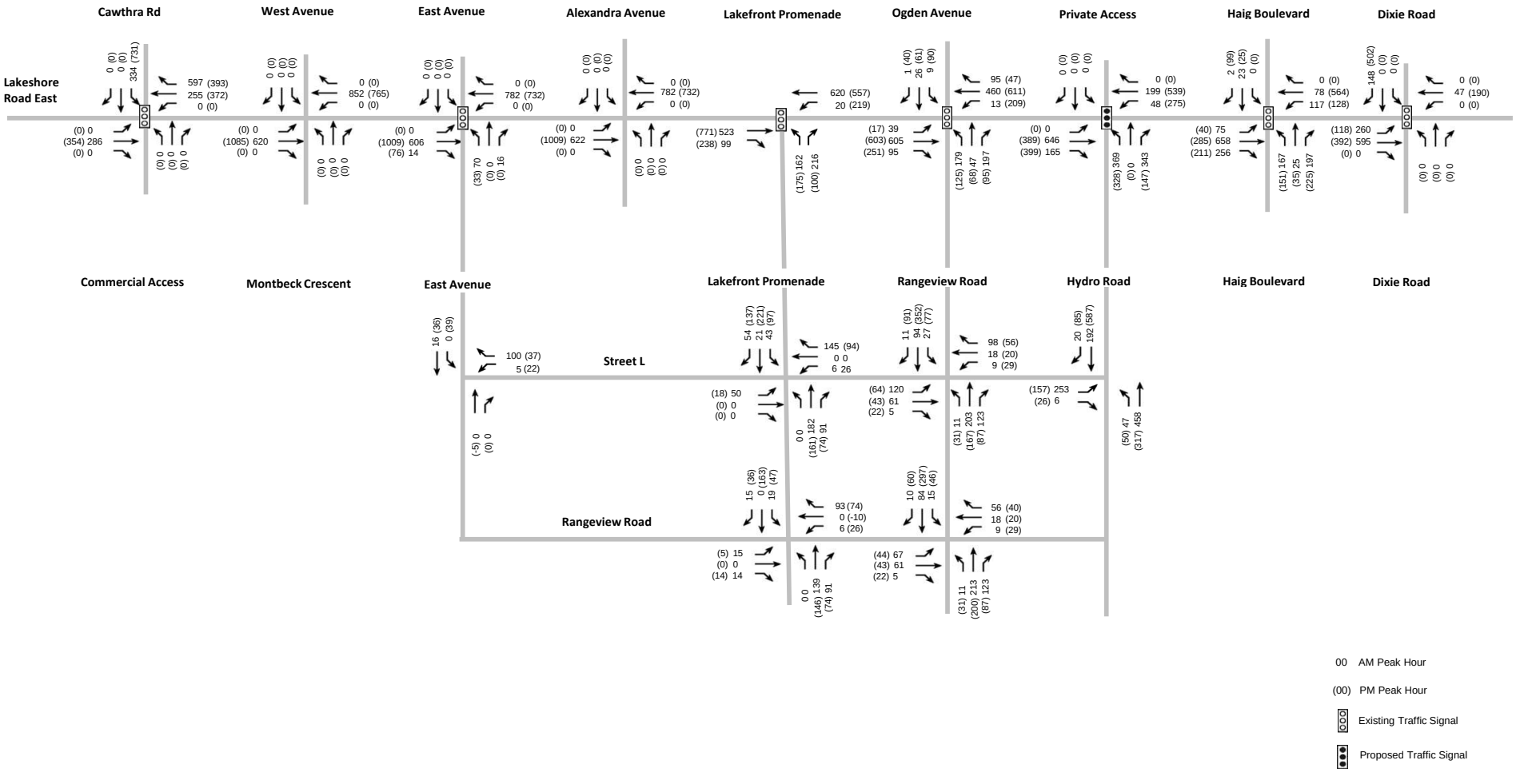
Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	95	701	796	525	202	727
Office	100% (47,500 ft^2)	26	3	30	1	18	18
Retail	100% (47,500 ft^2)	49	32	81	72	67	139
Total		**170**	**736**	**906**	**598**	**287**	**885**
Lakeview Village							
Residential	16,000	243	1754	2002	1786	743	2529
Non-Residential	100% (1.7M ft^2)	633	234	862	306	739	1045
Total		**876**	**1,988**	**2,864**	**2,092**	**1,482**	**3,574**
Serson							
Office	100%	130	29	159	29	148	177
Research	0%	0	0	0	0	0	0
Total		**130**	**29**	**159**	**29**	**148**	**177**
All Sites Combined							
Total		**1,176**	**2,753**	**3,929**	**2,719**	**1,917**	**4,636**

The Scenario 4 - 7B lane configuration and traffic control is provided in **Figure 38**.Figures that illustrate the Scenario 7A traffic volumes are provided as follows:

- **Figure 48**: Scenario 7A: 2041 Lakeview Village Site Traffic Volumes (16,000 units)
- **Figure 49**: Scenario 7A: 2041 Rangeview + Lakeview Village Site Traffic Volumes (21,300 units)
- **Figure 50**: Scenario 7A: 2041 Future Total Traffic Volumes (21,300 units)

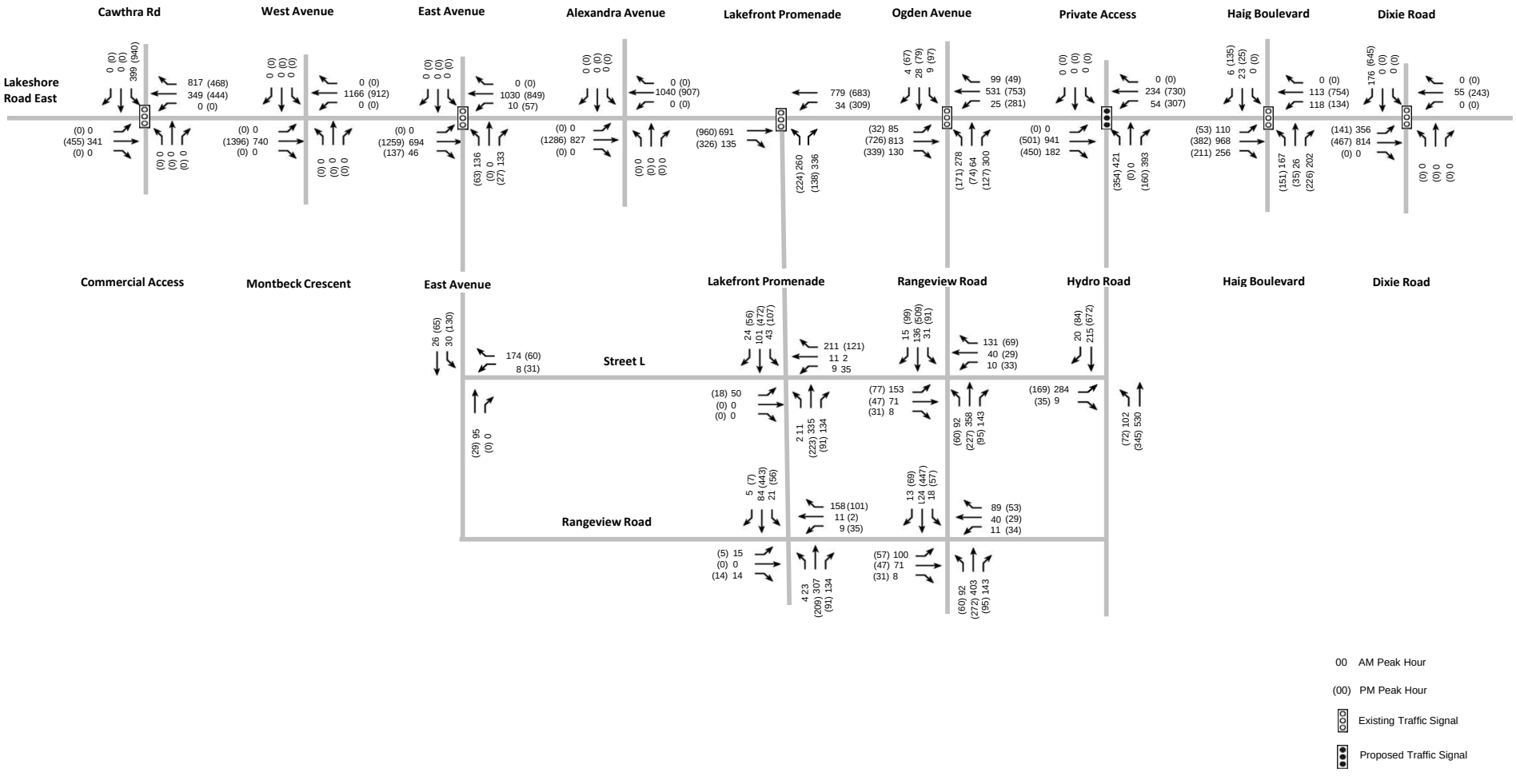
TABLE 28 MULTI-MODAL TRAVEL DEMAND: SCENARIO 7A – 5,300 RANGEVIEW UNITS AND 16,000 LAKEVIEW RESIDENTIAL UNITS

Mode of Transportation	Morning			Afternoon		
	Inbound	Outbound	2-way	Inbound	Outbound	2-way
Transit	882	2,065	2,947	2,855	2,013	4,868
Auto Driver	1,176	2,753	3,929	2,719	1,917	4,636
Auto Passenger	706	1,652	2,357	897	633	1,530
Walk	176	413	589	326	230	556
Cycle	0	0	0	0	0	0
Total	**2,940**	**6,882**	**9,822**	**6,798**	**4,793**	**11,590**



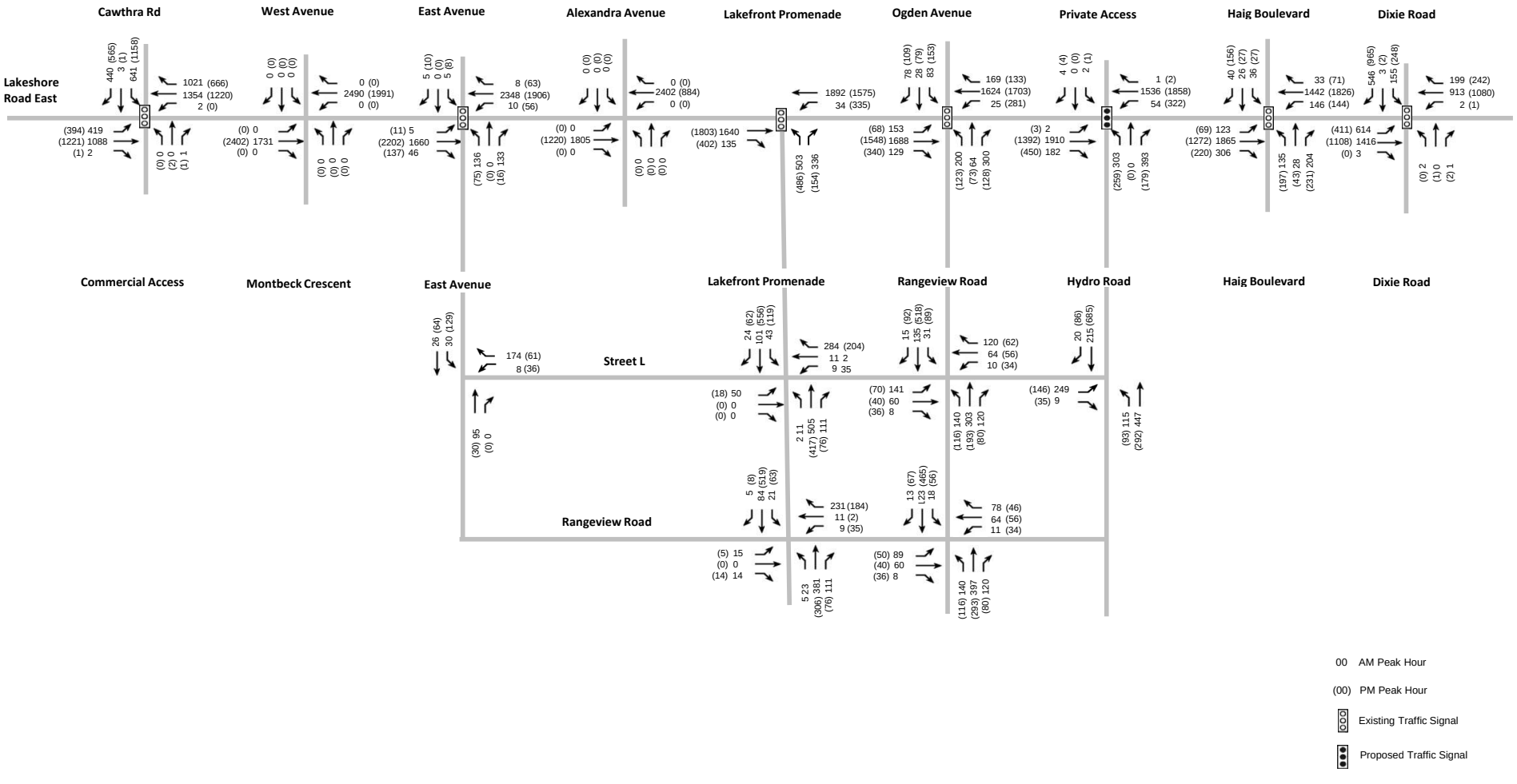
Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 48 - Scenario 7A 2041 Lakeview Village Site Traffic Volumes (16,000 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 49 - Scenario 7A 2041 Rangeview + Lakeview Village Site Traffic Volumes (21,300 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 50 - Scenario 7A Future Total Volumes (21,300 Units)

6.4.2.5 Travel Demand: Scenario 7B – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

TABLE 29 VEHICLE TRIPS: SCENARIO 7B – 5,300 RANGEVIEW UNITS AND 16,000 LAKEVIEW RESIDENTIAL UNITS

Land Use	Number of Units / % Non-residential	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Rangeview							
Residential	5,300	83	613	696	459	177	636
Office	100% (47,500 ft^2)	23	3	26	1	16	16
Retail	100% (47,500 ft^2)	43	28	71	63	59	122
Total		**149**	**644**	**793**	**523**	**251**	**775**
Lakeview Village							
Residential	16,000	212	1535	1752	1562	650	2213
Non-Residential	100% (1.7M ft^2)	554	205	754	268	646	915
Total		**767**	**1,740**	**2,506**	**1,831**	**1,297**	**3,127**
Serson							
Office	100%	114	25	139	25	130	155
Research	0%	0	0	0	0	0	0
Total		**114**	**25**	**139**	**25**	**130**	**155**
All Sites Combined							
Total		**1,029**	**2,409**	**3,438**	**2,379**	**1,677**	**4,057**

The Scenario 4 - 7B lane configuration and traffic control is provided in **Figure 38**.Figures that illustrate the Scenario 7B traffic volumes are provided as follows:

- **Figure 48**: Scenario 7B: 2041 Lakeview Village Site Traffic Volumes (16,000 units)
- **Figure 49**: Scenario 7B: 2041 Rangeview + Lakeview Village Site Traffic Volumes (21,300 units)
- **Figure 50**: Scenario 7B: 2041 Future Total Traffic Volumes (21,300 units)

TABLE 30 MULTI-MODAL TRAVEL DEMAND: SCENARIO 7B – 5,300 RANGEVIEW UNITS AND 16,000 LAKEVIEW RESIDENTIAL UNITS

Mode of Transportation	Morning			Afternoon		
	Inbound	Outbound	2-way	Inbound	Outbound	2-way
Transit	956	2,237	3,192	3,093	2,181	5,274
Auto Driver	1,029	2,409	3,438	2,379	1,677	4,057
Auto Passenger	764	1,789	2,554	972	685	1,657
Walk	191	447	638	353	249	603
Cycle	0	0	0	0	0	0
Total	**2,940**	**6,882**	**9,822**	**6,798**	**4,793**	**11,590**

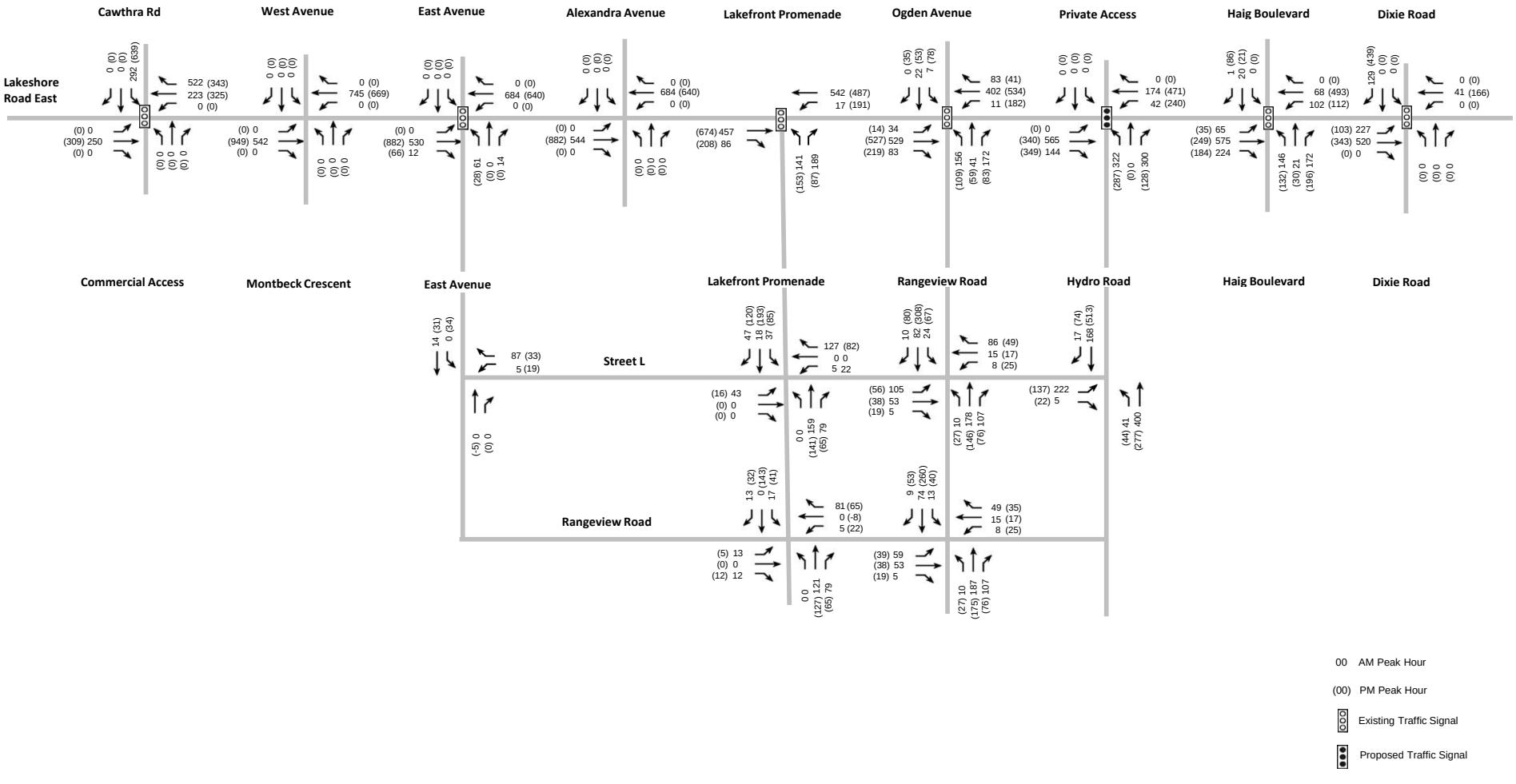
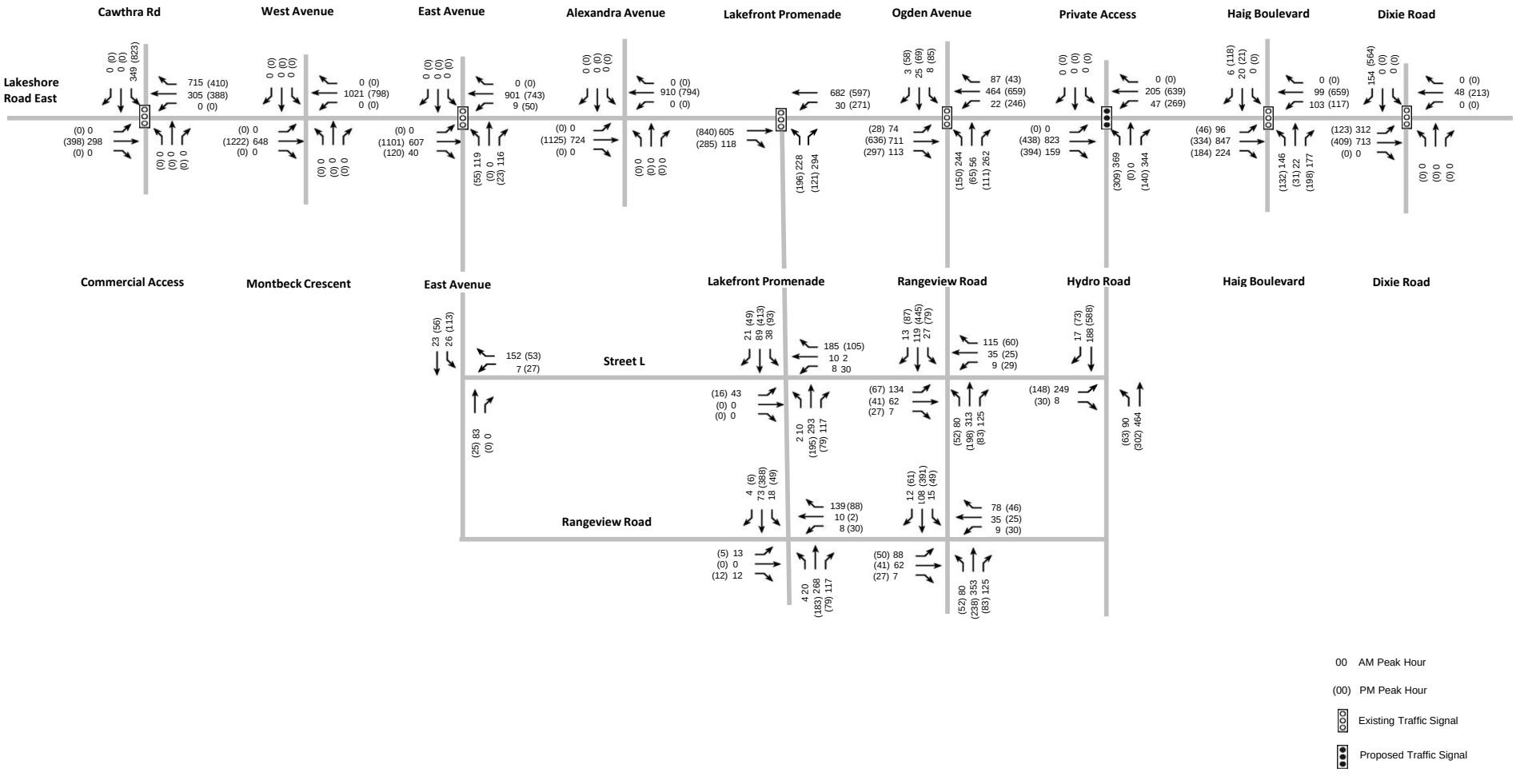
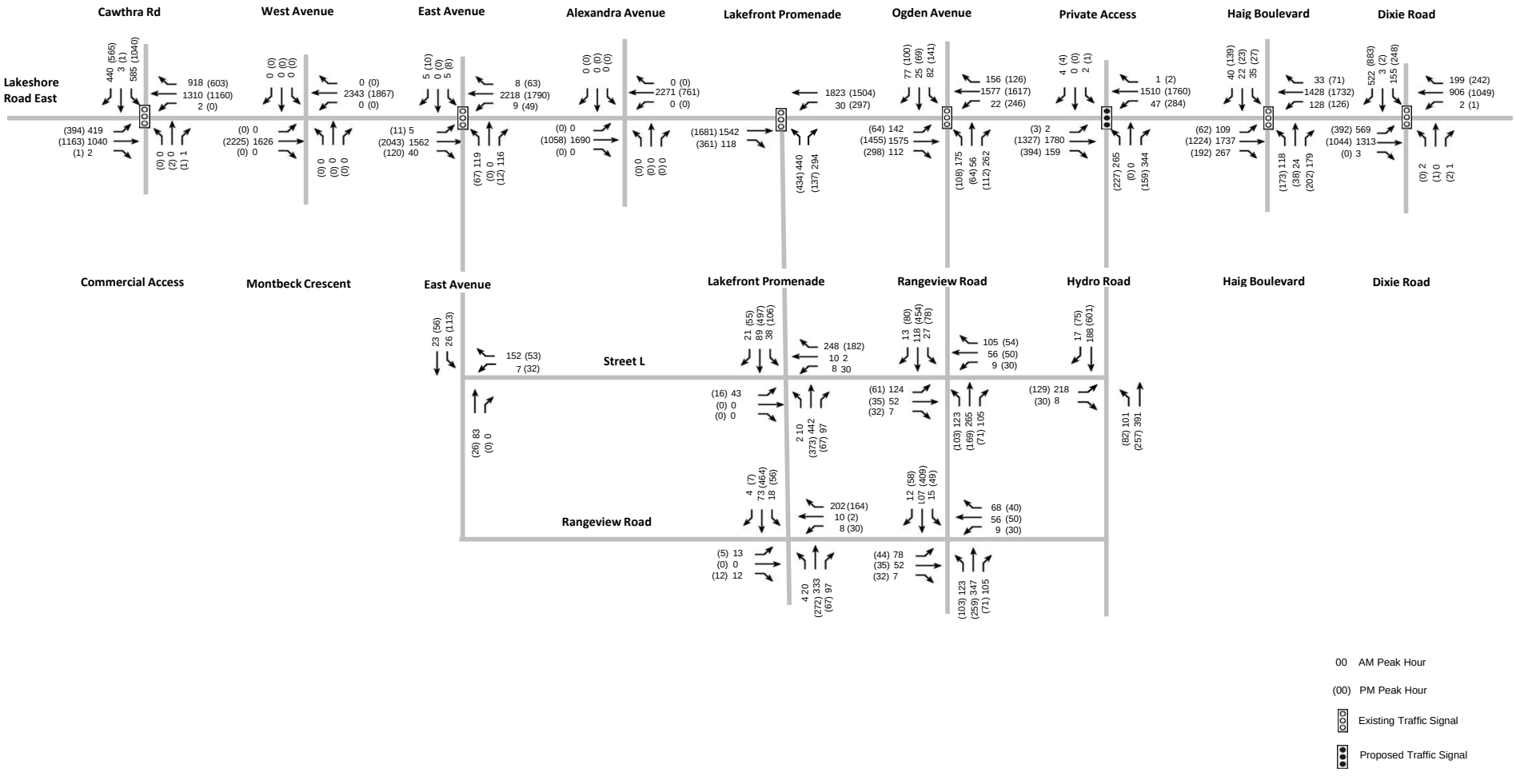


FIGURE 51 - Scenario 7B 2041 Lakeview Village Site Traffic Volumes (16,000 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 52 - Scenario 7B 2041 Rangeview + Lakeview Village Site Traffic Volumes (21,300 Units)



Date Plotted: 30/04/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE 53 - Scenario 7B Future Total Volumes (21,300 Units)

7.0 TRAFFIC ANALYSIS

7.1 TRAFFIC ANALYSIS APPROACH AND ASSUMPTIONS

The approach and methodology utilized for the September 2023 BA Group Report study generally aligns with the April 2021 TYLin report while the approach for the updated report that includes Scenario 4, 5, 6, 7A & 7B has been modified.

7.1.1 Study Area Intersections

When updated traffic counts become available in 2024, the study area can be expanded based on the City's comments. For this updated report, the study area continues to include the following intersections:

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
- Rangeview Road & East Avenue
- Rangeview Road & Lakefront Promenade
- Rangeview Road & Ogden Avenue
- Rangeview Road & Hydro Road

7.1.2 Time Periods Assessed

Both the September 2023 BA Group Report and this updated report evaluated both the morning peak and afternoon peak hours and aligned with the time periods assessed within the April 2021 and December 2023 TYLin reports.

7.1.3 Signalized Intersections

The traffic operations analysis was undertaken at the area intersections using standard capacity analysis procedures. The analysis undertaken at intersections operating under traffic signal control was completed

using the methodologies and procedures outlined in the Highway Capacity Manual (HCM) 2000 and using Synchro 11.0 software. The Synchro detailed capacity analysis outputs are included in **Appendix I.** The product of the signalized intersection evaluation is an intersection performance index (volume to capacity ratio or v/c), where a v/c index of 1.00 indicates 'at or near capacity' conditions.
HCM level of service (LOS) criteria for signalized intersections are as follows:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 20s
- LOS C: 20s < Control Delay ≤ 35s
- LOS D: 35s < Control Delay ≤ 55s
- LOS E: 55s < Control Delay ≤ 80s
- LOS F: Control Delay > 80s

7.1.4 Unsignalized Intersections

The unsignalized intersection analysis was completed using standard capacity procedures for intersections operating under "two-way" and "all-way" stop control and in accordance with the methodologies outlined in the Highway Capacity Manual 2000 (HCM2000). The Synchro detailed capacity analysis outputs are included in **Appendix I.**

The product of this analysis is a level of service (LOS) designation, ranging from LOS of A to F; which provides a relative indication of the level of delay experienced by motorists completing a turning manoeuvre at an intersection. LOS A represents conditions under which motorists would experience little delay and LOS F reflects conditions where more extended delays can be expected.

HCM level of service (LOS) criteria for unsignalized intersections is as follows:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 15s
- LOS C: 15s < Control Delay ≤ 25s
- LOS D: 25s < Control Delay ≤ 35s
- LOS E: 35s < Control Delay ≤ 50s
- LOS F: Control Delay > 50s

7.1.5 Network-Wide Parameters

Key analysis parameters were assumed based on default parameters summarized as follows:

Lane Widths

In order to align with the April 2021 TYLin report, the analysis for this study included 3.7 metre wide through lanes and 3.5 metre wide turning lanes.

Traffic Signal Timings

Traffic signal timings incorporated into the analysis were based upon information provided within the 2021 TYLin Synchro model. Although the traffic signal timings were optimized for each scenario analyzed for this

study, cycle lengths were maintained at 130 seconds and 140 seconds, for the AM Peak and PM Peak period, respectively.

Base Saturation Flow Rates

The Synchro default saturation flow rate of 1,900 vehicles per hour was adopted for the analysis for this study.

Heavy Vehicle Assumptions

Heavy and medium truck percentages incorporated into the analysis were based upon information provided within the 2021 TYLin Synchro model.

Lost Time Adjustments

The lost time adjustment factor of -1.0 seconds (i.e. a total loss time per phase equal to the amber plus all-red time minus 1 second) was adopted by BA Group for the traffic analysis in this study. This differs slightly from the TYLin approach where a lost time adjustment was set to 0.

Peak Hour Factors

A peak hour factor (phf) of 1.0 was adopted by BA Group for the traffic analysis in this study. This differs slightly from the TYLin approach where a peak hour factor (PHF) was determined by the turning movement count for each individual intersection.

7.2 CAPACITY ANALYSIS AT SIGNALIZED INTERSECTIONS

7.2.1 September 2023 BA Group Report

7.2.1.1 Traffic Analysis: Existing Conditions

For the purpose of providing a summary of existing conditions in the September 2023 BA Group Report, an analysis of existing conditions that replicate the TYLin report Transportation Considerations Report Addendum from April 2021 was undertaken. This analysis evaluated the current road network using the 2018 turning movement counts. The existing conditions traffic analysis has not been updated for this report. When 2024 traffic counts are available for the study area, an updated assessment of existing conditions can be undertaken.

It is noted that BA Group did not change the saturation flow, which remained at 1,900 vehicles per hour, as no studies to support TYLin ‘s adoption of 2,000 vehicles per hour along Lakeshore Road East were found. A summary of the results of the detailed capacity analysis for existing conditions at the signalized intersections is provided in **Table 31**. All existing signalized intersection movements within the study area are operating at v/c equal to or less than 1.0. All queues are lower than the available queueing spacing in the network, with the exception of:

- Eastbound left turn at Lakeshore Road East & Cawthra Road, under 95th percentile conditions during the PM peak hour, slightly exceeds the available storage space.
- Southbound left turn at Lakeshore Road East & Dixie Road, under 95th percentile conditions during the PM peak hour, slightly exceeds the available storage space.

TABLE 31 CAPACITY ANALYSIS SUMMARY: EXISTING CONDITIONS

Movement	Existing Conditions (as per the 2021 TYLin Study)					Available Queuing Space (metres)
	V/C	Delay (seconds)	LOS	50th Queue (metres)	95th Queue (metres)	
Lakeshore Road East & East Avenue						
EBL	0.02 (0.05)	1.7 (1.6)	A (A)	0.5 (0.4)	1.7 (0.7)	80
EBT	0.45 (0.32)	3 (2.4)	A (A)	38.9 (35.3)	53.3 (11)	330
EBR	0.05 (0.02)	1.7 (1.3)	A (A)	1 (0.1)	3.8 (0.2)	45
NBL	0.34 (0.3)	59 (56.2)	E (E)	5 (5.8)	13.5 (14.7)	20
NBT	0.02 (0.18)	55 (54.6)	D (D)	0.2 (4.1)	5.9 (15.3)	175
SBL	0.11 (0.08)	55.9 (53.9)	E (D)	1.7 (1.4)	6.6 (5.9)	50
SBT	0.02 (0.01)	55 (53.3)	D (D)	0.2 (0.2)	6.6 (4.4)	80
WBL	0.05 (0.02)	2.1 (3)	A (A)	0.6 (0.5)	2.3 (m1.7)	50
WBT	0.27 (0.48)	2.3 (5)	A (A)	16.5 (51.7)	24.2 (81.2)	340
WBR	0.01 (0.02)	1.6 (7.5)	A (A)	0 (0.1)	0.2 (2.4)	30
OVERALL	**0.44 (0.47)**	**3.9 (5.4)**	**A (A)**	--	--	--
Lakeshore Road East & Lakefront Promenade						
EBT	0.41 (0.27)	1.7 (1.3)	A (A)	11.7 (7.1)	14.6 (9.7)	340
EBR	0.04 (0.01)	0.3 (0.4)	A (A)	0 (0)	0.1 (0.2)	20
NBL	0.34 (0.41)	56.8 (55)	E (D)	6.3 (12)	18.2 (26.7)	205
NBR	- (-)	- (-)	- (-)	- (-)	- (-)	205
WBL	0.06 (0.01)	2.3 (1.2)	A (A)	1.6 (0.2)	3 (m0.7)	45
WBT	0.24 (0.39)	3.3 (2)	A (A)	35.6 (26.2)	22.9 (26.7)	240
OVERALL	**0.4 (0.39)**	**3.5 (3.6)**	**A (A)**	**--**	**--**	**--**
Lakeshore Road East & Ogden Avenue						
EBL	0.14 (0.22)	2.2 (2.8)	A (A)	3.6 (2.4)	6.4 (4.6)	35
EBT	0.38 (0.28)	2.4 (1.7)	A (A)	21.8 (14.5)	26.4 (17.5)	240
NBT	0 (0.05)	51.7 (53.8)	D (D)	0 (1)	0 (5.1)	15
SBL	0.5 (0.34)	57.5 (57)	E (E)	12 (6.5)	24.7 (16.2)	60
SBT	0.03 (0.03)	52 (53.6)	D (D)	0.2 (0)	11.2 (0)	160
WBL	0.02 (-)	4.8 (-)	A (-)	0.4 (-)	m2.5 (-)	25
WBT	0.2 (0.41)	5.3 (6.6)	A (A)	17 (82.2)	50.2 (83.4)	200
OVERALL	**0.39 (0.4)**	**6.1 (6.3)**	**A (A)**	--	--	--
Lakeshore Road East & Haig Boulevard						
EBL	0.05 (0.1)	1.9 (2.4)	A (A)	0.7 (0.7)	2.4 (2.8)	110
EBT	0.46 (0.31)	2.8 (2)	A (A)	32.8 (16)	50 (28.2)	165
SBL	0.37 (0.28)	56.1 (55.5)	E (E)	9.2 (6.5)	23.3 (18.8)	320
WBT	0.37 (0.51)	2 (4.1)	A (A)	18.4 (44.1)	24 (77.3)	600
OVERALL	**0.45 (0.49)**	**3.9 (4.3)**	**A (A)**	--	--	--
Lakeshore Road East & Cawthra Road						
EBL	0.66 (0.73)	14.6 (39.1)	B (D)	45.8 (53.1)	97.5 (91.5)	75
EBT	0.41 (0.27)	5.3 (6.7)	A (A	47 (20.7)	70.8 (50.6)	260
NBT	- (0.29)	- (66.2)	- (E)	- (1.4)	- (6.5)	10

Movement	Existing Conditions (as per the 2021 TYLin Study)					Available Queuing Space (metres)
	V/C	Delay (seconds)	LOS	50th Queue (metres)	95th Queue (metres)	
SBL	0.67 (0.58)	67 (55.9)	E (E)	36.7 (25.7)	57.5 (43.7)	115
SBT	0.67 (0.58)	67.5 (55.4)	E (E)	37 (26)	57.8 (43.8)	250
SBR	0.36 (0.28)	25.9 (39.5)	C (D)	19.2 (0)	40.5 (28.3)	75
WBL	0.01 (0.01)	22.3 (18.2)	C (B)	0.5 (0.3)	2.8 (m0.7)	105
WBT	0.54 (0.87)	30.2 (31.3)	C (C)	77.2 (66.4)	107.6 (#242.7)	325
OVERALL	**0.72 (0.79)**	**21 (29.5)**	**C (C)**	--	--	--
Lakeshore Road East & Dixie Road						
EBL	0.72 (0.83)	19.3 (48.9)	B (D)	35.1 (44.4)	89 (#105.8)	75
EBT	0.33 (0.31)	5.9 (12.9)	A (B)	32 (53.7)	62.1 (73.7)	600
NBT	0.03 (0.01)	43 (34.4)	D (C)	0.7 (0.8)	3.4 (3.6)	95
SBL	0.71 (0.86)	58.5 (62.3)	E (E)	37.4 (68.9)	57.3 (98.9)	95
SBT	0.16 (0.45)	44.1 (39.4)	D (D)	0 (24.4)	0.6 (52.8)	310
WBL	0.03 (0.01)	14.4 (16.4)	B (B)	1.1 (0.3)	4.6 (1.8)	25
WBT	0.53 (0.89)	20.5 (35.6)	C (D)	76.8 (170.8)	113.2 (207)	460
OVERALL	**0.74 (0.87)**	**20.1 (34.4)**	**C (C)**	- (-)	- (-)	--

Notes:

1. Pink-shaded cells represent a queue that exceeds available storage space.

7.2.1.2 Traffic Analysis: Scenario 1 – 2,500 Rangeview Residential Units

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

A summary of the results of the detailed capacity analysis for Scenarios 1, 2, 3A & 3B is provided in **Table 32**.

7.2.1.3 Traffic Analysis: Scenario 2 – 3,700 Rangeview Residential Units (with Ogden)

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

7.2.1.4 Traffic Analysis: Scenario 3A – 5,300 Rangeview Residential Units (with Haig)

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Dixie Road & Lakeshore Road East:** the southbound right-turn movement operates with a v/c of 1.05 during the afternoon peak hour. In a busy urban environment, it is typical that particular movements will operate at, or slightly over capacity, during the peak periods of the day. It is also likely that traffic will divert and rebalance in the future as traffic patterns evolve. For these reasons, the intersection is expected to operate acceptably for all movements in relation to Scenario 3A.

- **Lakeshore Road East & Haig Boulevard:** the northbound through/left movement operates with a v/c of 1.35 during the afternoon peak hour. It is likely that traffic will divert and rebalance in the future as traffic patterns evolve. This movement could also be improved with minor upgrades to the north approach, such as a southbound right-turn pocket. This intersection can also be monitored in the future when more accurate traffic data is available. For these reasons, the intersection is expected to operate acceptably for all movements in relation to Scenario 3A. It is however important to note that as no Rangeview-related volumes have been assigned to the intersection of Lakeshore Road East & Haig Boulevard, the traffic concerns at this intersection are related only to the traffic generated by Lakeview Village and Serson.

7.2.1.5 Traffic Analysis: Scenario 3B – 5,300 Rangeview Residential Units (Dual left turns but no Haig)

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Dixie Road & Lakeshore Road East:** the southbound right-turn movement operates with a v/c of 1.04 during the afternoon peak hour. In a busy urban environment, it is typical that particular movements will operate at, or slightly over capacity, during the peak periods of the day. It is also likely that traffic will divert and rebalance in the future as traffic patterns evolve. For these reasons, the intersection is expected to operate acceptably for all movements in relation to Scenario 3B.

7.2.2 Updated BA Group Report

7.2.2.1 Travel Demand: Scenario 4 – 5,300 Rangeview Residential Units and 10,000 Lakeview Residential Units

A summary of the results of the detailed capacity analysis for Scenarios 4, 5, and 6 is provided in **Table 33.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Ogden Avenue & Lakeshore Road East:** the westbound through during the morning peak operates at a v/c ratio of 0.98.
- **Lakeshore Road East & Cawthra Road:** the eastbound left-turn during the afternoon peak and westbound through during the morning peak operate at v/c ratios of 0.99.
- **Dixie Road & Lakeshore Road East:** the southbound right-turn during the afternoon peak operates at a v/c ratio of 0.98.

It should be noted that these movements were also identified as critical in the September 2023 BA Group Report. However, given that the share of auto driver mode share has been adjusted to better reflect future evolving conditions, intersections operate under improved conditions as compared to a 50% auto driver mode share. In a busy urban environment, it is typical that particular movements may operate at, or slightly over

capacity, during the peak periods of the day. Traffic operations at these critical movements can be confirmed and monitored through updated traffic studies as the development progresses.

7.2.2.2 Travel Demand: Scenario 5 – 5,300 Rangeview Residential Units and 12,000 Lakeview Residential Units

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Ogden Avenue & Lakeshore Road East:** the westbound through during the morning peak operates at a v/c ratio of 0.9.
- **Lakeshore Road East & Cawthra Road:** the eastbound left-turn during the afternoon peak and westbound through during the morning peak operate at v/c ratios of 0.99.
- **Dixie Road & Lakeshore Road East:** the southbound right-turn during the afternoon peak operates at a v/c ratio of 0.98.

7.2.2.3 Travel Demand: Scenario 6 – 5,300 Rangeview Residential Units and 14,000 Lakeview Residential Units

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Ogden Avenue & Lakeshore Road East:** the westbound through during the morning peak operates at a v/c ratio of 0.99.
- **Lakeshore Road East & Cawthra Road:** the eastbound left-turn during the afternoon peak operates at v/c ratios of 0.99. The westbound though operates at a v/c ratio of 1.00 in the morning peak and 0.98 in the afternoon peak.
- **Dixie Road & Lakeshore Road East:** the southbound right-turn during the afternoon peak operates at a v/c ratio of 1.00.

7.2.2.4 Travel Demand: Scenario 7A – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

A summary of the results of the detailed capacity analysis for Scenarios 7A and 7B is provided in **Table 34.**

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Ogden Avenue & Lakeshore Road East:** the westbound through during the morning peak operates at a v/c ratio of 1.02.
- **Lakeshore Road East & Haig Boulevard:** the westbound through during the afternoon peak operates at a v/c ratio of 0.99.
- **Lakeshore Road East & Cawthra Road:** the eastbound left-turn during the afternoon peak operates at a v/c ratio of 0.99. The westbound though operates at a v/c ratio of 0.99 in the morning peak and 0.98 in the afternoon peak.
- **Dixie Road & Lakeshore Road East:** the southbound right-turn during the afternoon peak operates at a v/c ratio of 1.06. The westbound through operates at a v/c ratio of 0.98 in the afternoon peak.

7.2.2.5 Travel Demand: Scenario 7B – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakeshore Road East & Cawthra Road:** the westbound through operates at a v/c ratio of 0.99 during the morning peak and 1.00 during the afternoon peak.
- **Dixie Road & Lakeshore Road East**: the southbound right-turn operates at a v/c ratio of 0.99 during the afternoon.

Overall, signalized intersections operate under acceptable conditions during the morning and afternoon peaks. As directed by City staff, the mode share was modified from the 2023 report by adopting the existing auto driver mode share of Liberty Village. The intersections of Lakeshore Rd E & Cawthra Rd and Lakeshore Rd E & Dixie Road maintain critical movements initially outlined in the 2023 report. At or near critical v/c movements at the above intersections operate under improved conditions as compared to the 2023 traffic assessment. It should be noted as to maintain a conservative approach, the ultimate conditions, scenarios 7A and 7B were evaluated under 40% and 35% auto driver auto mode share. In both scenarios, the intersections operate under conditions typical of busy urban environments. Continual monitoring of these movements as the development progresses will confirm operations assessments.

TABLE 32 CAPACITY ANALYSIS SUMMARY AT SIGNALIZED INTERSECTIONS - SCENARIOS 1, 2, 3A & 3B

Movement	Scenario 1: Rangeview with 2,500 units Lakeview Village with 7,500 units No Ogden No Haig (with road improvements)			Scenario 2: Rangeview with 3,700 units Lakeview Village with 8,050 units Ogden connected			Scenario 3A: Rangeview with 5,300 units Lakeview Village with 8,050 units Haig connected			Scenario 3B: Rangeview with 5,300 units Lakeview Village with 8,050 units Dual left at Lakefront Promenade/No Haig		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
Lakeshore Road East & East Avenue												
EBL	0.69 (0.5)	94.6 (68.3)	F (E)	0.69 (0.45)	91.5 (66.5)	F (E)	0.54 (0.53)	71.2 (70)	E (E)	0.61 (0.45)	78.2 (66.3)	E (E)
EBT	0.85 (0.79)	36.3 (21.8)	D (C)	0.87 (0.96)	32.5 (36)	C (D)	0.95 (0.95)	42.5 (32.3)	D (C)	0.81 (0.91)	22.4 (24.8)	C (C)
NBL	0.91 (0.7)	67.9 (68.5)	E (E)	0.9 (0.69)	76 (66.4)	E (E)	0.89 (0.66)	71.6 (66.6)	E (E)	0.78 (0.57)	67.6 (64.8)	E (E)
NBT	0.42 (0.02)	36.9 (52.2)	D (D)	0.2 (0.04)	41.3 (51.8)	D (D)	0.24 (0.02)	40.4 (53)	D (D)	0.43 (0.04)	50.1 (56.3)	D (E)
SBL	0.13 (0.13)	33.2 (53.3)	C (D)	0.12 (0.13)	40.5 (52.7)	D (D)	0.12 (0.13)	39.1 (54.1)	D (D)	0.23 (0.17)	48.1 (57.6)	D (E)
SBT	0.01 (0)	31.8 (52.1)	C (D)	0.01 (0)	39.2 (51.5)	D (D)	0.01 (0)	37.8 (52.8)	D (D)	0.01 (0)	45.6 (56)	D (E)
WBL	0.78 (0.48)	96.5 (60.4)	F (E)	0.43 (0.5)	68.9 (61.8)	E (E)	0.29 (0.68)	68.3 (73.7)	E (E)	0.42 (0.52)	60.7 (58)	E (E)
WBT	0.7 (0.56)	23 (9.9)	C (A)	0.83 (0.75)	17.1 (14.9)	B (B)	0.91 (0.79)	26.8 (12.2)	C (B)	0.85 (0.75)	14.2 (9.8)	B (A)
WBR	0.01 (0.02)	13.5 (6.7)	B (A)	0.01 (0.02)	9.3 (7.1)	A (A)	0.01 (0.02)	10.4 (6.3)	B (A)	0.01 (0.02)	6.7 (5.6)	A (A)
OVERALL	**0.87 (0.74)**	**36.5 (21)**	**D (C)**	**0.87 (0.86)**	**30 (29.1)**	**C (C)**	**0.93 (0.88)**	**38 (26.1)**	**D (C)**	**0.83 (0.83)**	**22.6 (20.7)**	**C (C)**
Lakeshore Road East & Lakefront Promenade												
EBT	0.71 (0.78)	25.9 (32)	C (C)	0.8 (0.89)	18.8 (37.4)	B (D)	0.91 (0.93)	23.5 (39)	C (D)	0.93 (0.89)	36.3 (33.6)	D (C)
EBR	0.23 (0.46)	21.9 (27.8)	C (C)	0.25 (0.38)	14.8 (30.4)	B (C)	0.21 (0.36)	14.7 (29.2)	B (C)	0.3 (0.41)	22.5 (26.4)	C (C)
NBL	0.83 (0.79)	63.6 (57.5)	E (E)	0.84 (0.94)	67 (86.2)	E (F)	0.87 (0.94)	69.7 (88)	E (F)	0.75 (0.75)	54.3 (60.7)	D (E)
NBR	0.75 (0.15)	45 (40.3)	D (D)	0.8 (0.13)	51.8 (45.8)	D (D)	0.79 (0.1)	50.6 (46.1)	D (D)	0.61 (0.14)	52 (49.8)	D (D)
WBL	0.51 (0.9)	69.4 (87.8)	E (F)	0.65 (0.89)	70.2 (74.9)	E (E)	0.53 (0.94)	63.3 (87.3)	E (F)	0.36 (0.86)	50 (72.1)	D (E)
WBT	0.34 (0.4)	1.6 (5.3)	A (A)	0.49 (0.56)	6.6 (8.1)	A (A)	0.53 (0.61)	6.6 (7.6)	A (A)	0.7 (0.77)	15.9 (17.4)	B (B)
OVERALL	**0.77 (0.82)**	**26.7 (32.9)**	**C (C)**	**0.85 (0.91)**	**23.2 (33.8)**	**C (C)**	**0.92 (0.94)**	**24.5 (34.1)**	**C (C)**	**0.78 (0.86)**	**33.5 (34.1)**	**C (C)**
Lakeshore Road East & Ogden Avenue												
EBL	0.7 (0.63)	47.9 (49.8)	D (D)	0.75 (0.68)	57.8 (72.1)	E (E)	0.76 (0.68)	55.3 (62)	E (E)	0.79 (0.68)	68.5 (67.8)	E (E)
EBT	0.57 (0.44)	6.3 (3.8)	A (A)	0.95 (0.92)	36.9 (36.5)	D (D)	1 (0.85)	41.3 (31.4)	D (C)	0.96 (0.94)	31 (39.1)	C (D)
EBR	- (-)	- (-)	- (-)	0.21 (0.38)	23.3 (27.5)	C (C)	0.14 (0.32)	22.4 (27.2)	C (C)	0.22 (0.39)	21 (28.9)	C (C)
NBL	- (-)	- (-)	- (-)	0.85 (0.87)	64.3 (65)	E (E)	1 (1)	102.3 (112.2)	F (F)	0.79 (0.88)	55.1 (70.3)	E (E)
NBT	- (-)	- (-)	- (-)	0.2 (0.12)	46.8 (44.9)	D (D)	0.24 (0.17)	48.7 (52.5)	D (D)	0.2 (0.13)	45.1 (47.4)	D (D)
NBR	- (-)	- (-)	- (-)	0.7 (0.1)	58.7 (44.8)	E (D)	0.67 (0.07)	58.7 (51.5)	E (D)	0.77 (0.11)	62.7 (47.1)	E (D)
SBL	0.61 (0.93)	60.8 (114.4)	E (F)	0.47 (0.51)	48.6 (51.6)	D (D)	0.51 (0.57)	49.3 (54.7)	D (D)	0.42 (0.5)	44.8 (50.7)	D (D)
SBT	0.12 (0.24)	55.4 (63.1)	E (E)	0.15 (0.67)	51 (65.2)	D (E)	0.07 (0.64)	49.6 (65.3)	D (E)	0.13 (0.69)	47.5 (65.8)	D (E)
WBL	- (-)	- (-)	- (-)	0.55 (0.81)	64.2 (78.6)	E (E)	0.56 (0.76)	60.2 (70)	E (E)	0.75 (0.8)	75.9 (69.8)	E (E)
WBT	0.45 (0.56)	5.4 (6.3)	A (A)	0.6 (0.92)	16.5 (31.4)	B (C)	0.62 (0.94)	20.8 (30.5)	C (C)	0.65 (0.9)	22 (29.4)	C (C)
OVERALL	**0.65 (0.64)**	**11.9 (14.5)**	**B (B)**	**0.93 (0.93)**	**37.4 (41.5)**	**D (D)**	**1.01 (0.97)**	**42.6 (40.5)**	**D (D)**	**0.94 (0.92)**	**36.6 (41.4)**	**D (D)**

Movement	Scenario 1: Rangeview with 2,500 units Lakeview Village with 7,500 units No Ogden No Haig (with road improvements)			Scenario 2: Rangeview with 3,700 units Lakeview Village with 8,050 units Ogden connected			Scenario 3A: Rangeview with 5,300 units Lakeview Village with 8,050 units Haig connected			Scenario 3B: Rangeview with 5,300 units Lakeview Village with 8,050 units Dual left at Lakefront Promenade/No Haig		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
Lakeshore Road East & Hydro Road												
EBL	0.15 (0.2)	57.9 (65.4)	E (E)	0.15 (0.17)	74.7 (67.7)	E (E)	0.15 (0.17)	82.8 (65.3)	F (E)	0.15 (0.2)	76.4 (65.9)	E (E)
EBT	0.78 (0.66)	31.2 (46.3)	C (D)	0.88 (0.79)	16.5 (29)	B (C)	0.97 (0.74)	18.7 (20.5)	B (C)	0.91 (0.94)	15.7 (42.5)	B (D)
EBR	0.3 (0.51)	26.2 (56)	C (E)	0.44 (0.51)	5.9 (25.2)	A (C)	0.29 (0.38)	2.2 (17.2)	A (B)	0.44 (0.61)	3.3 (32.7)	A (C)
NBL	0.83 (0.81)	59.1 (63.9)	E (E)	0.86 (0.91)	65.9 (77.4)	E (E)	0.83 (0.78)	66.2 (66.1)	E (E)	0.97 (0.92)	89.3 (74.8)	F (E)
NBT	0.6 (0.19)	44.1 (42.4)	D (D)	0.8 (0.41)	57.2 (43.8)	E (D)	0.56 (0.15)	47.2 (46.1)	D (D)	0.88 (0.32)	67.5 (39.4)	E (D)
SBT	0.01 (0)	35.1 (40.2)	D (D)	0.01 (0)	37.3 (38.7)	D (D)	0.01 (0)	39.8 (44.5)	D (D)	0.01 (0)	37.8 (35.5)	D (D)
WBL	0.61 (0.83)	53.4 (72.4)	D (E)	0.75 (0.88)	86.7 (85.2)	F (F)	0.62 (0.77)	76.5 (66.9)	E (E)	0.82 (0.94)	98.9 (92.8)	F (F)
WBT	0.4 (0.56)	12.8 (6.2)	B (A)	0.48 (0.68)	9.8 (11.5)	A (B)	0.5 (0.76)	9.3 (12.6)	A (B)	0.48 (0.72)	10.9 (21.7)	B (C)
OVERALL	**0.78 (0.74)**	**30.8 (37)**	**C (D)**	**0.86 (0.84)**	**23.6 (31.3)**	**C (C)**	**0.91 (0.78)**	**20.8 (23)**	**C (C)**	**0.92 (0.93)**	**26.7 (40.8)**	**C (D)**
Lakeshore Road East & Haig Boulevard												
EBL	0.58 (0.45)	43.4 (49.4)	D (D)	0.63 (0.44)	50.4 (47.6)	D (D)	0.64 (0.97)	57.7 (146.1)	E (F)	0.65 (0.53)	51.2 (62.8)	D (E)
EBT	0.6 (0.43)	7.7 (3.2)	A (A)	0.68 (0.52)	4.9 (3.9)	A (A)	0.95 (0.81)	24 (21.2)	C (C)	0.73 (0.53)	5.1 (2.2)	A (A)
EBR	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.31 (0.18)	13.8 (11.3)	B (B)	- (-)	- (-)	- (-)
NBT	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.75 (1.35)	66.1 (228.2)	E (F)	- (-)	- (-)	- (-)
NBR	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.53 (0.18)	51.8 (37.8)	D (D)	- (-)	- (-)	- (-)
SBT	0.05 (0.08)	57.7 (61.4)	E (E)	0.11 (0.19)	58 (61.4)	E (E)	0.38 (0.41)	49.6 (41.3)	D (D)	0.11 (0.3)	56.5 (62)	E (E)
WBL	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.72 (0.68)	52.7 (58.1)	D (E)	- (-)	- (-)	- (-)
WBT	0.49 (0.72)	23.2 (23)	C (C)	0.61 (0.85)	20.8 (27.4)	C (C)	0.65 (0.97)	19.8 (39.4)	B (D)	0.63 (0.86)	17.8 (17.3)	B (B)
OVERALL	**0.59 (0.66)**	**15.9 (17.4)**	**B (B)**	**0.67 (0.77)**	**14 (19.8)**	**B (B)**	**0.88 (1.12)**	**27.6 (51.4)**	**C (D)**	**0.71 (0.79)**	**12.9 (14.6)**	**B (B)**
Lakeshore Road East & Cawthra Road												
EBL	0.91 (0.9)	54.8 (65.1)	D (E)	0.96 (1)	69.2 (93.4)	E (F)	0.76 (0.68)	69.3 (93.6)	E (F)	0.96 (1.00)	69.3 (93.5)	E (F)
EBT	0.46 (0.5)	14.5 (21.5)	B (C)	0.54 (0.56)	15.9 (21.5)	B (C)	1.00 (0.85)	16.4 (22)	B (C)	0.55 (0.58)	16 (21.9)	B (C)
EBR	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.14 (0.32)	- (-)	- (-)	- (-)	- (-)	- (-)
NBL	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.95 (1.00)	- (-)	- (-)	- (-)	- (-)	- (-)
NBT	- (0.21)	- (67.1)	- (E)	- (0.21)	- (67.1)	- (E)	0.24 (0.17)	- (67.1)	- (E)	- (0.21)	- (67.1)	- (E)
NBR	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.66 (0.07)	- (-)	- (-)	- (-)	- (-)	- (-)
SBL	0.59 (0.69)	39.4 (39.7)	D (D)	0.76 (0.9)	46.5 (58)	D (E)	0.52 (0.57)	52.6 (74.1)	D (E)	0.77 (0.96)	47.2 (71.4)	D (E)
SBT	0.58 (0.61)	39 (32)	D (C)	0.74 (0.78)	45.3 (40.9)	D (D)	0.07 (0.64)	50.7 (46.1)	D (D)	0.75 (0.84)	46.2 (45.2)	D (D)
SBR	0.43 (0.47)	15.6 (16.7)	B (B)	0.43 (0.5)	15.9 (19.6)	B (B)	- (-)	15.9 (19.6)	B (B)	0.43 (0.5)	15.9 (19.6)	B (B)
WBL	0.02 (-)	40.1 (-)	D (-)	0.02 (0.02)	39.1 (26.1)	D (C)	0.56 (0.76)	39.4 (26.1)	D (C)	0.02 (0.02)	41.5 (26.1)	D (C)
WBT	0.78 (0.9)	46.7 (52.2)	D (D)	0.93 (0.94)	57.1 (53.2)	E (D)	0.62 (0.94)	64.8 (62.7)	E (E)	0.96 (0.95)	62.8 (55.6)	E (E)
WBR	0.67 (0.52)	10.2 (10.2)	B (B)	0.81 (0.66)	13.1 (11.9)	B (B)	- (-)	20.5 (13.9)	C (B)	0.89 (0.68)	22.5 (12.4)	C (B)
OVERALL	**0.83 (0.82)**	**29.1 (33.4)**	**C (C)**	**0.95 (0.94)**	**34.7 (38.4)**	**C (D)**	**1.00 (0.97)**	**38.7 (43.5)**	**D (D)**	**0.99 (0.98)**	**37.9 (41.1)**	**D (D)**

Movement	Scenario 1: Rangeview with 2,500 units Lakeview Village with 7,500 units No Ogden No Haig (with road improvements)			Scenario 2: Rangeview with 3,700 units Lakeview Village with 8,050 units Ogden connected			Scenario 3A: Rangeview with 5,300 units Lakeview Village with 8,050 units Haig connected			Scenario 3B: Rangeview with 5,300 units Lakeview Village with 8,050 units Dual left at Lakefront Promenade/No Haig		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
Lakeshore Road East & Dixie Road												
EBL	0.91 (0.71)	44.4 (37.1)	D (D)	0.93 (0.65)	49.4 (35)	D (D)	0.98 (0.67)	38.3 (35)	D (D)	0.98 (0.65)	52.5 (26.8)	D (C)
EBT	0.46 (0.4)	5.7 (25.8)	A (C)	0.53 (0.48)	6.4 (19.8)	A (B)	0.56 (0.51)	18.9 (32.9)	B (C)	0.56 (0.49)	6.5 (23.7)	A (C)
NBT	0.02 (0.01)	46.2 (43.7)	D (D)	0.02 (0.01)	46.8 (44.6)	D (D)	0.02 (0.01)	46.8 (44.9)	D (D)	0.02 (0.01)	46.8 (44.9)	D (D)
SBT	0.7 (0.92)	61.5 (85.9)	E (F)	0.69 (0.96)	61.3 (95.6)	E (F)	0.69 (0.97)	61.3 (99.6)	E (F)	0.69 (0.97)	61.3 (99.6)	E (F)
SBR	0.42 (0.91)	15.2 (46.1)	B (D)	0.48 (0.99)	14.6 (58.5)	B (E)	0.52 (1.05)	15.2 (74.5)	B (E)	0.49 (1.04)	14.7 (71.3)	B (E)
WBT	0.72 (0.79)	45.7 (42.9)	D (D)	0.97 (0.95)	70.4 (61.2)	E (E)	0.98 (0.98)	72.8 (68.7)	E (E)	0.97 (0.98)	70.9 (68)	E (E)
WBR	0.18 (0.24)	35.4 (30.4)	D (C)	0.18 (0.27)	37.5 (35.3)	D (D)	0.18 (0.27)	37.5 (35.9)	D (D)	0.18 (0.27)	37.5 (35.9)	D (D)
OVERALL	**0.81 (0.86)**	**28.2 (41.1)**	**C (D)**	**0.9 (0.97)**	**35.3 (47.2)**	**D (D)**	**0.93 (1.02)**	**37.7 (56.5)**	**D (E)**	**0.93 (1.01)**	**35.5 (52.5)**	**D (D)**

Notes:
1. XX (XX) –Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

TABLE 33 CAPACITY ANALYSIS SUMMARY AT SIGNALIZED INTERSECTIONS - SCENARIOS 4, 5, AND 6

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Lakeshore Road East & East Avenue									
EBL	0.17 (0.22)	76.7 (69.9)	E (E)	0.17 (0.22)	76.9 (71.5)	E (E)	0.17 (0.22)	76.6 (73.4)	E (E)
EBT	0.61 (0.82)	11.8 (20.2)	B (C)	0.63 (0.84)	12 (21.5)	B (C)	0.63 (0.85)	11.3 (20.5)	B (C)
NBL	0.67 (0.59)	66.2 (68.9)	E (E)	0.67 (0.59)	66.4 (69.2)	E (E)	0.67 (0.59)	66.2 (69.2)	E (E)
NBT	0.3 (0.01)	55.4 (58.6)	E (E)	0.27 (0.01)	54.9 (58.5)	D (E)	0.24 (0.01)	54.7 (58.5)	D (E)
SBL	0.04 (0.07)	52.9 (59.1)	D (E)	0.04 (0.07)	52.7 (59)	D (E)	0.04 (0.07)	52.7 (59)	D (E)
SBT	0 (0.01)	52.5 (58.6)	D (E)	0 (0.01)	52.3 (58.5)	D (E)	0 (0.01)	52.4 (58.5)	D (E)
WBL	0.22 (0.41)	55 (55.9)	D (E)	0.22 (0.4)	54.3 (55.1)	D (E)	0.3 (0.44)	58.7 (57.9)	E (E)
WBT	0.86 (0.61)	15.1 (7.5)	B (A)	0.88 (0.63)	16 (7.7)	B (A)	0.89 (0.64)	16.5 (7.9)	B (A)
WBR	0.01 (0.04)	5 (5.2)	A (A)	0.01 (0.04)	5 (5.5)	A (A)	0.01 (0.04)	5 (5.3)	A (A)
OVERALL	**0.82 (0.77)**	**17.1 (16.4)**	**B (B)**	**0.84 (0.79)**	**17.5 (17.2)**	**B (B)**	**0.85 (0.79)**	**17.4 (16.7)**	**B (B)**
Lakefront Promenade & Lakeshore Road East									
EBT	0.74 (0.85)	13.9 (28.5)	B (C)	0.76 (0.9)	15.4 (32)	B (C)	0.78 (0.93)	17.3 (37.4)	B (D)
EBR	0.12 (0.4)	9.1 (19.4)	A (B)	0.12 (0.42)	9.9 (20.5)	A (C)	0.13 (0.44)	10 (21.8)	A (C)
NBL	0.75 (0.72)	60.8 (60.6)	E (E)	0.76 (0.74)	61 (60.5)	E (E)	0.77 (0.75)	61.2 (60.7)	E (E)
NBR	0.19 (0.08)	50.5 (50.3)	D (D)	0.19 (0.09)	50 (49.6)	D (D)	0.2 (0.09)	49.7 (49.1)	D (D)
WBL	0.13 (0.84)	59.2 (82.6)	E (F)	0.13 (0.85)	60.2 (83.2)	E (F)	0.14 (0.87)	62.4 (83.9)	E (F)

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
WBT	0.88 (0.77)	17.4 (16.4)	B (B)	0.9 (0.8)	18.1 (18.4)	B (B)	0.92 (0.82)	17.9 (19.4)	B (B)
OVERALL	**0.75 (0.83)**	**22.9 (30.8)**	**C (C)**	**0.76 (0.87)**	**23.9 (33.2)**	**C (C)**	**0.78 (0.89)**	**24.6 (35.8)**	**C (D)**
Ogden Avenue & Lakeshore Road East									
EBL	0.52 (0.41)	62.9 (57.5)	E (E)	0.55 (0.41)	64.1 (57.2)	E (E)	0.61 (0.41)	64.9 (57)	E (E)
EBT	0.71 (0.88)	14.4 (29.6)	B (C)	0.73 (0.9)	15.7 (29.4)	B (C)	0.74 (0.91)	17.4 (30.1)	B (C)
EBR	0.07 (0.35)	17.2 (22.2)	B (C)	0.08 (0.37)	17.5 (22.8)	B (C)	0.08 (0.39)	19.7 (23.1)	B (C)
NBL	0.71 (0.57)	62.3 (55.5)	E (E)	0.72 (0.59)	61.7 (56.2)	E (E)	0.72 (0.62)	62.2 (57)	E (E)
NBT	0.23 (0.26)	55.8 (57.7)	E (E)	0.23 (0.27)	55.1 (57.1)	E (E)	0.23 (0.29)	54.9 (57)	D (E)
NBR	0.67 (0.07)	67.2 (56)	E (E)	0.68 (0.07)	67.5 (55.3)	E (E)	0.69 (0.07)	67.8 (55)	E (E)
SBL	0.31 (0.54)	50 (54.5)	D (D)	0.3 (0.57)	49.2 (55.3)	D (E)	0.3 (0.59)	48.9 (55.7)	D (E)
SBT	0.15 (0.61)	55.1 (64.5)	E (E)	0.16 (0.62)	54.4 (64.8)	D (E)	0.16 (0.63)	54.2 (64.9)	D (E)
WBL	0.32 (0.52)	85.4 (51.2)	F (D)	0.32 (0.57)	82.8 (53.7)	F (D)	0.32 (0.6)	79.9 (54.7)	E (D)
WBT	0.98 (0.8)	38.3 (17)	D (B)	0.99 (0.82)	38.9 (17.1)	D (B)	0.99 (0.83)	34.4 (16.7)	C (B)
OVERALL	**0.86 (0.77)**	**33.6 (29.4)**	**C (C)**	**0.87 (0.79)**	**34.4 (29.7)**	**C (C)**	**0.88 (0.8)**	**33.3 (30)**	**C (C)**
Hydro Road & Lakeshore Road East									
EBL	0.08 (0.11)	69 (58.5)	E (E)	0.08 (0.11)	69.3 (60.5)	E (E)	0.08 (0.12)	71.4 (61.1)	E (E)
EBT	0.84 (0.7)	21.8 (22)	C (C)	0.87 (0.75)	24 (24.5)	C (C)	0.89 (0.79)	24.9 (26.9)	C (C)
EBR	0.1 (0.39)	16.4 (20.2)	B (C)	0.11 (0.44)	16.4 (22.1)	B (C)	0.12 (0.48)	14.7 (23.9)	B (C)
NBL	0.8 (0.76)	66.1 (65.9)	E (E)	0.82 (0.78)	67 (65.9)	E (E)	0.84 (0.79)	68.4 (65.7)	E (E)

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
NBT	0.2 (0.09)	45.7 (47.3)	D (D)	0.27 (0.1)	45.3 (46)	D (D)	0.32 (0.1)	45.1 (44.9)	D (D)
SBT	0 (0)	43.5 (46.4)	D (D)	0 (0)	42.2 (45)	D (D)	0 (0)	41.3 (43.8)	D (D)
WBL	0.38 (0.78)	74.3 (71.4)	E (E)	0.41 (0.81)	74.2 (73)	E (E)	0.42 (0.83)	73.8 (75.2)	E (E)
WBT	0.66 (0.72)	14.2 (12.2)	B (B)	0.68 (0.74)	14.7 (13.3)	B (B)	0.69 (0.76)	15.2 (14.4)	B (B)
OVERALL	**0.81 (0.75)**	**23.8 (23.7)**	**C (C)**	**0.84 (0.78)**	**25.2 (25.6)**	**C (C)**	**0.85 (0.8)**	**26.1 (27.4)**	**C (C)**
Lakeshore Road East & Haig Boulevard									
EBL	0.42 (0.48)	65.8 (78.1)	E (E)	0.42 (0.5)	65.3 (78.4)	E (E)	0.42 (0.51)	65.3 (77.7)	E (E)
EBT	0.79 (0.64)	9.8 (13)	A (B)	0.83 (0.66)	11.4 (12.7)	B (B)	0.85 (0.68)	12.7 (13.2)	B (B)
EBR	0.19 (0.1)	4.4 (6.6)	A (A)	0.21 (0.13)	5.2 (6.1)	A (A)	0.23 (0.14)	5.7 (6.5)	A (A)
NBT	0.69 (0.78)	67.9 (61.9)	E (E)	0.7 (0.79)	66.9 (61.9)	E (E)	0.71 (0.79)	66.7 (61.7)	E (E)
NBR	0.16 (0.14)	52.7 (40)	D (D)	0.23 (0.19)	52.2 (39.9)	D (D)	0.27 (0.22)	51.9 (40)	D (D)
SBT	0.39 (0.26)	55.6 (41.5)	E (D)	0.38 (0.27)	54.2 (41)	D (D)	0.37 (0.28)	53.3 (40.7)	D (D)
WBL	0.6 (0.62)	51.9 (61.3)	D (E)	0.61 (0.66)	51.6 (61.5)	D (E)	0.62 (0.67)	51.9 (61.3)	D (E)
WBT	0.71 (0.89)	29.8 (32.3)	C (C)	0.73 (0.92)	31.9 (35.2)	C (D)	0.75 (0.94)	33.1 (37.3)	C (D)
OVERALL	**0.77 (0.87)**	**23.9 (29.1)**	**C (C)**	**0.8 (0.89)**	**25.5 (30.4)**	**C (C)**	**0.82 (0.91)**	**26.5 (31.5)**	**C (C)**
Lakeshore Rd E & Cawthra Rd									
EBL	0.85 (0.99)	55.7 (85.2)	E (F)	0.88 (0.99)	60.3 (84.7)	E (F)	0.85 (0.99)	55.8 (85.5)	E (F)
EBT	0.55 (0.71)	22.9 (34.3)	C (C)	0.56 (0.72)	23.1 (34.1)	C (C)	0.56 (0.73)	23 (34)	C (C)
NBT	0 (0.08)	68 (69.4)	E (E)	0 (0.08)	68 (69.4)	E (E)	0 (0.08)	68 (69.4)	E (E)

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
SBL	0.52 (0.68)	37.2 (34.4)	D (C)	0.54 (0.72)	37.6 (36.5)	D (D)	0.56 (0.75)	38.4 (38.2)	D (D)
SBT	0.46 (0.61)	31.6 (27.8)	C (C)	0.48 (0.65)	31.9 (29.4)	C (C)	0.49 (0.67)	32.4 (30.6)	C (C)
SBR	0.51 (0.61)	22.8 (21.1)	C (C)	0.52 (0.61)	23.3 (21.6)	C (C)	0.52 (0.62)	23.1 (21.9)	C (C)
WBL	0.01 (-)	40.2 (-)	D (-)	0.01 (-)	35.3 (-)	D (-)	0.01 (-)	34 (-)	C (-)
WBT	0.99 (0.97)	68.9 (67.9)	E (E)	0.99 (0.97)	67.8 (69.1)	E (E)	1.00 (0.98)	69.6 (68.1)	E (E)
WBR	0.79 (0.42)	15.2 (4.6)	B (A)	0.82 (0.45)	16.6 (4.6)	B (A)	0.85 (0.46)	17.3 (4.7)	B (A)
OVERALL	**0.9 (0.86)**	**38.6 (40.7)**	**D (D)**	**0.91 (0.89)**	**39 (41.1)**	**D (D)**	**0.92 (0.9)**	**39.2 (41.2)**	**D (D)**
Dixie Rd & Lakeshore Rd E									
EBL	0.78 (0.67)	40.3 (36.8)	D (D)	0.8 (0.65)	39.5 (34.2)	D (C)	0.82 (0.65)	39.3 (33.1)	D (C)
EBT	0.52 (0.44)	19.3 (27.2)	B (C)	0.54 (0.45)	20.6 (28.2)	C (C)	0.54 (0.46)	21.4 (28.8)	C (C)
NBT	0 (0)	49.5 (42.5)	D (D)	0 (0)	49.5 (42.5)	D (D)	0 (0)	49.5 (42.5)	D (D)
SBT	0.72 (0.82)	66.5 (67.5)	E (E)	0.72 (0.82)	66.5 (67.5)	E (E)	0.72 (0.82)	66.5 (67.5)	E (E)
SBR	0.59 (0.98)	19.1 (56.1)	B (E)	0.6 (0.99)	19.2 (57.7)	B (E)	0.6 (1.00)	19.4 (61.5)	B (E)
WBL	0.07 (0.04)	68.8 (68.7)	E (E)	0.07 (0.04)	68.8 (68.7)	E (E)	0.07 (0.04)	68.8 (68.7)	E (E)
WBT	0.87 (0.86)	57 (51.1)	E (D)	0.89 (0.91)	58.3 (57.2)	E (E)	0.89 (0.93)	58.3 (61.2)	E (E)
WBR	0.27 (0.35)	39.1 (36.9)	D (D)	0.27 (0.36)	39.5 (38.6)	D (D)	0.27 (0.37)	39.4 (39.4)	D (D)
OVERALL	**0.8 (0.93)**	**35.1 (44.5)**	**D (D)**	**0.81 (0.96)**	**35.6 (46.6)**	**D (D)**	**0.82 (0.98)**	**35.8 (48.7)**	**D (D)**

TABLE 34 CAPACITY ANALYSIS SUMMARY AT SIGNALIZED INTERSECTIONS - SCENARIOS 7A AND 7B

Movement	Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share			Scenario 7B Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS
Lakeshore Road East & East Avenue						
EBL	0.17 (0.22)	77.4 (73.4)	E (E)	0.17 (0.22)	76.5 (71.8)	E (E)
EBT	0.67 (0.92)	11.9 (26.7)	B (C)	0.61 (0.82)	10.3 (20.3)	B (C)
NBL	0.68 (0.54)	66.4 (63.9)	E (E)	0.65 (0.58)	65.9 (68.6)	E (E)
NBT	0.26 (0.01)	54.2 (56.8)	D (E)	0.17 (0.01)	54.6 (58.8)	D (E)
SBL	0.03 (0.06)	51.9 (57.2)	D (E)	0.03 (0.07)	53.3 (59.4)	D (E)
SBT	0 (0.01)	51.6 (56.8)	D (E)	0 (0.01)	53 (58.8)	D (E)
WBL	0.3 (0.44)	56.5 (57)	E (E)	0.29 (0.42)	58.3 (57.9)	E (E)
WBT	0.94 (0.69)	21.8 (9.4)	C (A)	0.87 (0.63)	15 (7.6)	B (A)
WBR	0.01 (0.04)	5.2 (5.9)	A (A)	0.01 (0.04)	4.8 (4.6)	A (A)
OVERALL	**0.88 (0.84)**	**20.5 (20.4)**	**C (C)**	**0.83 (0.77)**	**16 (16.2)**	**B (B)**
Lakefront Promenade & Lakeshore Road East						
EBT	0.82 (0.99)	18.7 (46.6)	B (D)	0.75 (0.9)	16 (31.3)	B (C)
EBR	0.14 (0.48)	10.6 (21.9)	B (C)	0.12 (0.42)	9.6 (19.1)	A (B)
NBL	0.81 (0.79)	62.8 (61.5)	E (E)	0.76 (0.75)	61 (60.6)	E (E)
NBR	0.26 (0.1)	49.5 (48.2)	D (D)	0.19 (0.09)	50.1 (49.3)	D (D)
WBL	0.15 (0.96)	61.4 (99.3)	E (F)	0.13 (0.87)	60.5 (88.2)	E (F)
WBT	0.96 (0.85)	21.4 (17.7)	C (B)	0.9 (0.79)	18.5 (16.4)	B (B)
OVERALL	**0.81 (0.95)**	**27.1 (40.2)**	**C (D)**	**0.76 (0.87)**	**24.2 (32.5)**	**C (C)**
Ogden Avenue & Lakeshore Road East						
EBL	0.65 (0.41)	66.6 (47.2)	E (D)	0.59 (0.41)	65.7 (47.5)	E (D)
EBT	0.79 (0.96)	19.4 (42.8)	B (D)	0.71 (0.82)	14.5 (30.4)	B (C)
EBR	0.1 (0.4)	19.1 (35.2)	B (D)	0.08 (0.31)	16.3 (29.7)	B (C)
NBL	0.78 (0.77)	66.4 (75)	E (E)	0.75 (0.69)	66.2 (66.3)	E (E)

Movement	Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share			Scenario 7B Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS
NBT	0.22 (0.3)	52.1 (56)	D (E)	0.22 (0.29)	54.4 (57.5)	D (E)
NBR	0.74 (0.08)	67.8 (54)	E (D)	0.7 (0.07)	67.6 (55.5)	E (E)
SBL	0.3 (0.67)	47.9 (61)	D (E)	0.33 (0.66)	50.4 (61.8)	D (E)
SBT	0.16 (0.66)	51.5 (65)	D (E)	0.16 (0.62)	53.9 (65)	D (E)
WBL	0.32 (0.65)	79 (59.7)	E (E)	0.29 (0.66)	66.9 (64.4)	E (E)
WBT	1.02 (0.86)	46.6 (20)	D (C)	0.96 (0.79)	42.9 (16.1)	D (B)
OVERALL	**0.92 (0.87)**	**39 (37.3)**	**D (D)**	**0.87 (0.77)**	**35.6 (31.1)**	**D (C)**
Hydro Road & Lakeshore Road East						
EBL	0.08 (0.12)	74.1 (70.5)	E (E)	0.08 (0.12)	92.3 (69)	F (E)
EBT	0.97 (0.87)	33.6 (27.2)	C (C)	0.84 (0.77)	13.5 (22.2)	B (C)
EBR	0.15 (0.58)	15.5 (20.1)	B (C)	0.14 (0.47)	2.6 (16.6)	A (B)
NBL	0.87 (0.83)	71.1 (67.8)	E (E)	0.83 (0.79)	67.9 (65.8)	E (E)
NBT	0.42 (0.11)	44.7 (43.2)	D (D)	0.77 (0.1)	59.8 (45)	E (D)
SBT	0 (0)	39.4 (42)	D (D)	0 (0)	41.5 (44)	D (D)
WBL	0.46 (0.86)	72.5 (75.4)	E (E)	0.55 (0.82)	93.2 (78.1)	F (E)
WBT	0.72 (0.81)	18.1 (16.6)	B (B)	0.68 (0.74)	5.4 (13.4)	A (B)
OVERALL	**0.91 (0.86)**	**31.5 (28.6)**	**C (C)**	**0.83 (0.79)**	**18.5 (25.1)**	**B (C)**
Lakeshore Road East & Haig Boulevard						
EBL	0.42 (0.61)	64.5 (82)	E (F)	0.57 (0.51)	56.8 (76.4)	E (E)
EBT	0.93 (0.72)	17.4 (12.2)	B (B)	0.85 (0.65)	22.6 (13.1)	C (B)
EBR	0.27 (0.18)	6.9 (4.8)	A (A)	0.24 (0.14)	16.1 (6.1)	B (A)
NBT	0.73 (0.82)	65.9 (63.4)	E (E)	0.71 (0.8)	66.6 (64.8)	E (E)
NBR	0.35 (0.28)	51.1 (39.2)	D (D)	0.24 (0.2)	51.7 (41.2)	D (D)
SBT	0.36 (0.3)	51.3 (39.4)	D (D)	0.36 (0.29)	53.4 (42.3)	D (D)
WBL	0.63 (0.75)	53.4 (62.5)	D (E)	0.52 (0.66)	51.1 (60.9)	D (E)

Movement	Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share			Scenario 7B Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver mode share		
	V/C	Delay	LOS	V/C	Delay	LOS
WBT	0.79 (0.99)	33.2 (40.2)	C (D)	0.69 (0.9)	21.3 (33.4)	C (C)
OVERALL	**0.87 (0.96)**	**28.7 (32.7)**	**C (C)**	**0.8 (0.89)**	**27 (29.9)**	**C (C)**
Lakeshore Road East & Cawthra Road						
EBL	0.97 (0.99)	79.3 (85.9)	E (F)	0.97 (0.82)	79.4 (49.8)	E (D)
EBT	0.58 (0.74)	23.7 (33.5)	C (C)	0.57 (0.7)	24.5 (31.9)	C (C)
NBT	0 (0.08)	68 (69.4)	E (E)	0 (0.08)	68 (69.4)	E (E)
SBL	0.59 (0.83)	39.1 (45.1)	D (D)	0.52 (0.75)	35.9 (39.8)	D (D)
SBT	0.53 (0.75)	32.8 (34.6)	C (C)	0.46 (0.67)	30.4 (31.8)	C (C)
SBR	0.53 (0.63)	24.5 (23.1)	C (C)	0.52 (0.61)	23.2 (20.8)	C (C)
WBL	0.01 (-)	33.6 (-)	C (-)	0.01 (-)	34.3 (-)	C (-)
WBT	0.99 (0.98)	60.9 (69.7)	E (E)	0.99 (1.00)	67 (76.9)	E (E)
WBR	0.9 (0.5)	21.3 (5.4)	C (A)	0.8 (0.47)	15.7 (3.8)	B (A)
OVERALL	**0.97 (0.95)**	**39.7 (42.6)**	**D (D)**	**0.92 (0.87)**	**40.4 (40.1)**	**D (D)**
Dixie Road & Lakeshore Road East						
EBL	0.83 (0.66)	33.1 (30.1)	C (C)	0.84 (0.66)	35.7 (35.5)	D (D)
EBT	0.58 (0.48)	24.6 (30.5)	C (C)	0.53 (0.45)	23.3 (28.9)	C (C)
NBT	0 (0)	49.5 (42.5)	D (D)	0 (0)	49.5 (42.5)	D (D)
SBT	0.72 (0.82)	66.5 (67.5)	E (E)	0.72 (0.82)	66.5 (67.5)	E (E)
SBR	0.61 (1.06)	18.5 (76.4)	B (E)	0.62 (0.99)	21.7 (58.8)	C (E)
WBL	0.07 (0.04)	68.8 (68.7)	E (E)	0.07 (0.04)	68.8 (68.7)	E (E)
WBT	0.94 (0.98)	66.5 (71.4)	E (E)	0.82 (0.91)	50.7 (57.7)	D (E)
WBR	0.28 (0.37)	41.1 (40.5)	D (D)	0.26 (0.36)	36.8 (38.7)	D (D)
OVERALL	**0.84 (1.03)**	**37.6 (55.1)**	**D (E)**	**0.81 (0.96)**	**34.4 (47.4)**	**C (D)**

7.3 QUEUING ASSESSMENT AT SIGNALIZED INTERSECTIONS

A summary of the queuing assessment for key movements at the signalized intersections along Lakeshore Road East for Scenarios 3A & 3B (September 2023 BA Group Report) and 4, 5, 6, 7A & 7B (updated scenarios) are provided in **Table 35** and **Table 36**. The details of this queuing assessment will be used to inform the future design of study area intersections.

A number of movements are highlighted in pink below where the queue could extend beyond the available storage space. An updated queuing assessment is recommended to be undertaken in the future as development progresses and updated traffic data becomes available.

TABLE 35 QUEUING SUMMARY AT SIGNALIZED INTERSECTIONS – SCENARIOS 3A AND 3B (KEY MOVEMENTS)

Movement	Available Queuing Space (metres)	Scenario 3A: Rangeview with 5,300 units Lakeview with 8,050 units Haig connected		Scenario 3B: Rangeview with 5,300 units Lakeview with 8,050 units Dual left at Lakefront Promenade/No Haig	
		50th Percentile Queue (metres)	95th Percentile Queue (metres)	50th Percentile Queue (metres)	95th Percentile Queue (metres)
	Lakeshore Road East & East Avenue				
NBL	65	77 (35)	153 (55)	45 (24)	70 (41)
NBT	130	16 (0)	38 (1)	23 (0)	47 (13)
WBL	105	3 (35)	7 (86)	7 (26)	12 (39)
WBT	340	258 (141)	180 (165)	100 (95)	109 (106)
	Lakeshore Road East & Lakefront Promenade				
NBL	50	79 (94)	125 (152)	64 (62)	81 (78)
NBR	130	95 (0)	162 (19)	28 (0)	73 (22)
WBL	80	22 (94)	22 (101)	25 (98)	39 (111)
WBT	240	53 (60)	63 (74)	63 (66)	98 (106)
	Lakeshore Road East & Ogden Avenue				
NBL	20	71 (59)	98 (99)	63 (58)	97 (84)
NBT	130	17 (12)	29 (24)	16 (12)	29 (22)
NBR	130	36 (0)	65 (6)	52 (0)	91 (19)
WBL	135	23 (62)	58 (110)	31 (70)	74 (145)
WBT	200	94 (158)	93 (283)	90 (123)	74 (82)
	Lakeshore Road East & Hydro Road				
NBL	35	64 (61)	95 (85)	85 (101)	146 (159)
NBT	135	43 (0)	71 (13)	85 (11)	146 (40)
WBL	95	20 (65)	40 (68)	38 (106)	74 (144)
WBT	170	38 (96)	41 (137)	32 (97)	33 (123)
	Lakeshore Road East & Haig Boulevard				
NBT	130	38 (147)	60 (213)	- (-)	- (-)
NBR	130	27 (0)	55 (22)	- (-)	- (-)
WBL	100	44 (48)	65(46)	- (-)	- (-)
WBT	600	97 (250)	112 (251)	102 (154)	124 (195)

Notes:
1. XX (XX) –Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

TABLE 36 QUEUING SUMMARY AT SIGNALIZED INTERSECTIONS - SCENARIOS 4, 5, 6, 7A & 7B (KEY MOVEMENTS)

Movement	Available Queuing Space (m)	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% of auto driver mode share		Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share		Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share		Scenario 7B Rangeview with 5,300 units Lakeview Village with 16,000 units Total = 21,300 Units 35% auto driver mode share	
	(metres)	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue
Lakeshore Road East & East Avenue											
NBL	65	35.4 (19.8)	55.3 (35.5)	36 (20)	55.8 (35.7)	35.7 (20)	55.5 (35.7)	38.2 (21.2)	58.5 (37.1)	33.5 (18.9)	52.8 (34.4)
NBT	130	13.8 (0)	34.1 (0)	12.4 (0)	31.9 (0)	10.8 (0)	29.6 (0)	12.6 (0)	31.5 (0)	6.5 (0)	24.3 (0)
WBL	105	3 (17.8)	4 (30.4)	3.1 (16.7)	4.1 (27.3)	2.8 (15.3)	3.9 (26.1)	2.6 (15.1)	3.6 (24)	2.6 (13.2)	3.4 (22.2)
WBT	340	118.4 (80.5)	373.1(131.1)	124.1 (85.1)	390 (136.5)	128.3 (87.1)	400.5 (145.6)	154.4 (100.8)	435.9 (157)	124.2 (89.3)	386.8 (137.7)
Lakefront Promenade & Lakeshore Road East											
NBL	50	61.1 (57.6)	77.2 (72.9)	64 (61.2)	81 (77)	66.1 (63.9)	83.7 (80.6)	72.5 (70.1)	92.3 (88.6)	63.5 (62.7)	80.3 (78.9)
NBR	130	0 (0)	25.9 (18.2)	0 (0)	26.4 (18.3)	0 (0)	26.6 (18.6)	3.6 (0)	33.1 (19.3)	0 (0)	25.9 (18.6)
WBL	80	8.9 (89.1)	10.5 (113)	9 (93.1)	10.2(120.6)	9.4 (95.6)	10.9(123.7)	10 (100)	10.7 (148.5)	8.8 (86.7)	10.2 (137.1)
WBT	240	117.4 (144.6)	309.6 (125.4)	292 (169.1)	313 (126.8)	300.2 (176.5)	323.5 (129.7)	324.2 (182.8)	323.4 (106.1)	292.1 (161.6)	334.1 (105.8)
Ogden Avenue & Lakeshore Road East											
NBL	20	44.4 (25.3)	61.7 (40.3)	45.7 (26.5)	62.9 (41.9)	46.4 (27.5)	63.5 (42.8)	50.3 (30.6)	67.7 (46.8)	44.6 (27.1)	62 (42.9)
NBT	130	14.2 (14.9)	25.7 (27.5)	14.9 (16.5)	26.2 (29.5)	15.4 (17.6)	27.2 (31.1)	16.5 (19.6)	28.3 (33.7)	14.8 (17.3)	26.1 (31)
NBR	130	31 (0)	59.7 (17.3)	33.7 (0)	62.3 (17.5)	34.7 (0)	63.5 (17.7)	44.7 (0)	73.9 (13)	36.4 (0)	64.4 (8.1)
WBL	135	7.3 (52.1)	11.7 (96.9)	7.3 (55.4)	11.4 (104.6)	7.1 (57.9)	10.8(112.1)	7.5 (76.4)	10.9 (113.6)	6.4 (68.3)	10 (105.9)
WBT	200	41.8 (53)	338.5 (64.2)	123 (140.2)	351.7 (70.4)	127.7 (148)	366.5 (77.4)	151 (188.6)	378.3 (261.6)	211.4 (157.4)	192.1 (93.6)
Hydro Road & Lakeshore Road East											

Movement	Available Queuing Space (m)	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% of auto driver mode share		Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 43% auto driver mode share		Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share		Scenario 7B Rangeview with 5,300 units Lakeview Village with 16,000 units Total = 21,300 Units 35% auto driver mode share	
	(metres)	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue	50thQueue	95thQueue
NBL	35	65.1 (54.5)	90 (77.2)	70.8 (59.7)	98.4 (83)	75 (63.8)	105 (88.1)	82.7 (71.9)	126.7(100.3)	73.5 (63.2)	103 (87.5)
NBT	135	1.2 (0)	24.3 (0)	7.2 (0)	33.6 (0)	11.8 (0)	40.5 (0)	21.4 (0)	56.7 (0)	74.5 (0)	107.1 (0)
WBL	95	12.6 (76.9)	18.6 (89.5)	13.9 (83.6)	19.8 (94.6)	14.8 (89)	20.7 (99.2)	16.7 (99.5)	22.5 (105.5)	14 (87.9)	21.9 (101)
WBT	170	78.5 (87.7)	77.2 (110.6)	79.4 (88.2)	78.4 (112.2)	80.4 (95.3)	79.5 (112.2)	88.7 (112)	90 (117.5)	23.6 (90.3)	26.6 (108.3)
Lakeshore Road East & Haig Boulevard											
NBL	130	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
NBT	130	34.8 (58.5)	54.2 (80.6)	38.1 (59.5)	58.1 (83.2)	40.5 (60.2)	61 (84.6)	45.4 (64)	66.4 (95.2)	39.7 (57.6)	60 (81.4)
WBL	100	33.2 (31.9)	45.2 (36.2)	35.5 (34.8)	48.1 (38.1)	37.1 (37)	50.6 (39.4)	42.6 (42.8)	53.5 (42.2)	36.6 (36.5)	51.3 (39.5)
WBT	600	153.6 (221.6)	193.6 (307.8)	156.6 (231.1)	197.2 (315.8)	158.4 (237.6)	199 (318.4)	156.5 (307.8)	191.7 (301)	112.3 (225.6)	178.3 (306.5)

7.4 CAPACITY ANALYSIS AT UNSIGNALIZED INTERSECTIONS

A summary of results of the detailed capacity analysis for the unsignalized intersections is provided in **Table 37**.

7.4.1 September 2023 BA Group Report

7.4.1.1 Traffic Analysis: Scenario 1 – 2,500 Rangeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakefront Promenade & Rangeview Road:** with all-way stop control, the southbound left/through/right movement operates with a v/c of 1.01 during the afternoon peak hour. As this represents the interim road network condition, it is expected that when Ogden Avenue is connected and the road network is built-out as development progresses, the operations at this intersection will improve.

- **Hydro Road & Rangeview Road:** with all-way stop control, the southbound through/right movement operates with a v/c of 1.14 during the afternoon peak hour. As this represents the interim road network condition, it is expected that when Ogden Avenue is connected and the road network is built-out as development progresses, the operations at this intersection would improve.

7.4.1.2 Traffic Analysis: Scenario 2 – 3,700 Rangeview Residential Units (with Ogden)

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Ogden Avenue & Street L:** with all-way stop control, the northbound left/through/right movement operates with a v/c of 1.16 and 1.01, during the morning and afternoon peak hour, respectively.

- **Ogden Avenue & Rangeview Road:** with all-way stop control, the northbound left/through/right movement operates with a v/c of 1.18 and 1.17, during the morning and afternoon peak hour, respectively.

- **Hydro Road & Street L**: with all-way stop control, the southbound through/right during the afternoon peak period.

- **Hydro Road & Rangeview Road**: with all-way stop control, the southbound through/right movement at Hydro Road & Rangeview Road, during the afternoon peak period.

As development progresses and updated traffic counts become available, the all-way stop control intersections could be reviewed to determine if any intersection warrants traffic signals.

7.4.1.3 Traffic Analysis: Scenario 3A – 5,300 Rangeview Residential Units (with Haig)

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

7.4.1.4 Traffic Analysis: Scenario 3B – 5,300 Rangeview Residential Units (Dual left turns but no Haig)

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of a number of intersections along Street L, as well as at Ogden Avenue & Rangeview Road and at Hydro Road & Rangeview Road.

As development progresses and updated traffic counts become available, the all-way stop control intersections could be reviewed to determine if any intersection warrants traffic signals. All intersections along the north-south streets between Lakeshore Road East and Rangeview Road, could be converted to signalized intersections.

7.4.2 Updated BA Group Report

7.4.2.1 Travel Demand: Scenario 4 – 5,300 Rangeview Residential Units and 10,000 Lakeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

7.4.2.2 Travel Demand: Scenario 5 – 5,300 Rangeview Residential Units and 12,000 Lakeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakefront Promenade & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 0.99 during the afternoon peak period.

7.4.2.3 Travel Demand: Scenario 6 – 5,300 Rangeview Residential Units and 14,000 Lakeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakefront Promenade & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 1.02 during the afternoon peak period.

7.4.2.4 Travel Demand: Scenario 7A – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakefront Promenade & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 1.15 during the afternoon peak period.
- **Ogden Avenue & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 1.11 during the afternoon peak period.
- **Hydro Road & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 1.09 during the afternoon peak period.
- **Hydro Road & Rangeview Road:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 0.99 during the afternoon peak period.

7.4.2.5 Travel Demand: Scenario 7B – 5,300 Rangeview Residential Units and 16,000 Lakeview Residential Units

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- **Lakefront Promenade & Street L:** With all-way stop control, the southbound left-through-right movement operates with a v/c of 0.98 during the afternoon peak period.

TABLE 37 UNSIGNALIZED INTERSECTION CAPACITY SUMMARY - SCENARIOS 1, 2, 3A & 3B

Movement	Scenario 1: Rangeview with 2,500 units Lakeview with 7,500 units No Ogden No Haig (with road improvements)			Scenario 2: Rangeview with 3,700 units Lakeview with 8,050 units Ogden connected			Scenario 3A: Rangeview with 5,300 units Lakeview with 8,050 units Haig connected			Scenario 3B: Rangeview with 5,300 units Lakeview Village with 8,050 units Dual left at Lakefront Promenade/No Haig		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
East Avenue & Street L												
WBLR	0.13 (0.03)	8.8 (7.3)	A (A)	0.27 (0.16)	8.6 (8.1)	A (A)	0.3 (0.14)	8.7 (8)	A (A)	0.27 (0.14)	8.4 (8)	A (A)
NBTR	0.68 (0.17)	16.4 (8.1)	C (A)	0.24 (0.12)	9 (8.1)	A (A)	0.23 (0.08)	9 (7.9)	A (A)	0.17 (0.07)	8.5 (7.8)	A (A)
SBTL	0.28 (0.27)	9.7 (8.8)	A (A)	0.13 (0.3)	8.5 (9.3)	A (A)	0.09 (0.3)	8.3 (9.3)	A (A)	0.14 (0.29)	8.5 (9.2)	A (A)
Lakefront Promenade & Street L												
EBLTR	0.05 (0.01)	9.9 (9.9)	A (A)	0.1 (0.04)	11.7 (11.3)	B (B)	0.12 (0.05)	11.3 (10.7)	B (B)	0.14 (0.05)	12.5 (11.6)	B (B)
WBLTR	0 (0)	0 (0)	A (A)	0.54 (0.41)	16.3 (13.9)	C (B)	0.49 (0.34)	14.5 (12.2)	B (B)	0.64 (0.46)	20 (14.9)	C (B)
NBLTR	0.99 (0.75)	50.4 (20.2)	F (C)	0.95 (0.78)	48 (25.7)	E (D)	0.81 (0.59)	27.9 (15.9)	D (C)	1.19 (0.87)	124.5 (35.5)	F (E)
SBLTR	0.43 (0.88)	11.4 (31.5)	B (D)	0.61 (0.97)	18.5 (51.3)	C (F)	0.47 (0.89)	14.2 (36.2)	B (E)	0.66 (1.08)	21.5 (83.7)	C (F)
Ogden Avenue & Street L												
EBLTR	0.08 (0.02)	6.8 (6.7)	A (A)	0.48 (0.42)	17.4 (16.7)	C (C)	0.45 (0.31)	15.9 (13.6)	C (B)	0.56 (0.43)	20.5 (16.9)	C (C)
WBLTR	0.1 (0.03)	7.7 (7.5)	A (A)	0.43 (0.36)	15.7 (15.2)	C (C)	0.39 (0.27)	14.1 (12.7)	B (B)	0.52 (0.38)	18.5 (15.6)	C (C)
NBLTR	0.02 (0.12)	7.2 (7.4)	A (A)	1.16 (1.01)	113.8 (65.3)	F (F)	0.93 (0.67)	46.2 (20.6)	E (C)	1.25 (0.97)	149.7 (57.3)	F (F)
SBLTR	- (-)	- (-)	- (-)	0.68 (1.2)	23.4 (128.1)	C (F)	0.5 (1)	16 (58.5)	C (F)	0.74 (1.34)	28.5 (184)	D (F)
Hydro Road & Street L												
EBLR	- (-)	- (-)	- (-)	0.5 (0.51)	17.1 (17.3)	C (C)	0.36 (0.33)	12.5 (12.6)	B (B)	0.56 (0.56)	19 (18.6)	C (C)
NBLT	0.87 (0.77)	29.1 (21.5)	D (C)	0.92 (0.97)	43.5 (54.5)	E (F)	0.59 (0.57)	15.7 (15.5)	C (C)	0.99 (1.03)	58.7 (70.5)	F (F)
SBTR	0.53 (0.98)	12.8 (48.8)	B (E)	0.96 (1.23)	51.1 (139.1)	F (F)	0.56 (0.85)	14.6 (29.7)	B (D)	1.01 (1.38)	64.1 (201.2)	F (F)
East Avenue & Rangeview Road												
WBLR	0.6 (0.15)	12.4 (7.4)	B (A)	0.17 (0.09)	7.3 (7)	A (A)	0.16 (0.06)	7.1 (6.8)	A (A)	0.11 (0.05)	7 (6.8)	A (A)
NBTR	- (-)	- (-)	- (-)	0.01 (0)	7.4 (7.3)	A (A)	0.02 (0.01)	7.4 (7.2)	A (A)	0.02 (0.01)	7.3 (7.2)	A (A)
SBTL	0.28 (0.2)	10.1 (8.3)	B (A)	0.08 (0.15)	7.8 (8)	A (A)	0.05 (0.13)	7.6 (7.8)	A (A)	0.08 (0.13)	7.6 (7.8)	A (A)
Lakefront Promenade & Rangeview Road												
EBLTR	0.03 (0.01)	10.7 (10.8)	B (B)	0.05 (0.03)	10.1 (10.2)	B (B)	0.05 (0.03)	9.4 (9.3)	A (A)	0.06 (0.04)	10.6 (10.3)	B (B)
WBLTR	0.43 (0.21)	13.2 (11.1)	B (B)	0.42 (0.36)	13 (12.6)	B (B)	0.35 (0.27)	11 (10.6)	B (B)	0.49 (0.39)	14.5 (13.1)	B (B)
NBLTR	0.95 (0.24)	71.3 (32.4)	F (D)	0.16 (0.08)	24.9 (21.5)	C (C)	0.12 (0.04)	14.7 (12.3)	B (B)	0.07 (0.04)	36.8 (24.4)	E (C)
SBLTR	0.51 (1.01)	14.9 (58.5)	B (F)	0.5 (0.81)	14.4 (27.9)	B (D)	0.32 (0.65)	11.1 (17.3)	B (C)	0.53 (0.8)	15.7 (27.6)	C (D)
Ogden Avenue & Rangeview Road												
EBLTR	0.22 (0.3)	8.8 (9.1)	A (A)	0.36 (0.37)	14.2 (15.3)	B (C)	0.28 (0.24)	12.2 (11.8)	B (B)	0.38 (0.38)	14.8 (15.6)	B (C)
WBLTR	0.2 (0.14)	8.7 (8)	A (A)	0.34 (0.32)	13.4 (14.3)	B (B)	0.27 (0.21)	11.4 (11.3)	B (B)	0.38 (0.34)	14.3 (14.7)	B (B)

Movement	Scenario 1: Rangeview with 2,500 units Lakeview with 7,500 units No Ogden No Haig (with road improvements)			Scenario 2: Rangeview with 3,700 units Lakeview with 8,050 units Ogden connected			Scenario 3A: Rangeview with 5,300 units Lakeview with 8,050 units Haig connected			Scenario 3B: Rangeview with 5,300 units Lakeview Village with 8,050 units Dual left at Lakefront Promenade/No Haig		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
NBLTR	- (-)	- (-)	- (-)	1.18 (1.17)	116.6 (117)	F (F)	0.84 (0.69)	29.3 (19.7)	D (C)	1.21 (1.16)	131.8 (114.9)	F (F)
SBLTR	0.21 (0.06)	8.7 (8)	A (A)	0.59 (0.97)	17.9 (54.9)	C (F)	0.37 (0.71)	12.3 (20.5)	B (C)	0.61 (1.02)	19 (67.7)	C (F)
Hydro Road & Rangeview Road												
EBLR	0.49 (0.29)	16 (12.8)	C (B)	0.4 (0.47)	14.2 (15.7)	B (C)	0.26 (0.28)	10.9 (11.5)	B (B)	0.44 (0.5)	15.1 (16.6)	C (C)
NBLT	0.93 (0.82)	43.2 (28.4)	E (D)	0.75 (0.79)	23.3 (27.1)	C (D)	0.5 (0.47)	12.9 (12.9)	B (B)	0.8 (0.82)	27.9 (30.2)	D (D)
SBTR	0.66 (1.14)	19.5 (98.8)	C (F)	0.86 (1.1)	32.5 (90)	D (F)	0.51 (0.75)	12.9 (21.2)	B (C)	0.89 (1.23)	36.6 (136.3)	E (F)

Notes:
1. XX (XX) –Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

TABLE 38 UNSIGNALIZED INTERSECTION CAPACITY SUMMARY - SCENARIOS 4, 5 & 6

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 46% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay (Seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
East Avenue & Street L									
WBLR	0.2 (0.1)	7.6 (7.5)	A (A)	0.19 (0.1)	7.6 (7.6)	A (A)	0.18 (0.1)	7.5 (7.6)	A (A)
NBTR	0.11 (0.02)	7.9 (7.4)	A (A)	0.11 (0.02)	7.9 (7.4)	A (A)	0.11 (0.02)	7.9 (7.4)	A (A)
SBTL	0.07 (0.22)	7.9 (8.5)	A (A)	0.07 (0.22)	7.8 (8.5)	A (A)	0.07 (0.22)	7.8 (8.5)	A (A)
Lakefront Promenade & Street L									
EBLTR	0.1 (0.04)	10 (10.8)	A (B)	0.1 (0.04)	10.2 (11)	B (B)	0.09 (0.04)	10.3 (11)	B (B)
WBLTR	0.38 (0.34)	11.2 (12.3)	B (B)	0.4 (0.37)	11.8 (12.9)	B (B)	0.41 (0.38)	12.1 (13)	B (B)
NBLTR	0.68 (0.6)	17.7 (16.4)	C (C)	0.74 (0.66)	20.9 (18.9)	C (C)	0.78 (0.69)	23.8 (20.2)	C (C)
SBLTR	0.22 (0.93)	10 (41.1)	B (E)	0.23 (0.99)	10.3 (54.1)	B (F)	0.24 (1.02)	10.5 (64.3)	B (F)
Ogden Avenue & Street L									
EBLTR	0.31 (0.22)	11.6 (11.3)	B (B)	0.33 (0.24)	12.1 (12)	B (B)	0.34 (0.26)	12.4 (12.4)	B (B)
WBLTR	0.26 (0.22)	10.4 (11)	B (B)	0.28 (0.24)	10.9 (11.7)	B (B)	0.29 (0.26)	11.2 (12.2)	B (B)
NBLTR	0.61 (0.45)	16 (13)	C (B)	0.68 (0.51)	18.8 (14.7)	C (B)	0.74 (0.56)	21.6 (16.2)	C (C)
SBLTR	0.24 (0.83)	10.5 (28.1)	B (D)	0.26 (0.91)	10.8 (38.6)	B (E)	0.27 (0.96)	11.1 (49.7)	B (E)
Hydro Road & Street L									
EBLR	0.33 (0.25)	11.3 (11)	B (B)	0.36 (0.27)	12 (11.6)	B (B)	0.38 (0.29)	12.5 (12.1)	B (B)
NBLT	0.56 (0.41)	13.8 (11.8)	B (B)	0.63 (0.47)	16.1 (13)	C (B)	0.69 (0.51)	18.5 (14.1)	C (B)
SBTR	0.25 (0.78)	9.7 (22.1)	A (C)	0.28 (0.87)	10.2 (30.6)	B (D)	0.31 (0.94)	10.7 (41.6)	B (E)
East Avenue & Rangeview Road									
WBLR	0.07 (0.01)	6.7 (6.6)	A (A)	0.07 (0.01)	6.7 (6.6)	A (A)	0.07 (0.01)	6.7 (6.6)	A (A)
NBTR	0.02 (0.01)	7.2 (7.1)	A (A)	0.01 (0)	7.2 (7.1)	A (A)	0.01 (0)	7.2 (7.1)	A (A)

Movement	Scenario 4 Rangeview with 5,300 units Lakeview with 10,000 units Total = 15,300 Units 46% auto driver mode share			Scenario 5 Rangeview with 5,300 units Lakeview with 12,000 units Total = 17,300 Units 46% auto driver mode share			Scenario 6 Rangeview with 5,300 units Lakeview with 14,000 units Total = 19,300 Units 40% auto driver mode share		
	V/C	Delay (Seconds)	LOS	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
SBTL	0.04 (0.1)	7.4 (7.5)	A (A)	0.04 (0.11)	7.4 (7.6)	A (A)	0.04 (0.11)	7.4 (7.6)	A (A)
Lakefront Promenade & Rangeview Road									
EBLTR	0.04 (0.03)	8.5 (9.1)	A (A)	0.04 (0.03)	8.7 (9.4)	A (A)	0.04 (0.03)	8.8 (9.6)	A (A)
WBLTR	0.26 (0.27)	9.1 (10.3)	A (B)	0.28 (0.29)	9.6 (10.9)	A (B)	0.3 (0.32)	9.9 (11.4)	A (B)
NBLTR	0.02 (0)	11.6 (11.3)	B (B)	0.03 (0)	13.1 (12.5)	B (B)	0.03 (0)	14.5 (13.7)	B (B)
SBLTR	0.11 (0.63)	8.7 (16.2)	A (C)	0.13 (0.71)	9 (19.5)	A (C)	0.14 (0.77)	9.2 (23.4)	A (C)
Ogden Avenue & Rangeview Road									
EBLTR	0.2 (0.17)	10.2 (10.4)	B (B)	0.22 (0.19)	10.7 (11)	B (B)	0.24 (0.21)	11.1 (11.5)	B (B)
WBLTR	0.18 (0.18)	9.5 (10.3)	A (B)	0.2 (0.2)	10 (11)	B (B)	0.22 (0.22)	10.4 (11.6)	B (B)
NBLTR	0.62 (0.51)	15.3 (13.5)	C (B)	0.71 (0.59)	19.1 (15.8)	C (C)	0.79 (0.66)	23.8 (18.4)	C (C)
SBLTR	0.17 (0.63)	9.3 (16.1)	A (C)	0.19 (0.71)	9.7 (20.1)	A (C)	0.21 (0.78)	10.1 (25)	B (D)
Hydro Road & Rangeview Road									
EBLR	0.24 (0.21)	10 (10.3)	B (B)	0.27 (0.23)	10.5 (10.9)	B (B)	0.3 (0.25)	10.9 (11.3)	B (B)
NBLT	0.44 (0.36)	11.2 (10.8)	B (B)	0.5 (0.41)	12.4 (11.7)	B (B)	0.55 (0.45)	13.6 (12.5)	B (B)
SBTR	0.22 (0.69)	9.1 (17.2)	A (C)	0.25 (0.78)	9.5 (22.2)	A (C)	0.27 (0.85)	9.9 (28.5)	A (D)

TABLE 39 UNSIGNALIZED INTERSECTION CAPACITY SUMMARY - SCENARIOS 7A AND 7B

Movement	Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share			Scenario 7B Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver mode share		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
East Avenue & Street L						
WBLR	0.19 (0.11)	7.6 (7.6)	A (A)	0.16 (0.09)	7.4 (7.5)	A (A)
NBTR	0.11 (0.03)	7.9 (7.5)	A (A)	0.1 (0.02)	7.8 (7.4)	A (A)
SBTL	0.07 (0.23)	7.8 (8.6)	A (A)	0.06 (0.2)	7.7 (8.3)	A (A)
Lakefront Promenade & Street L						
EBLTR	0.1 (0.04)	10.8 (11.2)	B (B)	0.08 (0.03)	10 (11)	B (B)
WBLTR	0.48 (0.42)	13.7 (13.9)	B (B)	0.39 (0.37)	11.6 (13)	B (B)
NBLTR	0.91 (0.78)	38.5 (25.9)	E (D)	0.75 (0.69)	21.5 (20)	C (C)
SBLTR	0.28 (1.15)	11.3 (105.6)	B (F)	0.23 (0.98)	10.2 (53.8)	B (F)
Ogden Avenue & Street L						
EBLTR	0.39 (0.29)	13.9 (13)	B (B)	0.31 (0.24)	12 (12.1)	B (B)
WBLTR	0.34 (0.29)	12.5 (12.9)	B (B)	0.27 (0.25)	10.9 (11.9)	B (B)
NBLTR	0.87 (0.65)	34.7 (19.3)	D (C)	0.71 (0.55)	20.2 (15.6)	C (C)
SBLTR	0.32 (1.11)	12.3 (90.9)	B (F)	0.26 (0.92)	10.8 (40.5)	B (E)
Hydro Road & Street L						
EBLR	0.44 (0.33)	14 (12.8)	B (B)	0.37 (0.28)	12.2 (12)	B (B)
NBLT	0.81 (0.59)	26.7 (16.2)	D (C)	0.68 (0.51)	18 (13.9)	C (B)
SBTR	0.36 (1.09)	11.7 (82.4)	B (F)	0.3 (0.92)	10.5 (38.5)	B (E)
East Avenue & Rangeview Road						
WBLR	0.08 (0.02)	6.7 (6.6)	A (A)	0.07 (0.01)	6.7 (6.6)	A (A)
NBTR	0.01 (0)	7.2 (7.1)	A (A)	0.01 (0)	7.1 (7.1)	A (A)

Movement	Scenario 7A Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 40% auto driver mode share			Scenario 7B Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver mode share		
	V/C	Delay (seconds)	LOS	V/C	Delay (seconds)	LOS
SBTL	0.04 (0.11)	7.4 (7.6)	A (A)	0.03 (0.1)	7.4 (7.5)	A (A)
Lakefront Promenade & Rangeview Road						
EBLTR	0.05 (0.04)	9.1 (10.1)	A (B)	0.04 (0.03)	8.7 (9.5)	A (A)
WBLTR	0.35 (0.37)	10.8 (12.6)	B (B)	0.29 (0.31)	9.8 (11.3)	A (B)
NBLTR	0.04 (0)	19 (17)	C (C)	0.03 (0)	14.3 (13.5)	B (B)
SBLTR	0.17 (0.89)	9.7 (37.1)	A (E)	0.14 (0.76)	9.1 (22.8)	A (C)
Ogden Avenue & Rangeview Road						
EBLTR	0.29 (0.26)	12.2 (12.8)	B (B)	0.23 (0.21)	11 (11.4)	B (B)
WBLTR	0.26 (0.27)	11.5 (12.9)	B (B)	0.21 (0.22)	10.3 (11.4)	B (B)
NBLTR	0.94 (0.79)	43.6 (27.6)	E (D)	0.78 (0.65)	23.3 (18.1)	C (C)
SBLTR	0.26 (0.94)	11 (45.8)	B (E)	0.21 (0.77)	10 (23.6)	B (C)
Hydro Road & Rangeview Road						
EBLR	0.35 (0.3)	12 (12.3)	B (B)	0.29 (0.25)	10.8 (11.3)	B (B)
NBLT	0.65 (0.53)	16.8 (14.6)	C (B)	0.55 (0.45)	13.5 (12.4)	B (B)
SBTR	0.32 (0.99)	10.7 (54)	B (F)	0.27 (0.84)	9.8 (27.5)	A (D)

7.5 TRAFFIC ANALYSIS SUMMARY

7.5.1 September 2023 BA Group Report

A summary of the traffic analysis undertaken for the four scenarios is described below.

Scenario 1: Rangeview with 2,500 units

In consideration of Rangeview with 2,500 residential units and Lakeview Village with 7,500 residential units + 67% development of the non-residential, the combined sites are expected to generate a total of 2,890 and 3,054 two-way vehicle trips, during the morning and afternoon peak period, respectively.

The Scenario 1 road network includes only the list of minor road improvements to be undertaken along Lakeshore Road East.

All signalized intersection movements within the study area are expected to operate at v/c equal to, or less than 1.0.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to, or less than 1.0, with the exception of the following:

- the southbound left/through/right movement at Lakefront Promenade & Rangeview Road in the afternoon peak hour; and
- the southbound through/right movement at Rangeview Road & Hydro Road, during the afternoon peak hour.

As the concerns noted at the unsignalized intersections occur as part of the interim road network condition, it is expected that when Ogden Avenue is connected, and the road network is built-out as development progresses, operations at the unsignalized intersections noted above would improve.

Based on the foregoing, the traffic related to the Scenario 1 development proposal can be acceptably accommodated on the future transportation network.

Scenario 2: Rangeview with 3,700 units + Ogden connected

In consideration of Rangeview with 3,700 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,841 and 4,229 two-way vehicle trips during the morning and afternoon peak period, respectively.

The Scenario 2 road network includes the improvements along Lakeshore Road East related to Scenario 1, in addition to the connection of Ogden Avenue to Lakeshore Road East.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following:

- the northbound left/through/right movement at Ogden Avenue & Street L during both peak periods and the southbound left/through/right movement during the afternoon peak period;
- the northbound left-through/right movements at Ogden Avenue & Rangeview Road during both peak periods;
- the southbound through/right at Hydro Road & Street L during the afternoon peak period; and
- the southbound through/right movement at Hydro Road & Rangeview Road, during the afternoon peak hour.

As development progresses and updated traffic counts become available, the all-way stop control intersections could be reviewed to determine if any intersection warrants traffic signals. All intersections along the north-south streets between Lakeshore Road East and Rangeview Road, could be converted to signalized intersections.

Based on the foregoing, the traffic related to the Scenario 2 development proposal can be acceptably accommodated on the future transportation network.

Scenario 3A: Rangeview with 5,300 units + Ogden + Haig

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential and 100% of the Serson lands developed, the combined sites are expected to generate a total of 4,337 and 4,739 two-way vehicle trips, during the morning and afternoon peak period, respectively.

The Scenario 3A road network includes the improvements along Lakeshore Road East related to Scenario 1, in addition to the connection of Ogden Avenue to Lakeshore Road and the connection of Haig Boulevard to Lakeshore Road East.

All signalized intersection movements within the study area are expected to operate at v/c equal to, or less than 1.0, with the exception of the following:

- The southbound right-turn movement at Dixie Road & Lakeshore Road East; and
- the northbound through/left movement at Lakeshore Road East & Haig Boulevard, during the afternoon peak hour.

In a busy urban environment, it is typical that particular movements will operate at, or slightly over capacity, during the peak periods of the day. It is also likely that traffic will divert and rebalance in the future as traffic patterns evolve. Minor improvements on the north leg of Haig Boulevard at Lakeshore Road East could also improve traffic operations, hence this location should be monitored in the future as development progresses. It is however important to note that as no Rangeview-related volumes have been assigned to the intersection of Lakeshore Road East & Haig Boulevard, the traffic concerns at this intersection are related only to the traffic generated by Lakeview Village and Serson.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to, or less than 1.0.

Based on the foregoing, the traffic related to the Scenario 3A development proposal can be acceptably accommodated on the future transportation network.

Scenario 3B: Rangeview with 5,300 units + Ogden + Northbound Dual Left-Turn (no Haig)

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 8,050 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 4,138 and 4,517 two-way vehicle trips, during the morning and afternoon peak period, respectively.

The Scenario 3B road network includes the improvements along Lakeshore Road East related to Scenario 1, in addition to the connection of Ogden Avenue to Lakeshore Road East, and the northbound dual left-turn implemented on Lakeshore Road East at Lakefront Promenade. The connection of Haig Boulevard to Lakeshore Road East is not included as part of Scenario 3B.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the southbound right-turn movement at Dixie Road and Lakeshore Road East during the afternoon peak hour. In a busy urban environment, it is typical that particular movements will operate at, or slightly over capacity, during the peak periods of the day. It is also likely that traffic will divert and rebalance in the future as traffic patterns evolve.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of a number of intersections along Street L, as well as at Ogden Avenue & Rangeview Road and at Hydro Road & Rangeview Road. As development progresses and updated traffic counts become available, the all-way stop control intersections could be reviewed to determine if any intersection warrants traffic signals. All intersections along the north-south streets between Lakeshore Road East and Rangeview Road, could be converted to signalized intersections.

Based on the foregoing, the traffic related to the Scenario 3B development proposal can be acceptably accommodated on the future transportation network.

7.5.2 Updated BA Group Report

Scenario 4: Rangeview with 5,300 Residential Units and 10,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview with 10,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,283 and 3,790 two-way vehicle trips, during the morning and afternoon peak period, respectively. The estimated auto driver mode share is 46%.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following:

- the westbound through movement at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak hour;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak hour.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0.

Based on the foregoing, the traffic related to the Scenario 4 development proposal can be acceptably accommodated on the future transportation network.

Scenario 5: Rangeview with 5,300 Residential Units and 12,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview with 12,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,454 and 4,023 two-way vehicle trips, during the morning and afternoon peak period, respectively. The estimated auto driver mode share is 43%.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following:

- the westbound through movement at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0. This is with the exception of the afternoon peak southbound left-through-right movement at the all-way stop control at Lakefront Promenade & Street L.

Based on the foregoing, the traffic related to the Scenario 5 development proposal can be acceptably accommodated on the future transportation network.

Scenario 6: Rangeview with 5,300 Residential Units and 14,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview with 14,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,571 and 4,189 two-way vehicle trips, during the morning and afternoon peak period, respectively. The estimated auto driver mode share is 40%.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following:

- the westbound through movement at Ogden & Lakeshore Road East during the morning peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning and afternoon peak hour; and
- the southbound-right turn at Dixie & Lakeshore Road East during the afternoon peak.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following:

- southbound left-through-right movement at the all-way stop control at Lakefront Promenade & Street L during the afternoon peak period.

Based on the foregoing, the traffic related to the Scenario 6 development proposal can be acceptably accommodated on the future transportation network.

Scenario 7A: Rangeview with 5,300 Residential Units and 16,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview Village with 16,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,929 and 4,636 two-way vehicle trips, during the morning and afternoon peak period, respectively. The estimated auto driver mode share is 40%.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the westbound through at Ogden & Lakeshore Road East during the morning peak hour;
- the westbound left-turn at Lakeshore Road East & Haig Boulevard during the afternoon peak hour;
- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the afternoon peak hour;
- the westbound through at Lakeshore Road East & Cawthra Road during the morning and afternoon peak hour;
- the southbound right-turn at Dixie Road & Lakeshore Road East during the afternoon peak; and
- the westbound through at Dixie Road & Lakeshore Road East during the afternoon peak.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the southbound left-through-right at Lakefront Promenade & Street L, southbound left-through-right at Ogden Avenue & Street L, southbound left-through-right at Hydro Road & Street L during the afternoon peak period.
- the southbound right-through-left at Hydro Road & Rangeview Road during the afternoon peak period.

Based on the foregoing, the traffic related to the Scenario 7A development proposal can be acceptably accommodated on the future transportation network.

Scenario 7B: Rangeview with 5,300 Residential Units and 16,000 Lakeview Residential Units

In consideration of Rangeview with 5,300 residential units + 100% development of the non-residential and Lakeview with 16,000 residential units + 100% development of the non-residential, the combined sites are expected to generate a total of 3,438 and 4,057 two-way vehicle trips, during the morning and afternoon peak period, respectively. The estimated auto driver mode share is 35%.

All signalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the eastbound left-turn at Lakeshore Road East & Cawthra Road during the morning and afternoon peak and;
- the southbound right-turn at Dixie Road & Lakeshore Road East during the afternoon peak.

All unsignalized intersection movements within the study area are expected to operate at v/c equal to or less than 1.0, with the exception of the following movements:

- the southbound left-through-right movement at the all-way stop control at Lakefront Promenade & Street L during the afternoon peak period.

Based on the foregoing, the traffic related to the Scenario 7B development proposal can be acceptably accommodated on the future transportation network.

Conclusions

The traffic analysis confirms that the future transportation network, with BRT along Lakeshore Road East, can acceptably accommodate the travel demands of the 21,300 residential units (Rangeview with 5,300 units Lakeview with 16,000 units) and 100% build-out of the non-residential GFA.

It is expected however that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

The ability of the transportation network to accommodate both Rangeview and Lakeview is dependent on the future auto driver share decreasing to approximately 40% to 35%, based on the evolving transportation context of the area and in consideration of auto driver mode share proxy studies in areas with a similar context.

In order to confirm the ability of the area transportation network to acceptably accommodate the proposed development, it is recommended that a comprehensive traffic analysis update be undertaken for the Lakeview site to develop beyond 8,050 units. An updated traffic study would ideally be completed for increments of 2,000 units, up to 16,000 units on Lakeview.

8.0 VISSIM ANALYSIS (2041)

8.1 VISSIM MODEL

A VISSIM analysis was completed by BA Group, that confirms the results of the traffic analysis undertaken with Synchro by both TYLin and BA Group. It is noted that the Synchro results represent the analysis undertaken by BA Group, but as Synchro largely evaluates intersections in isolation, the VISSIM results may differ slightly as offsets and traffic flow between intersections are considered.

8.1.1 Overview of Study Area

A VISSIM microsimulation analysis was undertaken for the study area in the September 2023 BA Group Report for Scenarios 3A & 3B. The VISSIM analysis has been updated to include Scenario 7B. The study area includes a portion of the Lakeshore Road East corridor from Cawthra Road in the west to Dixie Road in the east. Along the Lakeshore Road East corridor, the following 7 intersections were included in the VISSIM analysis:

1. Lakeshore Road East & Cawthra Road
2. Lakeshore Road East & East Avenue
3. Lakeshore Road East & Lakefront Promenade
4. Lakeshore Road East & Hydro Road
5. Lakeshore Road East & Ogden Avenue
6. Lakeshore Road East & Haig Boulevard
7. Lakeshore Road East & Dixie Road

8.1.2 Model Development

8.1.2.1 Scope and Parameters

A list of assumptions considered for the VISSIM model is as follows:

The VISSIM analysis scenarios are outlined below and summarized in **Table 40**. These are the same scenarios that were analysed within Synchro as described in **Section 7.2**.

- Scenario 3A & 3B (2041): 50% auto driver mode share (Rangeview with 5,300 units and Lakeview with 8,050 units); and
- Scenario 7B (2041): 35% auto driver mode share (Rangeview with 5,300 units and Lakeview with 16,000 units).

TABLE 40 VISSIM ANALYSIS SCENARIOS

Development	MODELLED WITH VISSIM		
	Scenario 3A (2041): **Phase 2 + Haig connected to Lakeshore Road East** **50% auto driver mode share**	**Scenario 3B (2041):** **Phase 2 + Dual NBL turns at Lakefront Promenade / Lakeshore Road East (Haig not connected)** **50% auto driver mode share**	**Scenario 7B (2041):** **All road improvements and connections in place** **35% auto driver mode share**
Rangeview	5,300 units + 100% non-residential	5,300 units + 100% non-residential	5,300 units + 100% non-residential
Lakeview	8,050 units + 2.1M ft^2 non-residential	8,050 units + 2.1M ft^2 non-residential	16,000 units + 1.7 M ft^2 non-residential
Serson	100%	0%	100%
Total	**13,350 units**	**13,350 units**	**21,300 units**

- **Study Periods:** AM and PM peak hour.
- **Traffic Volumes:** converted into static traffic volumes (same traffic volumes as used for the scenarios above in the Synchro model).
- **Traffic Signal Timings:**
  - Same traffic signal timing phases as used in Synchro for the scenarios above and optimized accordingly to mitigate corridor congestion due to queues spilling back along the corridor.

8.1.2.2 Unbalanced Traffic Volumes

As part of the traffic analysis completed to date, BA Group references the TYLin 2019 report as the basis for existing, future background 2031 and future background 2041 traffic volumes. A concern has however been noted by BA Group that these traffic volumes have not been balanced between intersections. Although this volume balancing concern does not create issues within the static Synchro model used for the traffic analysis, this unbalancing can create inconsistencies along the corridor within the dynamic VISSIM model.

In order to address the volume balancing issue and to replicate the VISSIM model as close as possible to the Synchro analysis model, the BA Group VISSIM model placed midblock driveways (“dummy intersections”) that subtract or add vehicles as required within the midblock to maintain the projected volumes at each intersection. This balancing approach was necessary to allow a comparison between the VISSIM analysis with the Synchro results at the intersection level.

8.1.2.3 Coding

The specific parameters and the range of values assigned within the VISSIM traffic simulation model are as follows:

- Desired and Reduced Speeds
    - Right-Turns: 15 to 20 km/h
    - Left-Turns: 20 to 25 km/h
- Maximum and Desired Acceleration
    - Maximum auto acceleration: 3.5 m/s^2
    - Desired auto acceleration: 3.5 m/s^2
    - Maximum auto deceleration: -4 m/s^2
    - Desired auto deceleration: -2.75 m/s^2
- Wiedemann 74 Driving Behaviour Parameters
    - Average Standstill Distance: 2 m
    - Additive Safety Distance Parameter: 2.33 m
    - Multiplicative Safety Distance Parameter: 3.33 m

8.1.3 Outputs and Assessment Measures

8.1.3.1 Delay

Within VISSIM, delay is measured as the difference in travel time between a vehicle completing a movement through an intersection unimpeded (aside from a reduced turning speed) versus the average travel time experienced by a vehicle completing the same movement within the simulation.

Simulated vehicle travel times were obtained by including vehicle detectors within the model, upstream and downstream of all intersections on all approaches. Simulation travel time per movement is the time elapsed between when a vehicle crosses the upstream detector on the approach leg and the downstream detector on the departure leg. The reported delay time per movement is calculated as the difference between the unimpeded travel time and the average travel time of all vehicles making the specified movement within the simulated hour, across all simulations runs.

8.1.3.2 Vehicle Queue Lengths

Queue lengths are calculated in VISSIM based on sample measurements taken at each intersection approach in 15-second intervals. Queue definition parameters within the model is set as follows:

- Queue start speed threshold = < 5 km/h
- Queue end speed threshold = > 10 km/h
- Maximum queue headway = 20 m
- Maximum queue length = 500 m

The reporting of the queue lengths provides the 50th, 85th, and 95th percentile maximum queues. It is important to note that these percentile queues are not equivalent to Synchro, but rather represent the

percentile of the maximum queue of the 15-second interval **within** the 10 simulation runs. It should be noted that the method in which VISSIM defines the queue, allows for the full impact of shockwaves to be captured in the queuing analysis, such that queues may be longer than the values presented in Synchro analysis.

8.1.3.3 GEH

The GEH measure is a tool used to evaluate the fit between the simulated and observed flows within the VISSIM model. As outlined in the Ministry Transportation Ontario (MTO) simulation guidelines, a GEH value of less than 5.0 is desirable.

As such, GEH values were calculated by comparing turning movements as produced from the VISSIM model with the projected traffic volumes for each scenario. All GEH values are lower than 5.0 for all movements within the study area, indicating that the VISSIM model accurately reflects the data collected in the field. The detailed VISSIM outputs are available upon request.

8.2 UPDATED VISSIM RESULTS

The results of the updated VISSIM analysis for Scenario 7B is provided below.

8.2.1 Scenario 7B (2041): Rangeview with 5,300 Residential Units and 16,000 Lakeview Residential Units

8.2.1.1 Scenario 7B: GEH Values

A comparison of projected traffic volumes for each scenario versus the VISSIM modelled volumes were used to calculate the GEH values. As shown **Table 41,** as none of the GEH values are greater than the recommended maximum of 5.0, the fit between the simulated and observed flows within the VISSIM model is appropriate.

TABLE 41 SCENARIO 7B: VOLUME COMPARISON INPUT VS. MODELLED 2041

Scenario	Future Total Morning Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share			Future Total Afternoon Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share		
Movement	**Modelled Volume**	**Input Volume**	**GEH**	**Modelled Volume**	**Input Volume**	**GEH**
Lakeshore Road & Cawthra Road						
NBL	0	0	0	0	0	0.0
NBT	0	0	0.0	3	2	0.7
NBR	1	1	0.4	2	1	0.9
WBL	1	2	0.1	0	0	0.0
WBT	1265	1310	1.2	1127	1160	1.0
WBR	885	918	1.1	590	603	0.5
SBL	568	585	0.7	1027	1040	0.4
SBT	2	3	0.6	1	1	0.4
SBR	438	440	0.1	576	565	0.5
EBL	431	419	0.6	339	394	2.9
EBT	1066	1040	0.8	1040	1163	3.7
EBR	1	2	0.5	0	1	0.4
Lakeshore Road & East Avenue						
NBL	122	119	0.2	56	67	1.4
NBT	0	0	0.0	0	-12	0.0
NBR	117	116	0.0	10	12	0.8
WBL	9	9	0.1	50	49	0.1
WBT	2152	2218	1.4	1763	1790	0.6
WBR	10	8	0.7	70	63	0.9
SBL	5	5	0.2	8	8	0.3
SBT	0	0	0.0	0	-1	0.0
SBR	4	5	0.1	9	10	0.3
EBL	4	5	0.1	9	11	0.6
EBT	1572	1562	0.2	1912	2043	2.9
EBR	41	40	0.1	102	120	1.6
Lakeshore Road & Lakefront Promenade						
NBL	455	440	0.7	441	434	0.3
NBT	0	0	0.0	0	0	0.0
NBR	291	294	0.2	137	137	0.0
WBL	30	30	0.0	285	297	0.7
WBT	1748	1823	1.8	1501	1504	0.1
WBR	0	0	0.0	0	0	0.0
SBL	0	0	0.0	0	0	0.0
SBT	0	0	0.0	0	0	0.0

Scenario	Future Total Morning Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share			Future Total Afternoon Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share		
Movement	**Modelled Volume**	**Input Volume**	**GEH**	**Modelled Volume**	**Input Volume**	**GEH**
SBR	0	0	0.0	0	0	0.0
EBL	0	0	0.0	0	0	0.0
EBT	1537	1542	0.1	1581	1681	2.5
EBR	127	118	0.7	336	361	1.3
Lakeshore Road & Ogden Road						
NBL	176	175	0.0	108	108	0.0
NBT	55	56	0.1	65	64	0.1
NBR	254	262	0.5	116	112	0.4
WBL	22	22	0.1	242	246	0.2
WBT	1527	1577	1.3	1600	1617	0.4
WBR	156	156	0.1	122	126	0.3
SBL	83	82	0.2	142	141	0.1
SBT	26	25	0.3	72	69	0.4
SBR	77	77	0.1	106	100	0.5
EBL	132	142	0.8	60	64	0.5
EBT	1573	1575	0.0	1341	1455	3.1
EBR	112	112	0.1	293	298	0.3
Lakeshore Road & Hydro Road						
NBL	258	265	0.5	229	227	0.1
NBT	0	0	0.0	0	0	0.0
NBR	339	344	0.3	156	159	0.2
WBL	48	47	0.2	280	284	0.3
WBT	1490	1510	0.5	1762	1760	0.0
WBR	1	1	0.0	1	2	0.1
SBL	2	2	0.4	1	1	0.5
SBT	0	0	0.0	0	0	0.0
SBR	4	4	0.0	4	4	0.1
EBL	2	2	0.3	2	3	0.2
EBT	1768	1780	0.3	1254	1327	2.0
EBR	163	159	0.3	371	394	1.2
Lakeshore Road & Haig Boulevard						
NBL	119	118	0.1	170	173	0.2
NBT	22	24	0.5	35	38	0.5
NBR	184	179	0.4	208	202	0.4
WBL	109	128	1.7	123	126	0.3
WBT	1404	1428	0.6	1744	1732	0.3
WBR	36	33	0.5	76	71	0.6
SBL	34	35	0.3	31	27	0.9

Scenario	Future Total Morning Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share			Future Total Afternoon Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share		
Movement	**Modelled Volume**	**Input Volume**	**GEH**	**Modelled Volume**	**Input Volume**	**GEH**
SBT	22	22	0.0	23	23	0.0
SBR	42	40	0.3	145	139	0.5
EBL	107	109	0.2	59	62	0.4
EBT	1725	1737	0.3	1158	1224	1.9
EBR	268	267	0.1	179	192	1.0
Lakeshore Road & Dixie Road						
NBL	1	2	0.5	0	0	0.0
NBT	0	0	0.0	0	1	0.4
NBR	1	1	0.4	2	2	0.1
WBL	1	2	0.5	0	1	0.4
WBT	901	906	0.2	1045	1049	0.1
WBR	196	199	0.2	244	242	0.2
SBL	148	155	0.5	212	248	2.3
SBT	2	3	0.5	2	2	0.0
SBR	527	522	0.2	780	883	3.6
EBL	529	569	1.7	361	392	1.6
EBT	1323	1313	0.3	1003	1044	1.3
EBR	3	3	0.3	0	0	0.0

8.2.1.2 Scenario 7B: Intersection Capacity Summary

A summary of the VISSIM model results for delay and LOS at each intersection is provided in **Table 42**. The VISSIM results are as expected and align very well with the results of the Synchro analysis.

The VISSIM analysis shows that the intersections work acceptably with the following exceptions:

- The northbound left-turn/ northbound through movements at Lakeshore Road East & Cawthra Road operate with a LOS F during the afternoon peak hour. This is expected as both of these movements include very low traffic volumes (south approach at this time serves a driveway to only a small office).
- The eastbound left-turn / eastbound through at Cawthra Road operates with a LOS F during the afternoon peak period due to high volumes.
- At the intersection of Dixie Road, many movements operate with a LOS F during both the morning and afternoon peak periods due to heavy volumes.
- All eastbound left-turn / westbound left-turn movements at intersections along Lakeshore Road East are expected to experience poor levels of service with increased delays as a direct result of the implementation of the fully protected left-turn phasing required to accommodate the BRT.
- It should be noted that LOS F for left-turning movements is to be expected because of the implementation of fully protected left-turn phases for the BRT, with a 140 second cycle length.

TABLE 42 SCENARIO 7B: SIGNALIZED INTERSECTIONS DELAY AND LOS

Scenario	Future Total Morning Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share		Future Total Afternoon Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share	
Movement	**Delay (s)**	**LOS**	**Delay (s)**	**LOS**
Lakeshore Road & Cawthra Road				
NBT	-	-	98	F
NBR	8	A	20	C
WBL	30	C	-	-
WBT	26	C	38	D
WBR	11	B	4	A
SBL	53	D	40	D
SBT	54	D	39	D
SBR	26	C	27	C
EBL	63	E	155	F
EBT	9	A	96	F
EBR	7	A	55	E
Lakeshore Road & East Avenue				
NBL	52	D	45	D
NBR	16	B	16	B
WBL	69	E	76	E
WBT	21	C	23	C
WBR	7	A	7	A
SBL	65	E	52	D
SBR	31	C	17	B
EBL	81	F	96	F
EBT	12	B	40	D
EBR	14	B	39	D
Lakeshore Road & Lakefront Promenade				
NBL	47	D	54	D
NBR	20	C	15	B
WBL	72	E	91	F
WBT	35	D	8	A
EBT	20	C	20	C
EBR	3	A	6	A
Lakeshore Road & Ogden Road				
NBL	44	D	48	D
NBT	42	D	42	D
NBR	39	D	14	B
WBL	63	E	112	F
WBT	35	D	26	C
WBR	34	C	29	C

Scenario	Future Total Morning Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share		Future Total Afternoon Peak Hour Rangeview with 5,300 units Lakeview with 16,000 units Total = 21,300 Units 35% auto driver share	
Movement	**Delay (s)**	**LOS**	**Delay (s)**	**LOS**
SBL	41	D	49	D
SBT	41	D	39	D
SBR	18	B	27	C
EBL	70	E	47	D
EBT	14	B	43	D
EBR	4	A	25	C
Lakeshore Road & Hydro Road				
NBL	53	D	46	D
NBR	46	D	14	B
WBL	79	E	95	F
WBT	11	B	12	B
WBR	1	A	6	A
SBL	49	D	24	C
SBR	13	B	7	A
EBL	93	F	68	E
EBT	16	B	19	B
EBR	4	A	5	A
Lakeshore Road & Haig Boulevard				
WBT	48	D	62	E
WBR	45	D	61	E
SBL	46	D	58	E
SBR	45	D	56	E
EBL	81	F	64	E
EBT	18	B	17	B
EBR	6	A	2	A
Lakeshore Road & Dixie Road				
NBL	42	D	-	-
NBT	-	-	51	D
WBL	91	F	114	F
WBT	77	E	86	F
WBR	59	E	70	E
SBL	46	D	134	F
SBR	15	B	124	F
EBL	66	E	60	E
EBT	14	B	11	B
EBR	30	C	-	-

8.2.1.3 Scenario 7B: Intersection Queuing Summary

A summary of the VISSIM model queuing results is provided **Table 43** with highlights as follows:

- Due to high volumes, northbound queues leaving the Site at both Lakefront Promenade and Hydro Road may extend beyond the available storage. Northbound queues at the remainder of streets leaving the Site may be lengthy but can be accommodated within the planned available storage.
- During the AM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound vehicles at Cawthra Road, eastbound vehicles at Haig Boulevard and northbound vehicles at Hydro Road.
- During the PM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound and southbound vehicles at Cawthra Road, eastbound vehicles at East avenue and southbound vehicles at Dixie Road.
- The northbound left-turning volumes at Lakefront Promenade at Lakeshore Road East are expected to be high and queueing should be monitored.
- High volumes of traffic are expected along Lakeshore Road East during the peak periods of the day which could create potential east-west queuing concerns at Cawthra Road, East Avenue (eastbound only), Lakefront Promenade (eastbound only), Haig Boulevard (eastbound only) and Hydro Road (eastbound only).

TABLE 43 SCENARIO 7B: INTERSECTION QUEUING SUMMARY

Scenario / Movement	Queuing Space (metres)	Future Total Morning Peak Hour			Future Total Afternoon Peak hour		
		50th percentile	85th percentile	95th percentile	50th percentile	85th percentile	95th percentile
Lakeshore Road & Cawthra Road							
NB	10	0	0	0	0	1	3
WB	325	110	316	346	84	268	327
SB	250	44	72	85	65	113	139
EB	260	32	69	106	290	370	379
Lakeshore Road & East Avenue							
NB	130	8	25	36	3	11	20
WB	340	51	146	217	50	146	205
SB	80	0	1	5	0	1	5
EB	330	13	83	141	224	338	347
Lakeshore Road & Lakefront Promenade							
NB	130	27	53	83	28	57	108
WB	240	109	185	241	65	115	182
SB	-	-	-	-	-	-	-
EB	340	66	124	238	163	335	351
Lakeshore Road & Ogden Road							
NB	130	26	50	67	10	23	35
WB	200	86	153	189	64	133	191
SB	160	6	19	27	16	36	49
EB	240	31	59	78	99	133	147
Lakeshore Road & Hydro Road							
NB	130	94	155	177	22	53	82
WB	155	18	59	92	67	124	167
SB	40	0	0	2	0	0	0
EB	200	39	131	195	27	53	109
Lakeshore Road & Haig Boulevard							
NB	130	15	40	61	25	59	88
WB	600	159	257	300	288	454	487
SB	320	9	23	33	24	49	66
EB	165	60	243	315	24	52	61
Lakeshore Road & Dixie Road							
NB	95	0	0	0	0	0	0
WB	460	107	194	231	146	256	292
SB	310	19	47	64	230	415	450
EB	600	91	151	216	51	97	128

8.2.2 VISSIM Summary

The VISSIM analysis completed by BA Group confirms the results of the traffic analysis undertaken with Synchro by both TYLin and BA Group. The VISSIM microsimulation analysis included 7 intersections along the Lakeshore Road East corridor. A comparison of projected traffic volumes for each scenario versus the VISSIM modelled volumes were used to calculate the GEH values for Scenario 7B. As none of the GEH values were greater than the recommended maximum of 5.0, the fit between the simulated and observed flows within the VISSIM model is appropriate.

Scenario 7B

The VISSIM analysis for **Scenario 7B** shows that the intersections work acceptably with the following exceptions:

- The northbound left-turn/ northbound through movements at Lakeshore Road East & Cawthra Road operate with a LOS F during the afternoon peak hour. This is expected as both of these movements include very low traffic volumes (south approach at this time serves a driveway to only a small office).
- The eastbound left-turn / eastbound through at Cawthra Road operates with a LOS F during the afternoon peak period due to high volumes.
- At the intersection of Dixie Road, many movements operate with a LOS F during both the morning and afternoon peak periods due to heavy volumes.
- All eastbound left-turn / westbound left-turn movements at intersections along Lakeshore Road East are expected to experience poor levels of service with increased delays as a direct result of the implementation of the fully protected left-turn phasing required to accommodate the BRT.

Queuing concerns for **Scenario 7B** were noted as follows:

- Due to high volumes, northbound queues leaving the Site at both Lakefront Promenade and Hydro Road may extend beyond the available storage. Northbound queues at the remainder of streets leaving the Site may be lengthy but can be accommodated within the planned available storage.
- During the AM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound vehicles at Cawthra Road, eastbound vehicles at Haig Boulevard and northbound vehicles at Hydro Road.
- During the PM peak hour along Lakeshore Road East, some queuing is expected to occur for westbound and southbound vehicles at Cawthra Road, eastbound vehicles at East avenue and southbound vehicles at Dixie Road.

8.2.3 Conclusions

The VISSIM analysis confirms that the future transportation network, with BRT along Lakeshore Road East, can acceptably accommodate the travel demands of the 21,300 residential units (5,300 units on Rangeview and 16,000 units on Lakeview) and 100% build-out of the non-residential GFA. It is expected however that some movements will operate at, or slightly over capacity, during the peak periods of the day. It is also expected that some traffic will divert from the area as traffic patterns evolve.

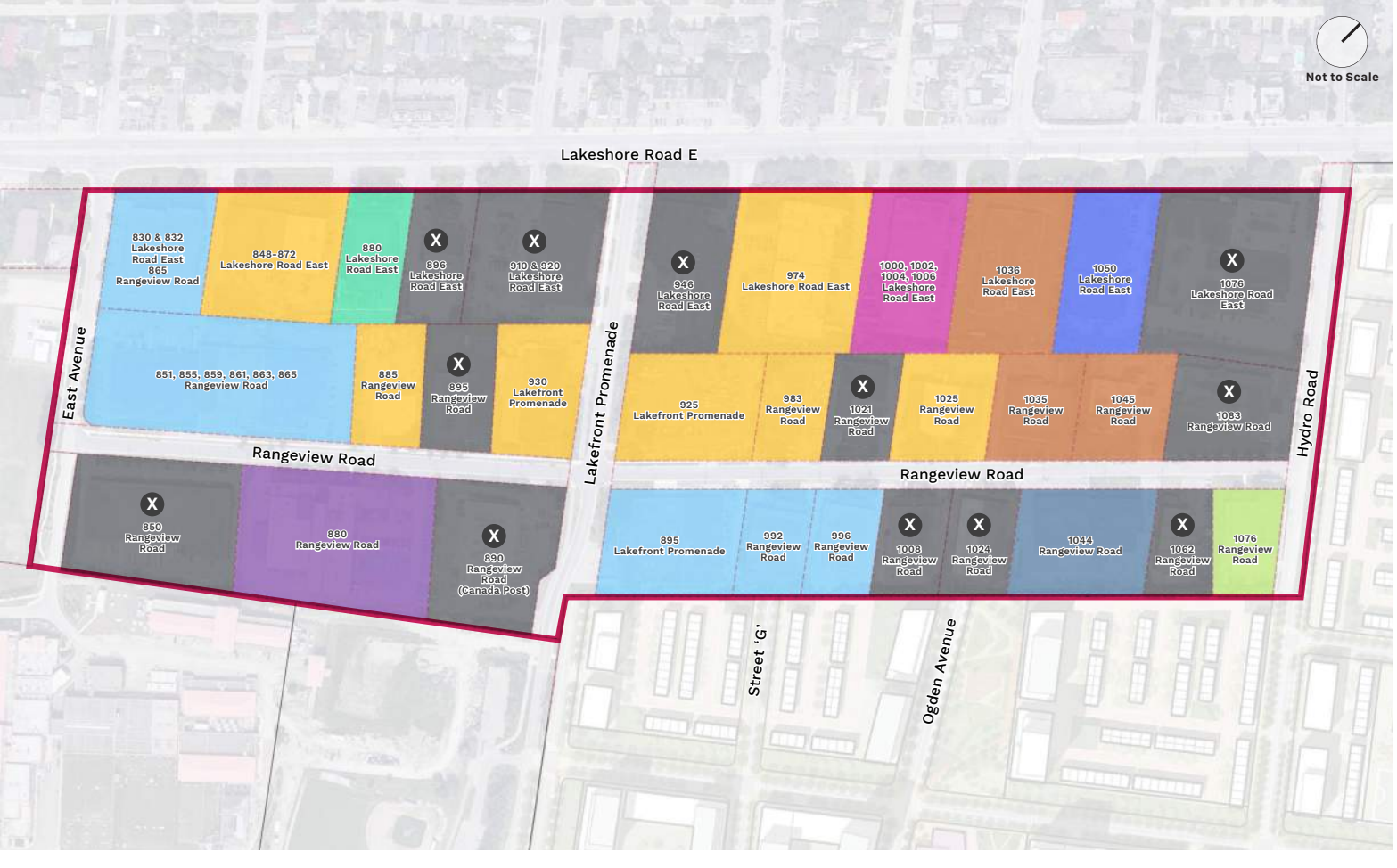
The ability of the transportation network to accommodate both Rangeview and Lakeview, is dependent on the future auto driver share decreasing to approximately 40% to 35%, based on the evolving transportation context of the area and in consideration of auto driver mode share proxy studies in areas with a similar context.

In order to confirm the ability of the area transportation network to acceptably accommodate the proposed development, it is recommended that a comprehensive traffic analysis update be undertaken for the Lakeview site to develop beyond 8,050 units. An updated traffic study would ideally be completed for increments of 2,000 units, up to 16,000 units on Lakeview.

Appendix A:
Rangeview Estates Landowner Map

RANGEVIEW ESTATES

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) | Non-Participating Landowners | Existing Parcel Lines

BOUSFIELDS INC.
PLANNING | DESIGN | ENGAGEMENT

Appendix B:
Rangeview Estates Master Plan

BOUSFIELDS INC.
PLANNING | DESIGN | ENGAGEMENT

Rangeview Development Master Plan

Concept Plan V7

LOG Approved

Rangeview Estates Precinct Area
Mississauga ON

April 2024

Project No. 20167

RANGEVIEW ESTATES PRECINCT

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 Company
- Kotyck Investments Ltd.

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

MASTER PLAN V7

Concept Plan

Legend Rangeview Estates Precinct Area — Existing Parcel Lines

BOUSFIELDS INC.
PLANNING | DESIGN | ENGAGEMENT

MASTER PLAN V7

Built Form Typology

Legend

- Rangeview Estates Precinct Area
- Existing Parcel Lines
- Low-rise (Up to 4-Storeys)
- Mid-rise / Podium (Tall Building) (5- to 8-Storeys)
- Tower Element (Tall Building) (Up to 15-Storeys)

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 ft^2 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 ft^2 GFA of non-residential uses) and Serson (449,000 ft^2 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 ~~35~~40**% to** ~~45~~60**%.** 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_____ ~~x 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	X ITE Trip Generation Manual ☐ "First Principles" ☐ Observed rates for similar developments in area ~~X 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 X **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 **X 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 **X Trip assignment to be established based on the 2023 TMIG report.**	2.3.21
Transportation Demand Management Plan		
Format	X Within a TIA Report ☐ Standalone	3.2.1
Type of Transportation Demand Management Plan	☐ TDM Statement **X TDM Scheme (Plan) - and will be further refined at a later stage in the planning process.**	3.2.2
Pedestrian Circulation Plan		
Format	**X Within the TIA Report and will be further refined at a later stage in the planning process.** ☐ Standalone	4.2.1

Additional Comments

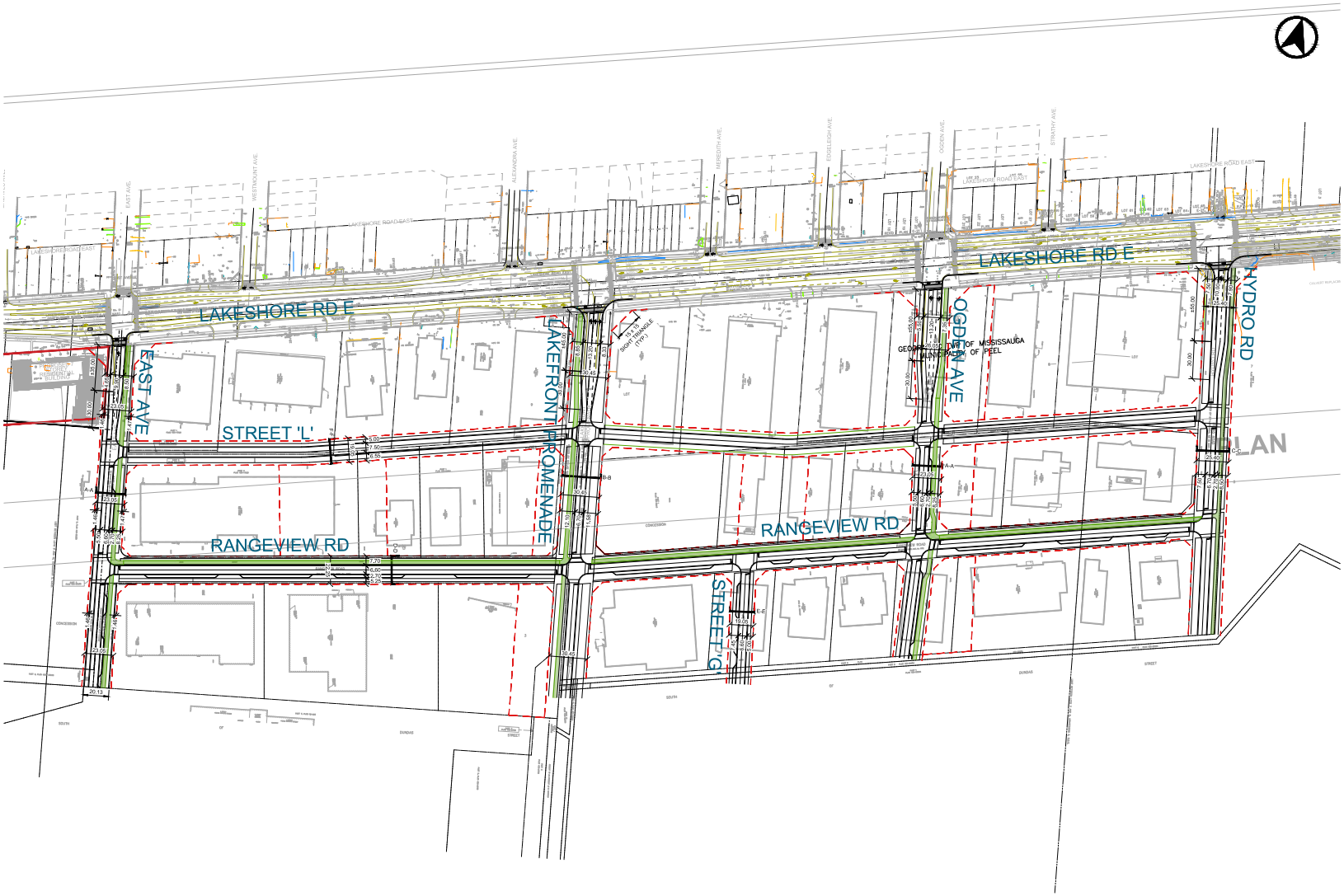
Description	Information	Section Reference
• **Microsimulation Analysis:** A VISSIM analysis is required. Note the following requirements for the VISSIM analysis: (i) The consultant will be responsible to produce a calibrated / validated VISSIM model to ensure the model is representative of existing conditions. (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.		

MASTER PLAN V6.2

Concept Plan

Legend Rangeview Estates Precinct Area --- Existing Parcel Lines

Appendix D:
Rangeview Estates Functional Road Plan



LEGEND

EXISTING PROPERTY LINE

PROPOSED RIGHT OF WAY

NON-PARTICIPATING LANDOWNERS

PARKS

BA Group

BA Consulting Group Ltd.
300–45 St. Clair Ave. W.,
Toronto ON M4V 1K9
ph. 416 961 7110
mail. beginner@bagroup.com

MOVEMENT
PLACEMAKING
ENVIRONMENTS
BAGROUP.COM

DORSAY PROPERTIES

ULTIMATE ROAD PLAN

Date: May 1, 2024

Project No.: 8061-01

Scale: 1:1,500 (0, 25, 50m)

RP-02

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

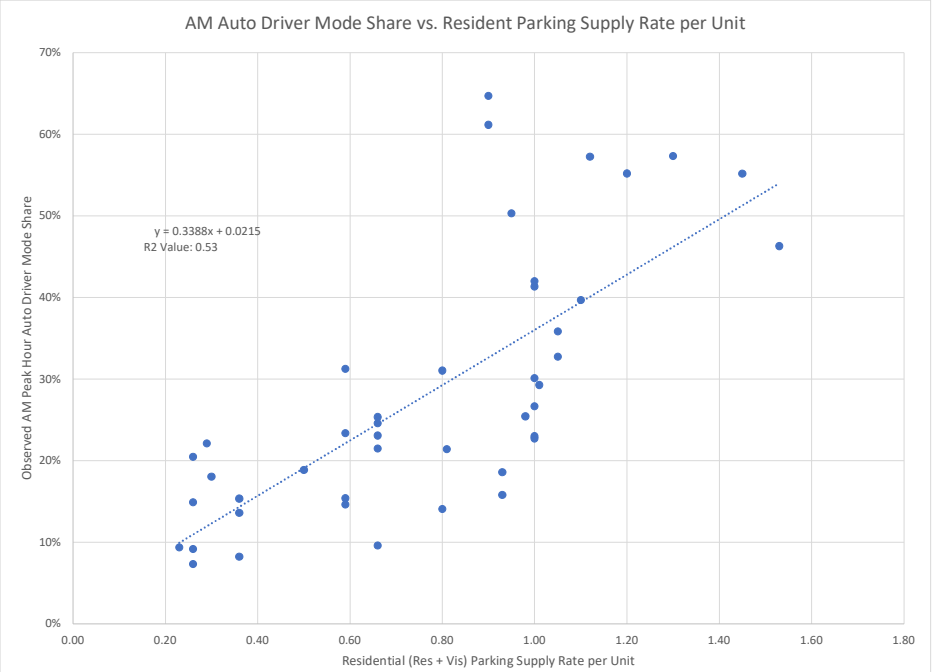
INTERIM & ULTIMATE PUDO / LOADING / VEHICULAR AREA

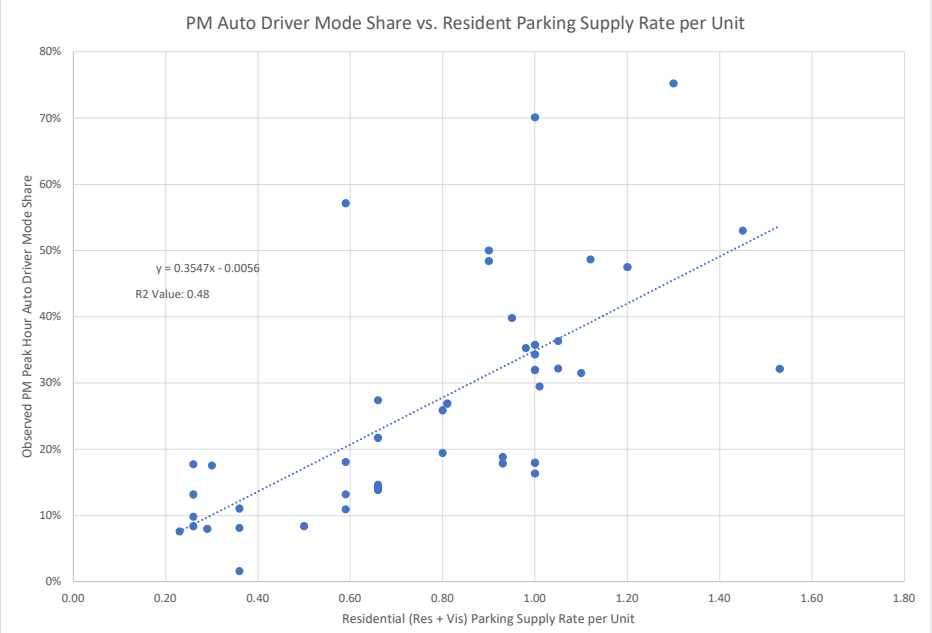
PARK AREA

Appendix F:
Travel Mode Share Studies

Site	Municipality	Combined Residential Parking Rate	Date	AM Mode Share	PM Mode Share
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	0.26	Thurs., Sept. 29, 2022	15%	13%
150 Redpath Avenue & 161 Roehampton /	Toronto	0.26	Tues., Mar. 28, 2023	20%	18%
8 Hillsdale Avenue&5 Soudan Avenue(Art S	Toronto	0.36	Wedn., Oct. 25, 2023	15%	11%
2855 Bloor Street West (Kingsway Condon	Toronto	1.53	Wedn., Sept. 13, 2023	46%	32%
185 Oneida Cres. (The Royal of Bayview Gl	Richmond Hill	1.30	Tues., Oct. 10, 2023	57%	75%
2662 Bloor Street West (The Terraces of O	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	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	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	1.20	Tues., Apr. 4, 2023	55%	48%
20 Richardson Street & 15 Lower Jarvis Str	Toronto	0.66	Thurs., Mar. 30, 2023	10%	14%
12-16 Bonnycastle Street (Monde Condos)	Toronto	0.66	Thurs., Mar. 30, 2023	23%	22%
228-230 Queen Quay Blvd W (Riviera Cond	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 (Trar	Vaughan	0.50	Wedn., Apr. 12, 2023	19%	8%
15, 29, 39 Queens Quay Blvd E (Pier 27 Co	Toronto	0.93	Tues., June 6, 2023	16%	18%
118 Merchant's Wharf (Aqualina Condos)	Toronto	0.66	Wedn., May 17, 2023	25%	27%
15 & 55 Merchant's Wharf (Aqualina Cond	Toronto	0.66	Thurs., May 25, 2023	21%	15%

AM R2:	0.53
PM R2:	0.48





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%

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 passe	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 Passe	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 passe	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 Passe	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	

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 purpos 2 3
and
2006 GTA z 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 passe	114	330	210	110	172	161	1097
School bus	8	27	0	0	31	0	66
Taxi passe	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		450		452		TOTAL	
Auto Drive	630	28%	1317	38%	476	22%	721	38%	1479	30%	1430	33%	4623	31%
Auto Passe	122	5%	357	10%	210	10%	110	6%	203	4%	172	4%	1002	7%
Transit	1183	53%	1608	46%	1321	62%	978	52%	2590	52%	2058	48%	7680	52%
Active Tra	285	13%	214	6%	132	6%	90	5%	721	14%	665	15%	1442	10%
TOTAL	2220	100%	3496	100%	2139	100%	1899	100%	4993	100%	4325	100%	14747	100%
													14747	

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 purpos 2 3
and
2006 GTA z 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 passe	225	362	161	83	608	261	1700
School bus	0	0	0	0	4	0	4
Taxi passe	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 Passe	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 Tra	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	

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 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	24%
Auto Passenger	0	0%	0	0%	85	2%	82	2%	84	1%	251	2%
Transit	170	67%	816	56%	2245	57%	1911	56%	3990	59%	9132	58%
Active Transportation	58	23%	328	22%	741	19%	534	16%	954	14%	2615	17%
TOTAL	254	100%	1458	100%	3923	100%	3412	100%	6790	100%	15837	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 z 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	25%
Auto Passe	77	29%	33	2%	198	5%	240	7%	294	4%	842	5%
Transit	100	37%	642	41%	2529	60%	1850	54%	4321	54%	9442	54%
Active Trai	65	24%	441	28%	539	13%	436	13%	1307	16%	2788	16%
TOTAL	268	100%	1571	100%	4222	100%	3401	100%	7995	100%	17457	100%
											17457	

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 To	PD 2 of To	PD 3 of To	PD 4 of To	PD 5 of To	PD 6 of To	PD 7 of To	PD 8 of To	PD 9 of To	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 passe	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 rideshi	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 Passe	58923	9%
Transit	256983	39%
Active Tra	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 To	PD 2 of To	PD 3 of To	PD 4 of To	PD 5 of To	PD 6 of To	PD 7 of To	PD 8 of To	PD 9 of To	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 passe	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 rideshi	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 Passe	60280	9%
Transit	240953	37%
Active Tra	104780	16%
TOTAL	645039	100%

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 dis 35 36)

Trip 2016
Table:

	Caledon	Brampton	Mississaug	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 rai	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 ridesha	0	168	434	602
Walk	39	4543	12168	16750
	1944	54321	129934	186199

Mode		
Auto Drive	106897	57%
Auto Passe	30506	16%
Transit	30875	17%
Active Trar	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

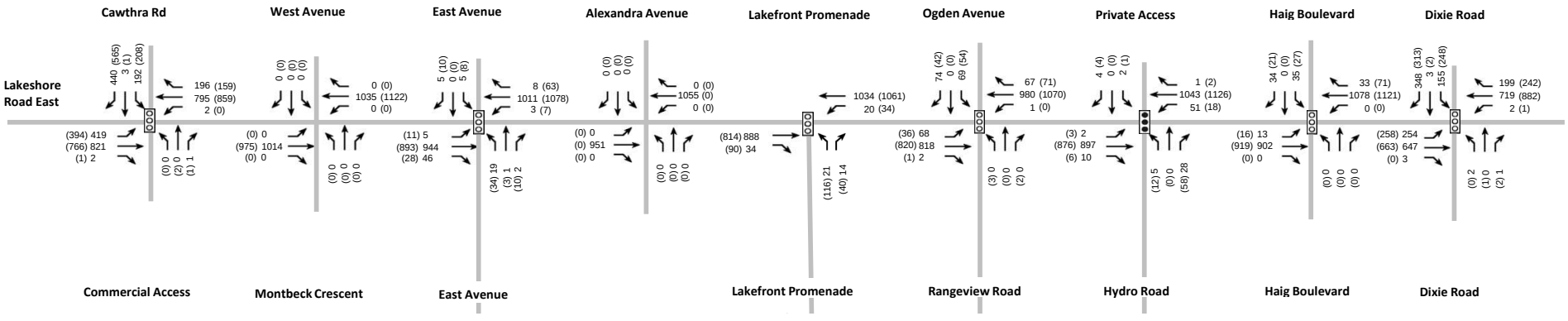
Filters:
(Type of dw 3
and
Start time of trip - start_time In 1600-1859
and
Trip purpose 2 3
and
Planning dis 35 36)

Trip 2016
Table:

	Caledon	Brampton	Mississaug	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 rai	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 ridesha	0	103	677	780
Walk	6	1267	4645	5918
	1700	47676	113028	162404

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

Appendix G:
Vehicle Turning Movement Counts



00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

Proposed Traffic Signal

Date Plotted: 01/05/2024 Filename P:\80\61\01\Graphics\Traffic Figures_DMA

FIGURE - Existing Conditions 2022 Counts

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & CAWTHRA RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (1 . LAKESHORE RD E & CAWTHRA RD) CustID: 01700000 MioID:

Start Time	N Approach CAWTHRA RD						E Approach LAKESHORE RD						S Approach CAWTHRA RD						W Approach LAKESHORE RD						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	84	0	66	0	3	150	48	73	0	0	0	121	0	0	0	0	0	0	0	179	109	0	2	288	559	
07:45:00	87	0	64	0	5	151	48	122	0	0	0	170	0	0	0	0	4	0	0	171	115	0	11	286	607	
08:00:00	90	0	42	0	3	132	34	154	0	0	1	188	0	0	0	0	4	0	0	195	98	0	11	293	613	
08:15:00	94	0	36	0	3	130	43	232	0	0	0	275	0	0	0	0	3	0	0	197	103	0	3	300	705	2484
08:30:00	117	0	58	0	1	175	39	217	0	0	0	256	0	0	0	0	1	0	0	205	98	0	4	303	734	2659
08:45:00	101	1	39	0	1	141	68	213	1	0	0	282	0	0	0	0	1	0	2	237	111	0	1	350	773	2825
09:00:00	128	2	59	0	5	189	46	133	1	0	0	180	1	0	0	0	1	1	0	182	107	0	5	289	659	2871
09:15:00	125	2	56	0	2	183	44	159	0	0	0	203	0	1	0	0	2	1	0	129	93	0	5	222	609	2775
BREAK																										
16:00:00	131	0	62	0	11	193	68	200	0	0	1	268	0	3	0	0	5	3	2	183	89	0	6	274	738	
16:15:00	141	1	51	0	8	193	37	179	0	0	1	216	0	2	0	0	4	2	1	191	104	0	9	296	707	
16:30:00	140	0	58	1	12	199	54	197	0	0	0	251	0	0	0	0	6	0	0	191	96	0	8	287	737	
16:45:00	148	0	43	0	13	191	26	211	0	0	0	237	0	1	0	0	8	1	1	178	90	0	9	269	698	2880
17:00:00	143	1	61	1	7	206	36	229	0	0	0	265	1	0	0	0	3	1	0	198	103	0	3	301	773	2915
17:15:00	153	0	47	1	11	201	44	184	0	0	0	228	0	0	0	0	4	0	0	201	112	0	5	313	742	2950
17:30:00	121	0	57	1	7	179	53	235	0	0	0	288	0	1	0	0	5	1	0	189	89	0	8	278	746	2959
17:45:00	123	0	51	1	18	175	41	177	0	0	0	218	0	1	0	0	8	1	0	191	107	0	12	298	692	2953
Grand Total	1926	7	850	5	110	2788	729	2915	2	0	3	3646	2	9	0	0	59	11	6	3017	1624	0	102	4647	**11092**	-
Approach%	69.1%	0.3%	30.5%	0.2%		-	20%	80%	0.1%	0%		-	18.2%	81.8%	0%	0%		-	0.1%	64.9%	34.9%	0%		-	-	-
Totals %	17.4%	0.1%	7.7%	0%		25.1%	6.6%	26.3%	0%	0%		32.9%	0%	0.1%	0%	0%		0.1%	0.1%	27.2%	14.6%	0%		41.9%	-	-
Heavy	49	0	33	0		-	50	75	0	0		-	0	0	0	0		-	0	84	39	0		-	-	-
Heavy %	2.5%	0%	3.9%	0%		-	6.9%	2.6%	0%	0%		-	0%	0%	0%	0%		-	0%	2.8%	2.4%	0%		-	-	-
Bicycles	0	0	1	0		-	0	5	0	0		-	0	0	0	0		-	0	14	0	0		-	-	-
Bicycle %	0%	0%	0.1%	0%		-	0%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0%	0.5%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & CAWTHRA RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 08:15 AM - 09:15 AM Weather: Clear Sky (9.22 °C)

Start Time	N Approach CAWTHRA RD						E Approach LAKESHORE RD						S Approach CAWTHRA RD						W Approach LAKESHORE RD						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	
08:15:00	94	0	36	0	3	130	43	232	0	0	0	275	0	0	0	0	3	0	0	197	103	0	3	300	705
08:30:00	117	0	58	0	1	175	39	217	0	0	0	256	0	0	0	0	1	0	0	205	98	0	4	303	734
08:45:00	101	1	39	0	1	141	68	213	1	0	0	282	0	0	0	0	1	0	2	237	111	0	1	350	773
09:00:00	128	2	59	0	5	189	46	133	1	0	0	180	1	0	0	0	1	1	0	182	107	0	5	289	659
Grand Total	440	3	192	0	10	635	196	795	2	0	0	993	1	0	0	0	6	1	2	821	419	0	13	1242	**2871**
Approach%	69.3%	0.5%	30.2%	0%		-	19.7%	80.1%	0.2%	0%		-	100%	0%	0%	0%		-	0.2%	66.1%	33.7%	0%		-	**-**
Totals %	15.3%	0.1%	6.7%	0%		22.1%	6.8%	27.7%	0.1%	0%		34.6%	0%	0%	0%	0%		0%	0.1%	28.6%	14.6%	0%		43.3%	**-**
PHF	0.86	0.38	0.81	0		0.84	0.72	0.86	0.5	0		0.88	0.25	0	0	0		0.25	0.25	0.87	0.94	0		0.89	**-**
Heavy	15	0	17	0		32	23	37	0	0		60	0	0	0	0		0	0	24	16	0		40	**-**
Heavy %	3.4%	0%	8.9%	0%		5%	11.7%	4.7%	0%	0%		6%	0%	0%	0%	0%		0%	0%	2.9%	3.8%	0%		3.2%	**-**
Lights	425	3	175	0		603	173	758	2	0		933	1	0	0	0		1	2	797	403	0		1202	**-**
Lights %	96.6%	100%	91.1%	0%		95%	88.3%	95.3%	100%	0%		94%	100%	0%	0%	0%		100%	100%	97.1%	96.2%	0%		96.8%	**-**
Single-Unit Trucks	4	0	16	0		20	18	22	0	0		40	0	0	0	0		0	0	16	3	0		19	**-**
Single-Unit Trucks %	0.9%	0%	8.3%	0%		3.1%	9.2%	2.8%	0%	0%		4%	0%	0%	0%	0%		0%	0%	1.9%	0.7%	0%		1.5%	**-**
Buses	10	0	0	0		10	1	11	0	0		12	0	0	0	0		0	0	6	10	0		16	**-**
Buses %	2.3%	0%	0%	0%		1.6%	0.5%	1.4%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	0.7%	2.4%	0%		1.3%	**-**
Articulated Trucks	1	0	1	0		2	4	4	0	0		8	0	0	0	0		0	0	2	3	0		5	**-**
Articulated Trucks %	0.2%	0%	0.5%	0%		0.3%	2%	0.5%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0.2%	0.7%	0%		0.4%	**-**
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	12	-	**-**
Pedestrians%	-	-	-	-	20.7%		-	-	-	-	0%		-	-	-	-	20.7%		-	-	-	-	41.4%		**-**
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	13.8%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	3.4%		**-**
Bicycles on Road	0	0	1	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & CAWTHRA RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

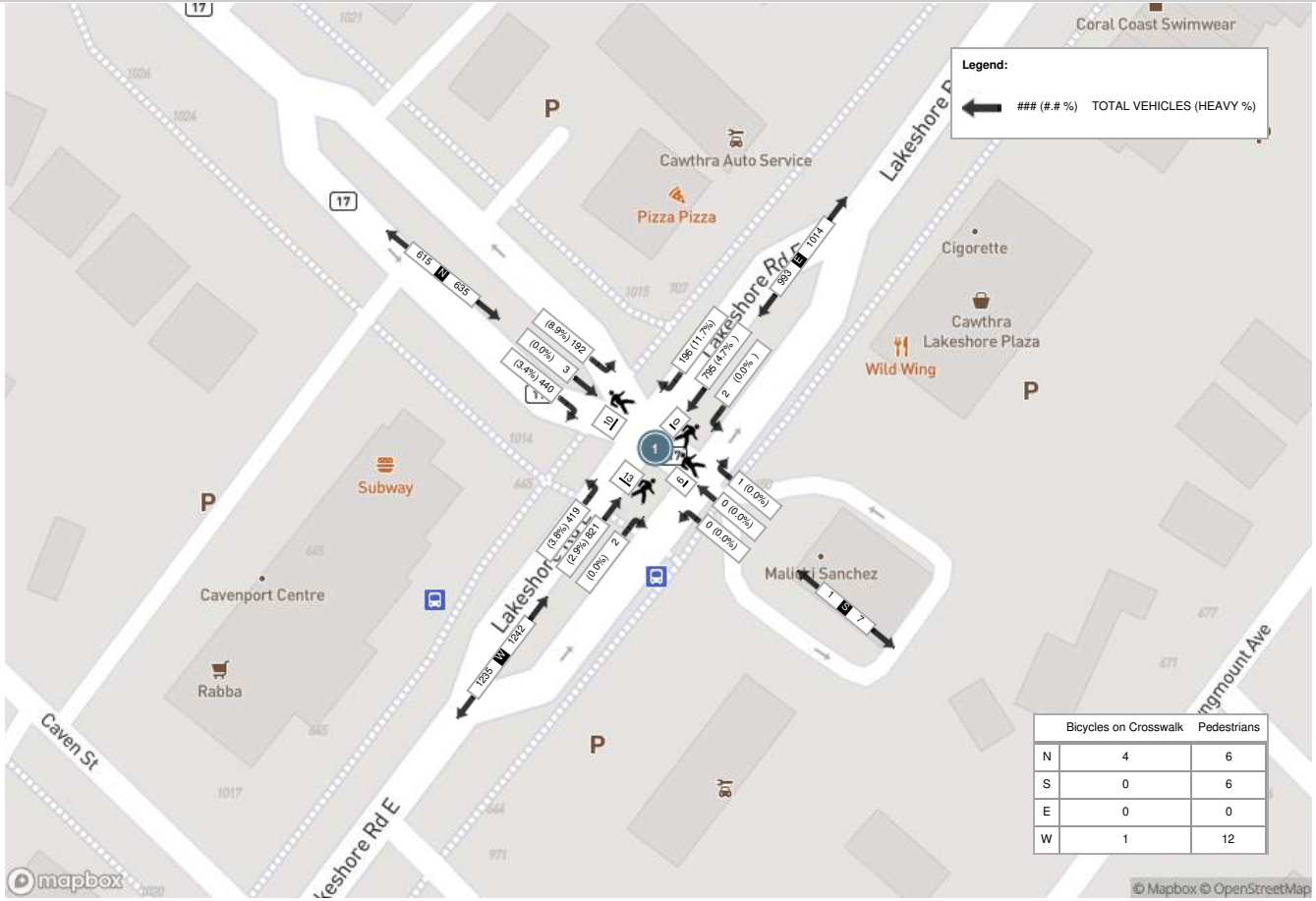
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Clear Sky (22.6 °C)

Start Time	N Approach CAWTHRA RD						E Approach LAKESHORE RD						S Approach CAWTHRA RD						W Approach LAKESHORE RD						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	148	0	43	0	13	191	26	211	0	0	0	237	0	1	0	0	8	1	1	178	90	0	9	269	698
17:00:00	143	1	61	1	7	206	36	229	0	0	0	265	1	0	0	0	3	1	0	198	103	0	3	301	773
17:15:00	153	0	47	1	11	201	44	184	0	0	0	228	0	0	0	0	4	0	0	201	112	0	5	313	742
17:30:00	121	0	57	1	7	179	53	235	0	0	0	288	0	1	0	0	5	1	0	189	89	0	8	278	746
Grand Total	565	1	208	3	38	777	159	859	0	0	0	1018	1	2	0	0	20	3	1	766	394	0	25	1161	**2959**
Approach%	72.7%	0.1%	26.8%	0.4%		-	15.6%	84.4%	0%	0%		-	33.3%	66.7%	0%	0%		-	0.1%	66%	33.9%	0%		-	**-**
Totals %	19.1%	0%	7%	0.1%		26.3%	5.4%	29%	0%	0%		34.4%	0%	0.1%	0%	0%		0.1%	0%	25.9%	13.3%	0%		39.2%	**-**
PHF	0.92	0.25	0.85	0.75		0.94	0.75	0.91	0	0		0.88	0.25	0.5	0	0		0.75	0.25	0.95	0.88	0		0.93	**-**
Heavy	9	0	3	0		12	2	7	0	0		9	0	0	0	0		0	0	16	4	0		20	**-**
Heavy %	1.6%	0%	1.4%	0%		1.5%	1.3%	0.8%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	2.1%	1%	0%		1.7%	**-**
Lights	556	1	205	3		765	157	852	0	0		1009	1	2	0	0		3	1	750	390	0		1141	**-**
Lights %	98.4%	100%	98.6%	100%		98.5%	98.7%	99.2%	0%	0%		99.1%	100%	100%	0%	0%		100%	100%	97.9%	99%	0%		98.3%	**-**
Single-Unit Trucks	7	0	3	0		10	2	3	0	0		5	0	0	0	0		0	0	12	3	0		15	**-**
Single-Unit Trucks %	1.2%	0%	1.4%	0%		1.3%	1.3%	0.3%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	1.6%	0.8%	0%		1.3%	**-**
Buses	1	0	0	0		1	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Buses %	0.2%	0%	0%	0%		0.1%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.3%	**-**
Articulated Trucks	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	**-**
Articulated Trucks %	0.2%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0.3%	0%		0.1%	**-**
Pedestrians	-	-	-	-	30	-	-	-	-	-	0	-	-	-	-	-	15	-	-	-	-	-	24	-	**-**
Pedestrians%	-	-	-	-	36.1%		-	-	-	-	0%		-	-	-	-	18.1%		-	-	-	-	28.9%		**-**
Bicycles on Crosswalk	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	9.6%		-	-	-	-	0%		-	-	-	-	6%		-	-	-	-	1.2%		**-**
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%		**-**

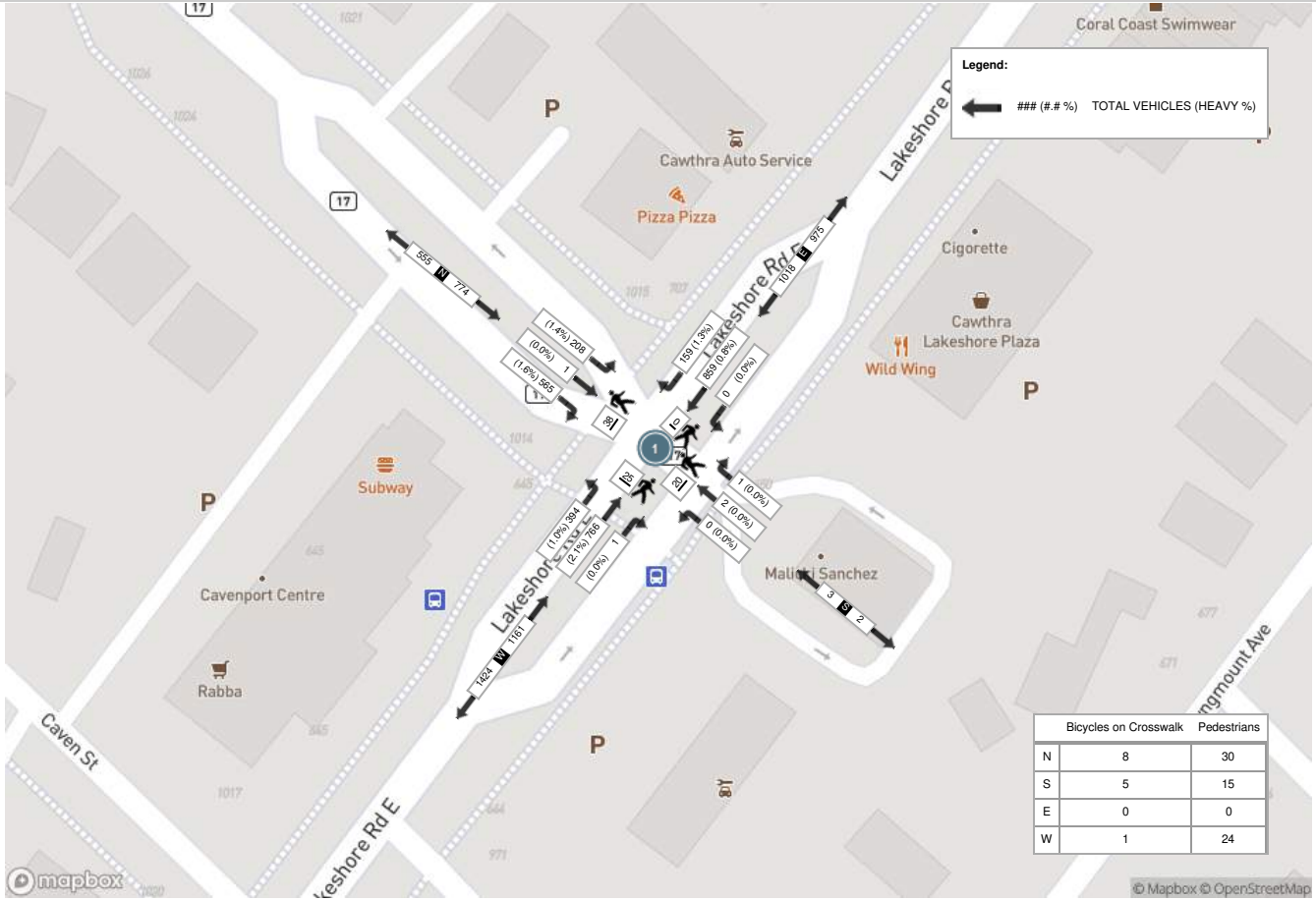
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:15 AM - 09:15 AM **Weather: Clear Sky (9.22 °C)**



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

Peak Hour: 04:45 PM - 05:45 PM **Weather: Clear Sky (22.6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	8	30
S	5	15
E	0	0
W	1	24

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & DIXIE RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (7 . LAKESHORE RD E & DIXIE RD) CustID: 00400000 MioID:

Start Time	N Approach DIXIE RD						E Approach LAKESHORE RD E						S Approach DIXIE RD						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	26	0	44	0	7	70	37	113	0	0	0	150	0	0	0	0	4	0	1	147	47	0	1	195	415	
07:45:00	44	0	46	0	5	90	38	140	0	0	0	178	0	0	0	0	0	0	0	185	56	0	2	241	509	
08:00:00	69	0	43	0	10	112	49	143	0	0	0	192	0	0	0	0	1	0	1	144	53	0	3	198	502	
08:15:00	83	1	40	0	2	124	59	205	0	0	0	264	0	0	1	0	3	1	0	177	70	0	3	247	636	2062
08:30:00	93	0	39	0	3	132	47	165	1	0	0	213	1	0	1	0	2	2	0	158	72	0	5	230	577	2224
08:45:00	103	2	33	0	3	138	44	206	1	0	0	251	0	0	0	0	1	0	2	168	59	0	2	229	618	2333
09:00:00	72	1	44	0	1	117	36	110	0	0	0	146	0	0	0	0	0	0	2	139	77	0	1	218	481	2312
09:15:00	67	1	27	0	5	95	31	123	0	0	0	154	0	0	1	0	2	1	0	109	49	0	1	158	408	2084
BREAK																										
16:00:00	88	1	56	0	4	145	69	189	0	0	1	258	2	1	1	0	4	4	2	126	75	0	1	203	610	
16:15:00	63	0	55	0	9	118	54	209	0	0	1	263	1	1	2	0	4	4	1	178	71	0	1	250	635	
16:30:00	72	0	62	0	9	134	63	209	0	0	0	272	1	0	1	0	4	2	0	143	65	0	5	208	616	
16:45:00	72	1	53	0	6	126	60	239	0	0	1	299	0	0	2	0	2	2	0	154	65	0	2	219	646	2507
17:00:00	86	0	57	0	11	143	58	206	0	0	0	264	1	0	0	0	3	1	0	163	72	0	9	235	643	2540
17:15:00	72	1	60	0	7	133	64	224	0	0	2	288	0	1	0	0	8	1	0	190	69	0	4	259	681	2586
17:30:00	75	0	74	0	1	149	53	202	1	0	0	256	1	0	0	0	3	1	0	140	64	0	4	204	610	2580
17:45:00	80	1	57	0	11	138	67	250	0	0	0	317	0	0	0	0	1	0	0	170	53	0	4	223	678	2612
Grand Total	1165	9	790	0	94	1964	829	2933	3	0	5	3765	7	3	9	0	42	19	9	2491	1017	0	48	3517	**9265**	-
Approach%	59.3%	0.5%	40.2%	0%		-	22%	77.9%	0.1%	0%		-	36.8%	15.8%	47.4%	0%		-	0.3%	70.8%	28.9%	0%		-	**-**	-
Totals %	12.6%	0.1%	8.5%	0%		21.2%	8.9%	31.7%	0%	0%		40.6%	0.1%	0%	0.1%	0%		0.2%	0.1%	26.9%	11%	0%		38%	**-**	-
Heavy	49	0	8	0		-	10	118	0	0		-	0	0	0	0		-	0	95	43	0		-	**-**	-
Heavy %	4.2%	0%	1%	0%		-	1.2%	4%	0%	0%		-	0%	0%	0%	0%		-	0%	3.8%	4.2%	0%		-	**-**	-
Bicycles	0	0	3	0		-	1	9	0	0		-	3	0	0	0		-	1	19	1	0		-	**-**	-
Bicycle %	0%	0%	0.4%	0%		-	0.1%	0.3%	0%	0%		-	42.9%	0%	0%	0%		-	11.1%	0.8%	0.1%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)

Start Time	N Approach DIXIE RD						E Approach LAKESHORE RD E						S Approach DIXIE RD						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	69	0	43	0	10	112	49	143	0	0	0	192	0	0	0	0	1	0	1	144	53	0	3	198	502
08:15:00	83	1	40	0	2	124	59	205	0	0	0	264	0	0	1	0	3	1	0	177	70	0	3	247	636
08:30:00	93	0	39	0	3	132	47	165	1	0	0	213	1	0	1	0	2	2	0	158	72	0	5	230	577
08:45:00	103	2	33	0	3	138	44	206	1	0	0	251	0	0	0	0	1	0	2	168	59	0	2	229	618
Grand Total	348	3	155	0	18	506	199	719	2	0	0	920	1	0	2	0	7	3	3	647	254	0	13	904	**2333**
Approach%	68.8%	0.6%	30.6%	0%		-	21.6%	78.2%	0.2%	0%		-	33.3%	0%	66.7%	0%		-	0.3%	71.6%	28.1%	0%		-	**-**
Totals %	14.9%	0.1%	6.6%	0%		21.7%	8.5%	30.8%	0.1%	0%		39.4%	0%	0%	0.1%	0%		0.1%	0.1%	27.7%	10.9%	0%		38.7%	**-**
PHF	0.84	0.38	0.9	0		0.92	0.84	0.87	0.5	0		0.87	0.25	0	0.5	0		0.38	0.38	0.91	0.88	0		0.91	**-**
Heavy	28	0	2	0		30	3	45	0	0		48	0	0	0	0		0	0	25	15	0		40	**-**
Heavy %	8%	0%	1.3%	0%		5.9%	1.5%	6.3%	0%	0%		5.2%	0%	0%	0%	0%		0%	0%	3.9%	5.9%	0%		4.4%	**-**
Lights	320	3	153	0		476	196	674	2	0		872	1	0	2	0		3	3	622	239	0		864	**-**
Lights %	92%	100%	98.7%	0%		94.1%	98.5%	93.7%	100%	0%		94.8%	100%	0%	100%	0%		100%	100%	96.1%	94.1%	0%		95.6%	**-**
Single-Unit Trucks	24	0	2	0		26	2	24	0	0		26	0	0	0	0		0	0	13	13	0		26	**-**
Single-Unit Trucks %	6.9%	0%	1.3%	0%		5.1%	1%	3.3%	0%	0%		2.8%	0%	0%	0%	0%		0%	0%	2%	5.1%	0%		2.9%	**-**
Buses	3	0	0	0		3	1	17	0	0		18	0	0	0	0		0	0	11	0	0		11	**-**
Buses %	0.9%	0%	0%	0%		0.6%	0.5%	2.4%	0%	0%		2%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.2%	**-**
Articulated Trucks	1	0	0	0		1	0	4	0	0		4	0	0	0	0		0	0	1	2	0		3	**-**
Articulated Trucks %	0.3%	0%	0%	0%		0.2%	0%	0.6%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.2%	0.8%	0%		0.3%	**-**
Pedestrians	-	-	-	-	16	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	11	-	**-**
Pedestrians%	-	-	-	-	42.1%		-	-	-	-	0%		-	-	-	-	13.2%		-	-	-	-	28.9%		**-**
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	5.3%		-	-	-	-	0%		-	-	-	-	5.3%		-	-	-	-	5.3%		**-**
Bicycles on Road	0	0	0	0	0	-	1	3	0	0	0	-	0	0	0	0	0	-	0	5	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & DIXIE RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

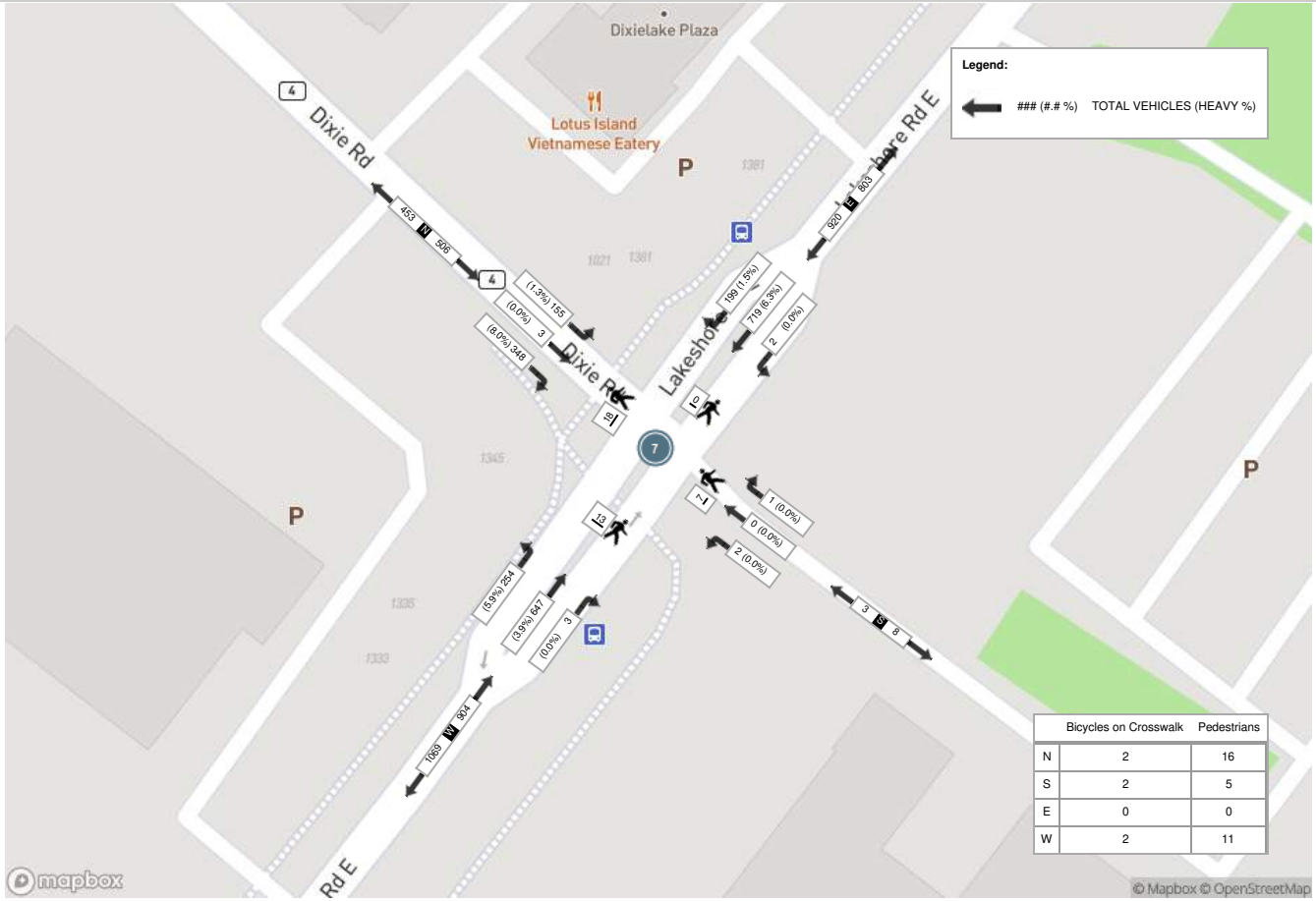
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)

Start Time	N Approach DIXIE RD						E Approach LAKESHORE RD E						S Approach DIXIE RD						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	
17:00:00	86	0	57	0	11	143	58	206	0	0	0	264	1	0	0	0	3	1	0	163	72	0	9	235	643
17:15:00	72	1	60	0	7	133	64	224	0	0	2	288	0	1	0	0	8	1	0	190	69	0	4	259	681
17:30:00	75	0	74	0	1	149	53	202	1	0	0	256	1	0	0	0	3	1	0	140	64	0	4	204	610
17:45:00	80	1	57	0	11	138	67	250	0	0	0	317	0	0	0	0	1	0	0	170	53	0	4	223	678
Grand Total	313	2	248	0	30	563	242	882	1	0	2	1125	2	1	0	0	15	3	0	663	258	0	21	921	**2612**
Approach%	55.6%	0.4%	44%	0%		-	21.5%	78.4%	0.1%	0%		-	66.7%	33.3%	0%	0%		-	0%	72%	28%	0%		-	**-**
Totals %	12%	0.1%	9.5%	0%		21.6%	9.3%	33.8%	0%	0%		43.1%	0.1%	0%	0%	0%		0.1%	0%	25.4%	9.9%	0%		35.3%	**-**
PHF	0.91	0.5	0.84	0		0.94	0.9	0.88	0.25	0		0.89	0.5	0.25	0	0		0.75	0	0.87	0.9	0		0.89	**-**
Heavy	2	0	1	0		3	4	17	0	0		21	0	0	0	0		0	0	17	5	0		22	**-**
Heavy %	0.6%	0%	0.4%	0%		0.5%	1.7%	1.9%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	2.6%	1.9%	0%		2.4%	**-**
Lights	311	2	247	0		560	238	865	1	0		1104	2	1	0	0		3	0	646	253	0		899	**-**
Lights %	99.4%	100%	99.6%	0%		99.5%	98.3%	98.1%	100%	0%		98.1%	100%	100%	0%	0%		100%	0%	97.4%	98.1%	0%		97.6%	**-**
Single-Unit Trucks	2	0	1	0		3	3	8	0	0		11	0	0	0	0		0	0	8	2	0		10	**-**
Single-Unit Trucks %	0.6%	0%	0.4%	0%		0.5%	1.2%	0.9%	0%	0%		1%	0%	0%	0%	0%		0%	0%	1.2%	0.8%	0%		1.1%	**-**
Buses	0	0	0	0		0	0	9	0	0		9	0	0	0	0		0	0	8	0	0		8	**-**
Buses %	0%	0%	0%	0%		0%	0%	1%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		0.9%	**-**
Articulated Trucks	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	1	3	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0.4%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0.2%	1.2%	0%		0.4%	**-**
Pedestrians	-	-	-	-	26	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	18	-	**-**
Pedestrians%	-	-	-	-	38.2%		-	-	-	-	0%		-	-	-	-	8.8%		-	-	-	-	26.5%		**-**
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	9	-	-	-	-	-	3	-	**-**
Bicycles on Crosswalk%	-	-	-	-	5.9%		-	-	-	-	2.9%		-	-	-	-	13.2%		-	-	-	-	4.4%		**-**
Bicycles on Road	0	0	0	0	0	-	0	3	0	0	0	-	2	0	0	0	0	-	1	5	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

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

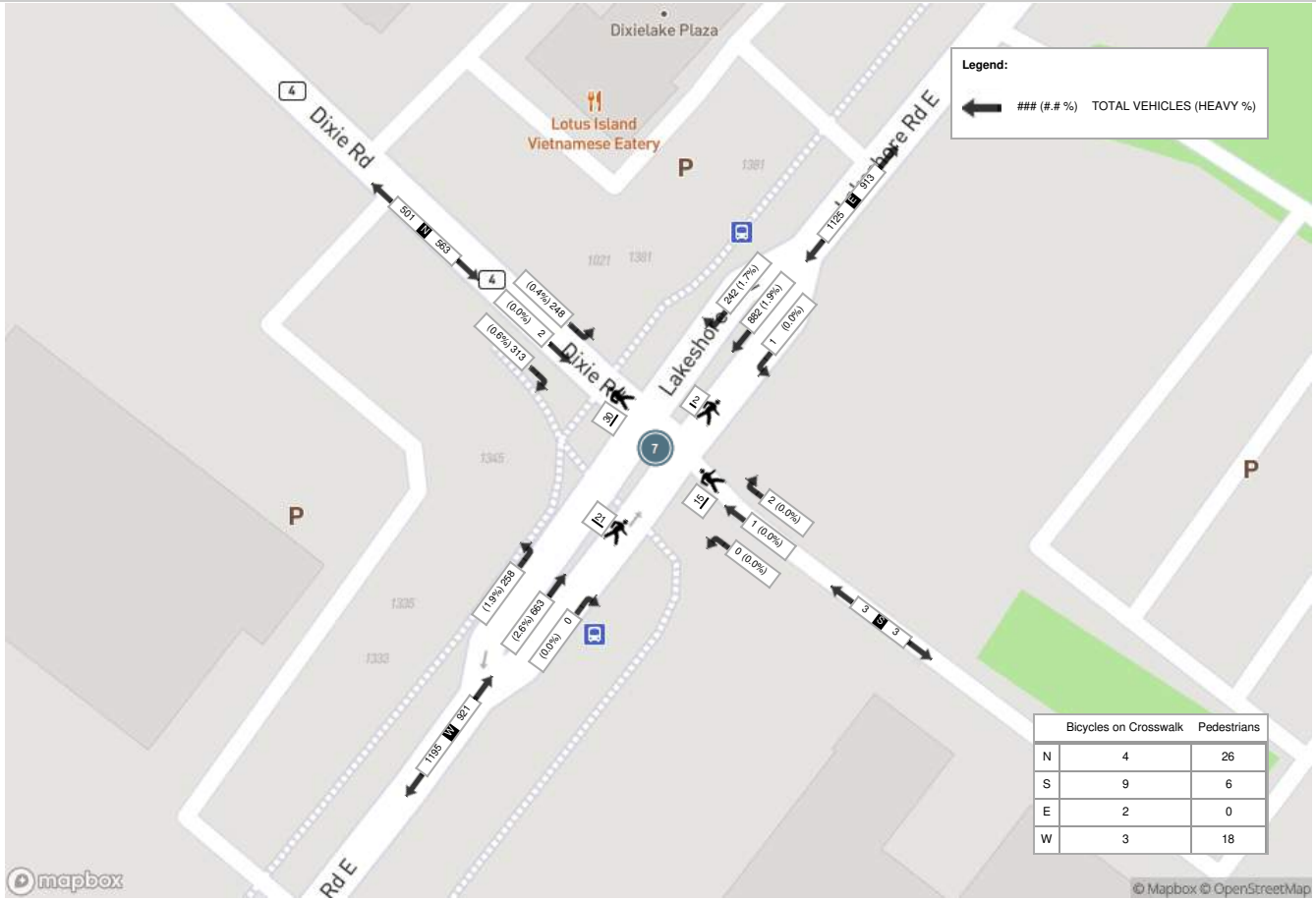
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)



	Bicycles on Crosswalk	Pedestrians
N	2	16
S	2	5
E	0	0
W	2	11

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

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	4	26
S	9	6
E	2	0
W	3	18

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & EAST AVE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

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

Start Time	N Approach EAST AVE						E Approach LAKESHORE RD E						S Approach EAST 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	0	0	2	0	1	2	0	116	1	0	1	117	2	0	1	0	2	3	9	207	3	0	3	219	341	
07:45:00	2	0	1	0	6	3	1	167	3	0	1	171	0	0	4	0	2	4	24	253	1	0	1	278	456	
08:00:00	1	0	3	0	2	4	1	204	0	1	0	206	1	0	4	0	0	5	19	222	1	0	1	242	457	
08:15:00	3	0	1	0	0	4	2	271	0	0	0	273	0	0	0	0	0	0	6	223	0	0	2	229	506	1760
08:30:00	0	0	0	0	1	0	3	257	0	0	0	260	0	0	8	0	1	8	8	233	1	0	0	242	510	1929
08:45:00	1	0	1	0	2	2	2	279	3	0	0	284	1	1	7	0	0	9	13	266	3	0	0	282	577	2050
09:00:00	0	0	1	0	2	1	1	181	2	0	0	184	2	0	3	0	1	5	21	213	0	0	1	234	424	2017
09:15:00	2	0	3	0	2	5	4	183	3	0	2	190	1	0	6	0	0	7	17	169	0	0	2	186	388	1899
BREAK																										
16:00:00	1	0	1	0	9	2	7	278	1	0	4	286	7	1	22	0	0	30	12	188	5	0	2	205	523	
16:15:00	1	0	0	0	9	1	32	256	3	0	0	291	6	1	4	0	3	11	7	228	2	0	1	237	540	
16:30:00	2	0	0	0	5	2	16	221	0	0	1	237	0	0	12	0	2	12	7	224	5	0	5	236	487	
16:45:00	1	0	2	0	9	3	22	278	2	0	1	302	2	4	4	0	5	10	8	183	1	0	1	192	507	2057
17:00:00	3	0	2	0	3	5	23	248	3	0	1	274	4	0	20	0	4	24	9	232	6	0	3	247	550	2084
17:15:00	1	0	3	0	6	4	19	281	2	0	0	302	2	2	10	0	3	14	8	223	1	0	2	232	552	2096
17:30:00	2	0	2	0	4	4	9	276	2	0	0	287	2	1	2	0	0	5	5	217	3	0	2	225	521	2130
17:45:00	4	0	1	0	7	5	12	273	0	0	2	285	2	0	2	0	3	4	6	221	1	0	3	228	522	2145
Grand Total	24	0	23	0	68	47	154	3769	25	1	13	3949	32	10	109	0	26	151	179	3502	33	0	29	3714	**7861**	-
Approach%	51.1%	0%	48.9%	0%		-	3.9%	95.4%	0.6%	0%		-	21.2%	6.6%	72.2%	0%		-	4.8%	94.3%	0.9%	0%		-	**-**	-
Totals %	0.3%	0%	0.3%	0%		0.6%	2%	47.9%	0.3%	0%		50.2%	0.4%	0.1%	1.4%	0%		1.9%	2.3%	44.5%	0.4%	0%		47.2%	**-**	-
Heavy	0	0	0	0		-	2	124	0	0		-	3	0	3	0		-	10	102	1	0		-	**-**	-
Heavy %	0%	0%	0%	0%		-	1.3%	3.3%	0%	0%		-	9.4%	0%	2.8%	0%		-	5.6%	2.9%	3%	0%		-	**-**	-
Bicycles	0	0	0	0		-	0	9	0	0		-	0	0	0	0		-	1	14	0	0		-	**-**	-
Bicycle %	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0.6%	0.4%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM **Weather: Clear Sky (9.22 °C)**

Start Time	N Approach EAST AVE						E Approach LAKESHORE RD E						S Approach EAST 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	1	0	3	0	2	4	1	204	0	1	0	206	1	0	4	0	0	5	19	222	1	0	1	242	457
08:15:00	3	0	1	0	0	4	2	271	0	0	0	273	0	0	0	0	0	0	6	223	0	0	2	229	506
08:30:00	0	0	0	0	1	0	3	257	0	0	0	260	0	0	8	0	1	8	8	233	1	0	0	242	510
08:45:00	1	0	1	0	2	2	2	279	3	0	0	284	1	1	7	0	0	9	13	266	3	0	0	282	577
Grand Total	5	0	5	0	5	10	8	1011	3	1	0	1023	2	1	19	0	1	22	46	944	5	0	3	995	**2050**
Approach%	50%	0%	50%	0%		-	0.8%	98.8%	0.3%	0.1%		-	9.1%	4.5%	86.4%	0%		-	4.6%	94.9%	0.5%	0%		-	**-**
Totals %	0.2%	0%	0.2%	0%		0.5%	0.4%	49.3%	0.1%	0%		49.9%	0.1%	0%	0.9%	0%		1.1%	2.2%	46%	0.2%	0%		48.5%	**-**
PHF	0.42	0	0.42	0		0.63	0.67	0.91	0.25	0.25		0.9	0.5	0.25	0.59	0		0.61	0.61	0.89	0.42	0		0.88	**-**
Heavy	0	0	0	0		0	1	56	0	0		57	0	0	0	0		0	0	33	0	0		33	**-**
Heavy %	0%	0%	0%	0%		0%	12.5%	5.5%	0%	0%		5.6%	0%	0%	0%	0%		0%	0%	3.5%	0%	0%		3.3%	**-**
Lights	5	0	5	0		10	7	955	3	1		966	2	1	19	0		22	46	911	5	0		962	**-**
Lights %	100%	0%	100%	0%		100%	87.5%	94.5%	100%	100%		94.4%	100%	100%	100%	0%		100%	100%	96.5%	100%	0%		96.7%	**-**
Single-Unit Trucks	0	0	0	0		0	1	37	0	0		38	0	0	0	0		0	0	25	0	0		25	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	12.5%	3.7%	0%	0%		3.7%	0%	0%	0%	0%		0%	0%	2.6%	0%	0%		2.5%	**-**
Buses	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	0	6	0	0		6	**-**
Buses %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	**-**
Articulated Trucks	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	0	2	0	0		2	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	**-**
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	44.4%		-	-	-	-	0%		-	-	-	-	11.1%		-	-	-	-	22.2%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	11.1%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	11.1%		**-**
Bicycles on Road	0	0	0	0	0	-	0	4	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

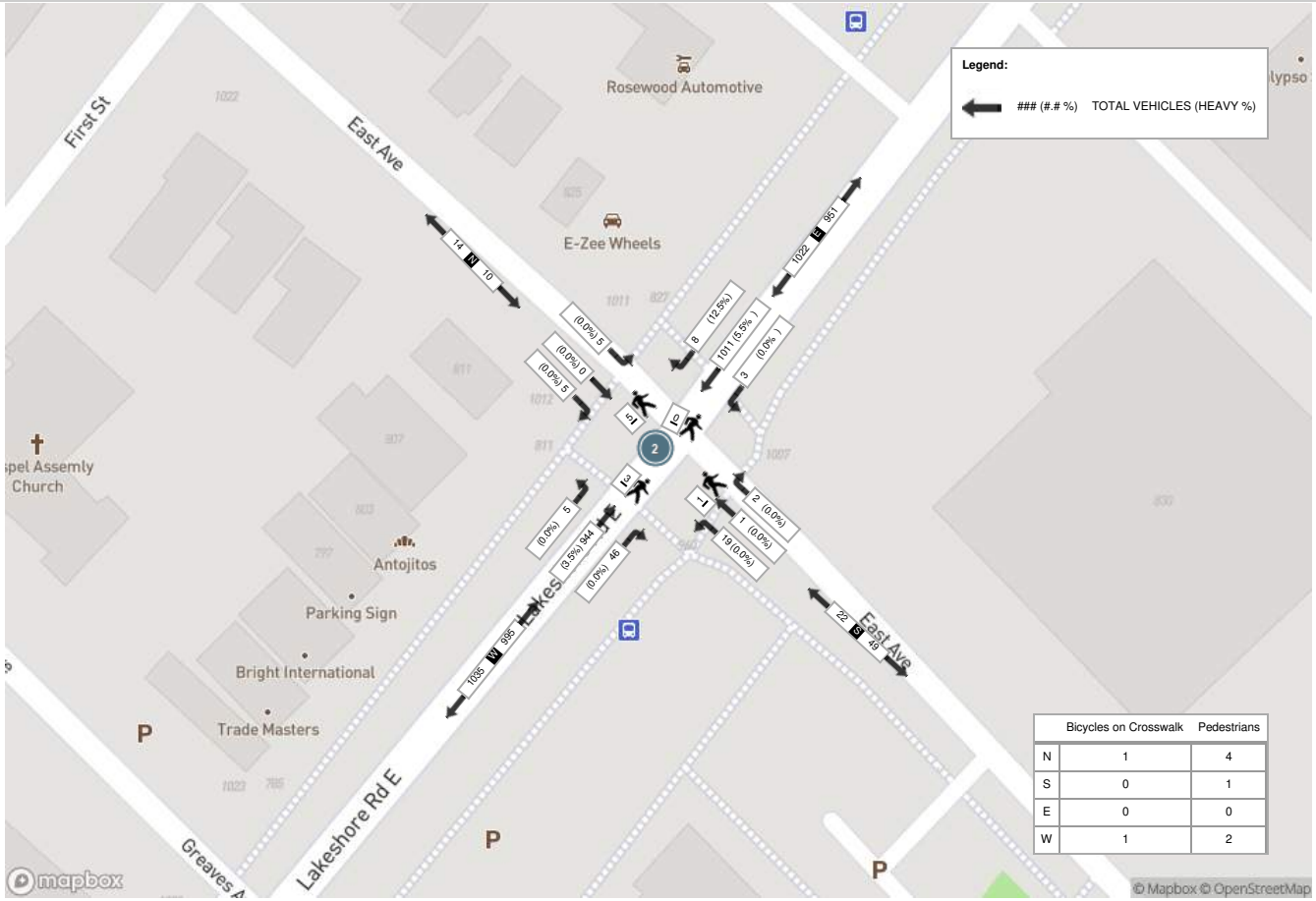
Turning Movement Count
Location Name: LAKESHORE RD E & EAST AVE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**

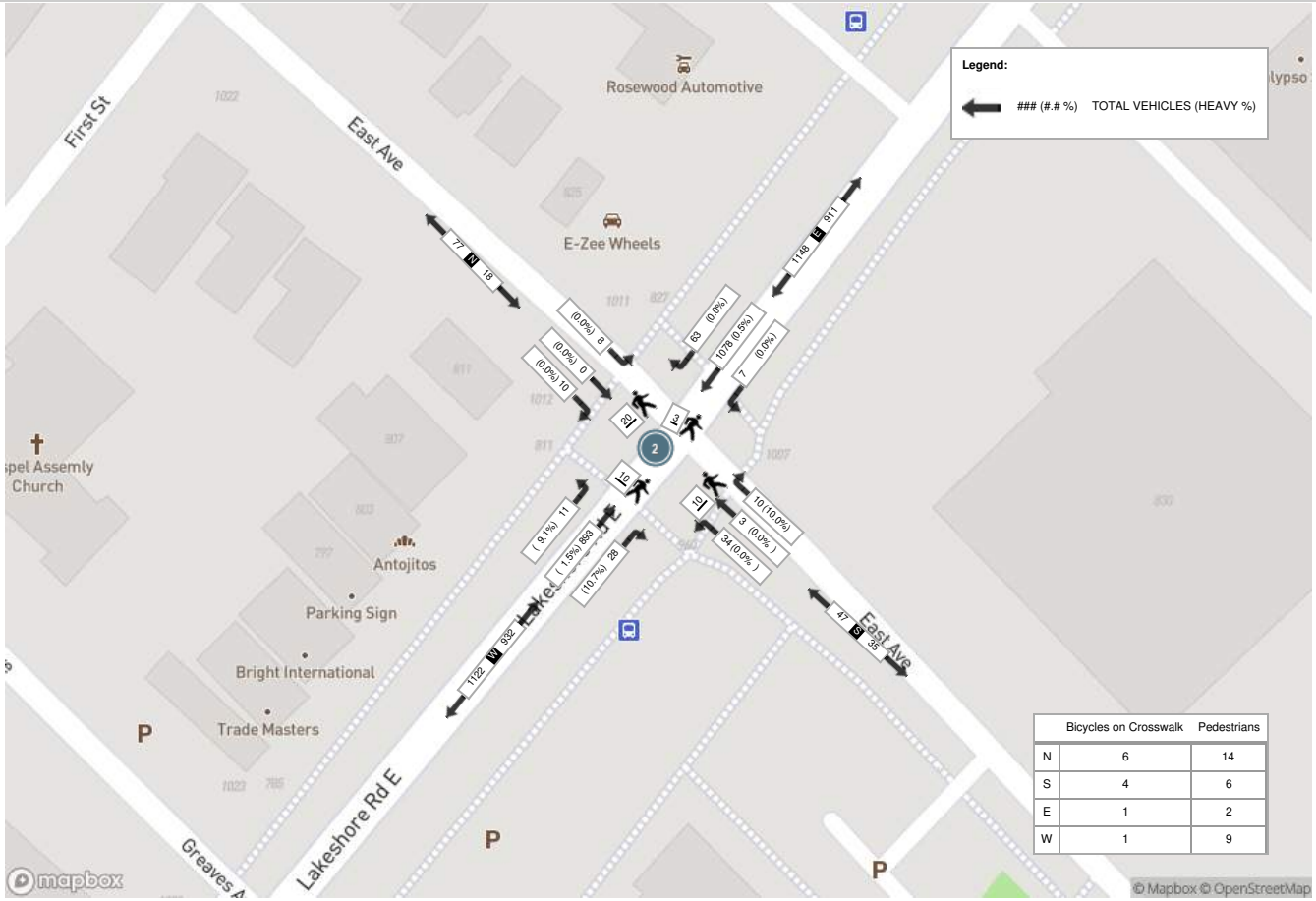
Start Time	N Approach EAST AVE						E Approach LAKESHORE RD E						S Approach EAST AVE						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	3	0	2	0	3	5	23	248	3	0	1	274	4	0	20	0	4	24	9	232	6	0	3	247	550
17:15:00	1	0	3	0	6	4	19	281	2	0	0	302	2	2	10	0	3	14	8	223	1	0	2	232	552
17:30:00	2	0	2	0	4	4	9	276	2	0	0	287	2	1	2	0	0	5	5	217	3	0	2	225	521
17:45:00	4	0	1	0	7	5	12	273	0	0	2	285	2	0	2	0	3	4	6	221	1	0	3	228	522
Grand Total	10	0	8	0	20	18	63	1078	7	0	3	1148	10	3	34	0	10	47	28	893	11	0	10	932	**2145**
Approach%	55.6%	0%	44.4%	0%		-	5.5%	93.9%	0.6%	0%		-	21.3%	6.4%	72.3%	0%		-	3%	95.8%	1.2%	0%		-	**-**
Totals %	0.5%	0%	0.4%	0%		0.8%	2.9%	50.3%	0.3%	0%		53.5%	0.5%	0.1%	1.6%	0%		2.2%	1.3%	41.6%	0.5%	0%		43.4%	**-**
PHF	0.63	0	0.67	0		0.9	0.68	0.96	0.58	0		0.95	0.63	0.38	0.43	0		0.49	0.78	0.96	0.46	0		0.94	**-**
Heavy	0	0	0	0		0	0	5	0	0		5	1	0	0	0		1	3	13	1	0		17	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	10%	0%	0%	0%		2.1%	10.7%	1.5%	9.1%	0%		1.8%	**-**
Lights	10	0	8	0		18	63	1073	7	0		1143	9	3	34	0		46	25	880	10	0		915	**-**
Lights %	100%	0%	100%	0%		100%	100%	99.5%	100%	0%		99.6%	90%	100%	100%	0%		97.9%	89.3%	98.5%	90.9%	0%		98.2%	**-**
Single-Unit Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	3	9	1	0		13	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	10.7%	1%	9.1%	0%		1.4%	**-**
Buses	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	10%	0%	0%	0%		2.1%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	14	-	-	-	-	-	2	-	-	-	-	-	6	-	-	-	-	-	9	-	**-**
Pedestrians%	-	-	-	-	32.6%		-	-	-	-	4.7%		-	-	-	-	14%		-	-	-	-	20.9%		**-**
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	14%		-	-	-	-	2.3%		-	-	-	-	9.3%		-	-	-	-	2.3%		**-**
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	1	5	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 08:00 AM - 09:00 AM **Weather: Clear Sky (9.22 °C)**



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

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	6	14
S	4	6
E	1	2
W	1	9

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & HAIG BLVD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (6 . LAKESHORE RD E & HAIG BLVD)

Start Time	N Approach HAIG BLVD					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	2	4	0	0	6	4	142	0	1	146	203	7	0	0	210	362	
07:45:00	6	9	0	2	15	8	182	0	1	190	209	3	0	0	212	417	
08:00:00	7	12	0	9	19	6	235	0	4	241	218	1	0	0	219	479	
08:15:00	12	10	1	3	23	12	276	0	1	288	217	2	0	4	219	530	1788
08:30:00	7	8	0	4	15	8	273	0	0	281	244	5	0	2	249	545	1971
08:45:00	8	5	0	4	13	7	294	0	1	301	223	5	0	0	228	542	2096
09:00:00	8	9	0	3	17	7	190	0	0	197	199	7	0	1	206	420	2037
09:15:00	2	6	0	3	8	5	184	0	4	189	152	10	0	1	162	359	1866
BREAK																	
16:00:00	7	14	0	4	21	21	278	0	4	299	208	4	0	1	212	532	
16:15:00	10	10	0	5	20	16	255	0	2	271	227	6	0	1	233	524	
16:30:00	6	5	0	1	11	16	300	0	2	316	199	8	0	1	207	534	
16:45:00	4	5	0	5	9	18	279	0	0	297	199	8	0	1	207	513	2103
17:00:00	5	9	0	3	14	21	276	0	2	297	249	3	0	3	252	563	2134
17:15:00	6	7	0	1	13	15	265	0	1	280	233	4	0	1	237	530	2140
17:30:00	7	8	0	6	15	15	280	0	5	295	218	5	0	0	223	533	2139
17:45:00	3	3	0	1	6	20	300	0	4	320	219	4	0	1	223	549	2175
Grand Total	100	124	1	54	225	199	4009	0	32	4208	3417	82	0	17	3499	**7932**	-
Approach%	44.4%	55.1%	0.4%		-	4.7%	95.3%	0%		-	97.7%	2.3%	0%		-	**-**	-
Totals %	1.3%	1.6%	0%		2.8%	2.5%	50.5%	0%		53.1%	43.1%	1%	0%		44.1%	**-**	-
Heavy	2	5	1		-	9	170	0		-	140	1	0		-	**-**	-
Heavy %	2%	4%	100%		-	4.5%	4.2%	0%		-	4.1%	1.2%	0%		-	**-**	-
Bicycles	1	7	0		-	5	7	0		-	16	0	0		-	**-**	-
Bicycle %	1%	5.6%	0%		-	2.5%	0.2%	0%		-	0.5%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)

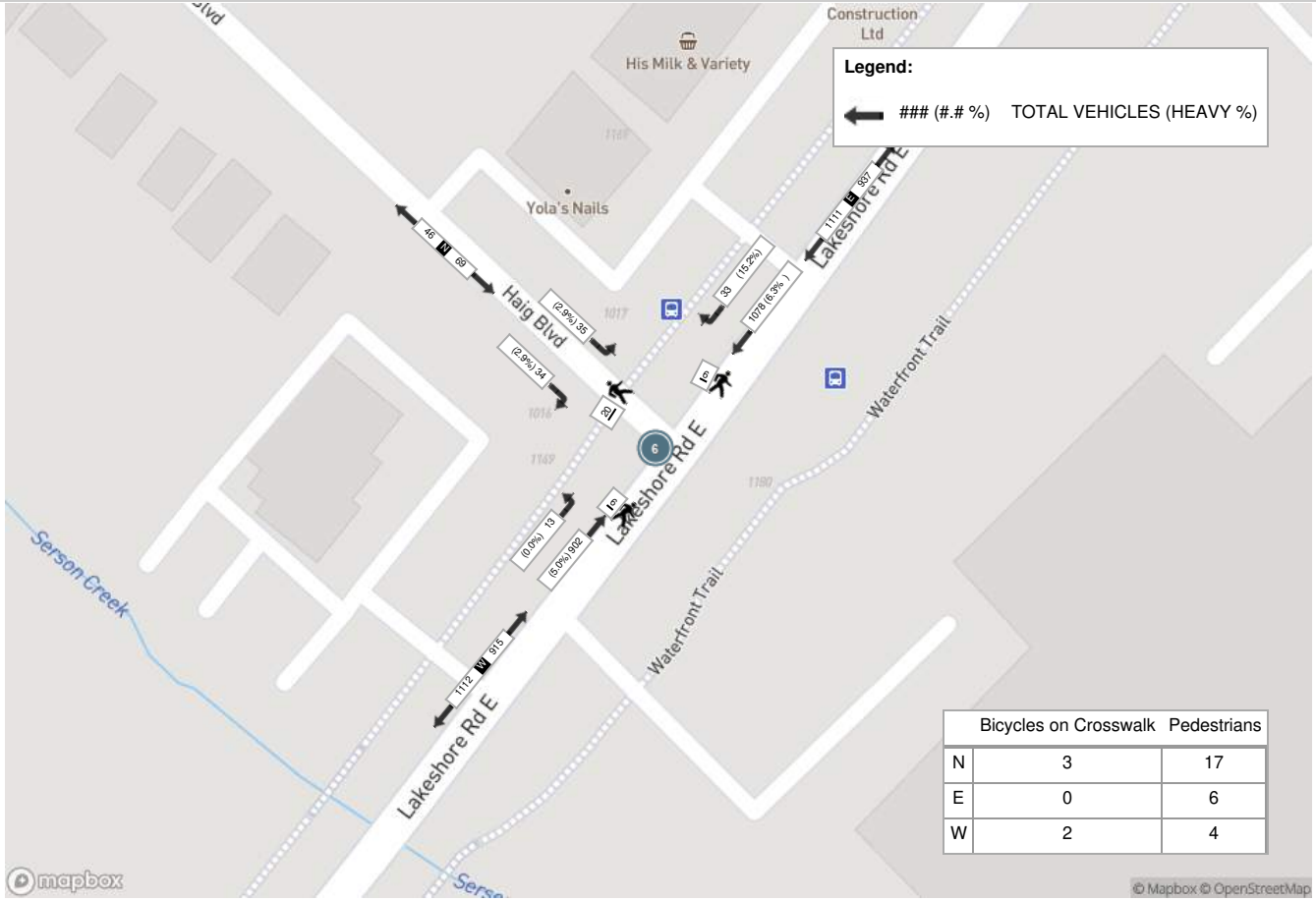
Start Time	N Approach HAIG BLVD					E Approach LAKESHORE RD E					W Approach LAKESHORE RD E					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	7	12	0	9	19	6	235	0	4	241	218	1	0	0	219	479
08:15:00	12	10	1	3	23	12	276	0	1	288	217	2	0	4	219	530
08:30:00	7	8	0	4	15	8	273	0	0	281	244	5	0	2	249	545
08:45:00	8	5	0	4	13	7	294	0	1	301	223	5	0	0	228	542
Grand Total	34	35	1	20	70	33	1078	0	6	1111	902	13	0	6	915	**2096**
Approach%	48.6%	50%	1.4%		-	3%	97%	0%		-	98.6%	1.4%	0%		-	**-**
Totals %	1.6%	1.7%	0%		3.3%	1.6%	51.4%	0%		53%	43%	0.6%	0%		43.7%	**-**
PHF	0.71	0.73	0.25		0.76	0.69	0.92	0		0.92	0.92	0.65	0		0.92	**-**
Heavy	1	1	1		3	5	68	0		73	45	0	0		45	**-**
Heavy %	2.9%	2.9%	100%		4.3%	15.2%	6.3%	0%		6.6%	5%	0%	0%		4.9%	**-**
Lights	33	34	0		67	28	1010	0		1038	857	13	0		870	**-**
Lights %	97.1%	97.1%	0%		95.7%	84.8%	93.7%	0%		93.4%	95%	100%	0%		95.1%	**-**
Single-Unit Trucks	0	0	1		1	1	44	0		45	32	0	0		32	**-**
Single-Unit Trucks %	0%	0%	100%		1.4%	3%	4.1%	0%		4.1%	3.5%	0%	0%		3.5%	**-**
Buses	1	1	0		2	4	20	0		24	9	0	0		9	**-**
Buses %	2.9%	2.9%	0%		2.9%	12.1%	1.9%	0%		2.2%	1%	0%	0%		1%	**-**
Articulated Trucks	0	0	0		0	0	4	0		4	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0.4%	0%		0.4%	0.4%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	17	-	-	-	-	6	-	-	-	-	4	-	**-**
Pedestrians%	-	-	-	53.1%		-	-	-	18.8%		-	-	-	12.5%		**-**
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	0	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	9.4%		-	-	-	0%		-	-	-	6.3%		**-**
Bicycles on Road	1	3	0	0	-	0	3	0	0	-	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)

Start Time	N Approach HAIG BLVD					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	
17:00:00	5	9	0	3	14	21	276	0	2	297	249	3	0	3	252	563
17:15:00	6	7	0	1	13	15	265	0	1	280	233	4	0	1	237	530
17:30:00	7	8	0	6	15	15	280	0	5	295	218	5	0	0	223	533
17:45:00	3	3	0	1	6	20	300	0	4	320	219	4	0	1	223	549
Grand Total	21	27	0	11	48	71	1121	0	12	1192	919	16	0	5	935	**2175**
Approach%	43.8%	56.3%	0%		-	6%	94%	0%		-	98.3%	1.7%	0%		-	**-**
Totals %	1%	1.2%	0%		2.2%	3.3%	51.5%	0%		54.8%	42.3%	0.7%	0%		43%	**-**
PHF	0.75	0.75	0		0.8	0.85	0.93	0		0.93	0.92	0.8	0		0.93	**-**
Heavy	0	0	0		0	0	15	0		15	19	1	0		20	**-**
Heavy %	0%	0%	0%		0%	0%	1.3%	0%		1.3%	2.1%	6.3%	0%		2.1%	**-**
Lights	21	27	0		48	71	1106	0		1177	900	15	0		915	**-**
Lights %	100%	100%	0%		100%	100%	98.7%	0%		98.7%	97.9%	93.8%	0%		97.9%	**-**
Single-Unit Trucks	0	0	0		0	0	6	0		6	8	1	0		9	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.5%	0%		0.5%	0.9%	6.3%	0%		1%	**-**
Buses	0	0	0		0	0	9	0		9	8	0	0		8	**-**
Buses %	0%	0%	0%		0%	0%	0.8%	0%		0.8%	0.9%	0%	0%		0.9%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	3	0	0		3	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0.3%	0%	0%		0.3%	**-**
Pedestrians	-	-	-	10	-	-	-	-	10	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	35.7%		-	-	-	35.7%		-	-	-	3.6%		**-**
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	2	-	-	-	-	4	-	**-**
Bicycles on Crosswalk%	-	-	-	3.6%		-	-	-	7.1%		-	-	-	14.3%		**-**
Bicycles on Road	0	3	0	0	-	1	1	0	0	-	4	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

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

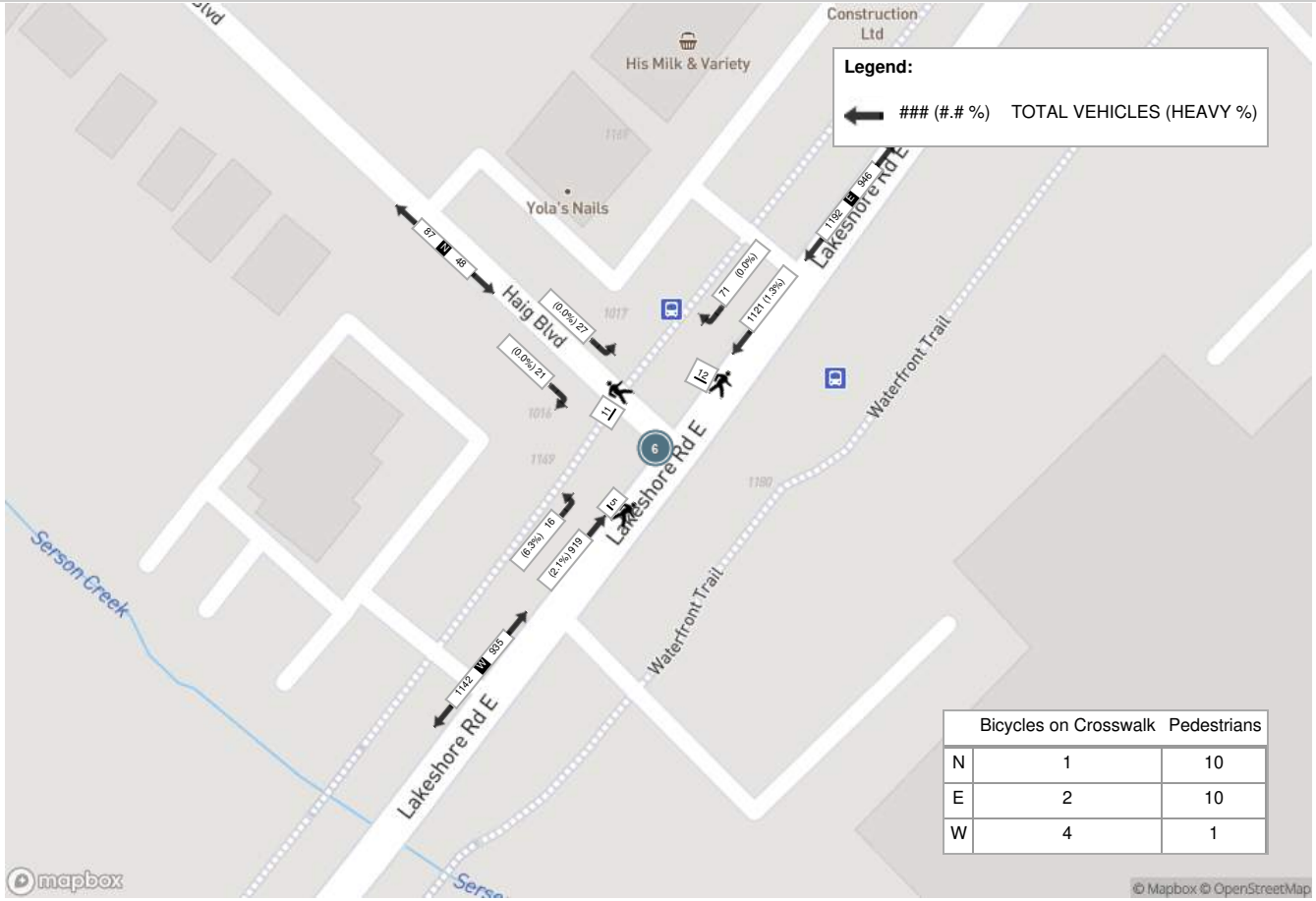
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)



	Bicycles on Crosswalk	Pedestrians
N	3	17
E	0	6
W	2	4

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

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)



	Bicycles on Crosswalk	Pedestrians
N	1	10
E	2	10
W	4	1

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & HYDRO RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (5 . LAKESHORE RD E & HYDRO RD)

Start Time	N Approach HYDRO RD						E Approach LAKESHORE RD E						S Approach HYDRO RD						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	0	0	0	1	0	137	7	0	0	144	4	0	0	0	1	4	3	202	0	0	0	205	354	
07:45:00	0	0	0	0	2	0	0	174	10	0	0	184	1	0	0	0	6	1	4	218	1	0	0	223	408	
08:00:00	0	0	0	0	5	0	0	223	17	0	0	240	5	0	1	0	3	6	4	221	0	0	0	225	471	
08:15:00	2	0	0	0	6	2	0	273	12	0	0	285	11	0	2	0	1	13	2	215	0	0	0	217	517	1750
08:30:00	2	0	2	0	3	4	0	269	10	0	0	279	10	0	0	0	4	10	3	233	1	0	0	237	530	1926
08:45:00	0	0	0	0	2	0	1	278	12	0	0	291	2	0	2	0	0	4	1	228	1	0	0	230	525	2043
09:00:00	0	0	0	0	5	0	0	185	12	0	0	197	5	0	0	0	2	5	0	201	0	0	0	201	403	1975
09:15:00	0	0	1	0	4	1	0	178	7	0	0	185	8	0	3	0	4	11	0	159	0	0	0	159	356	1814
BREAK																										
16:00:00	0	0	0	0	6	0	0	281	6	0	2	287	19	0	7	0	3	26	6	188	0	0	0	194	507	
16:15:00	0	0	0	0	5	0	1	257	6	0	0	264	10	0	2	0	5	12	3	222	0	0	0	225	501	
16:30:00	1	0	0	0	2	1	0	302	4	1	0	307	12	0	4	0	6	16	3	209	1	0	0	213	537	
16:45:00	0	0	0	0	7	0	2	282	5	0	1	289	14	0	3	0	5	17	1	179	0	0	0	180	486	2031
17:00:00	2	0	0	0	8	2	0	282	4	0	0	286	18	0	8	0	10	26	2	242	1	0	0	245	559	2083
17:15:00	0	0	0	0	2	0	0	266	4	0	1	270	15	0	1	0	10	16	1	212	1	0	0	214	500	2082
17:30:00	2	0	0	0	1	2	1	282	4	0	1	287	10	0	2	0	7	12	2	216	0	0	0	218	519	2064
17:45:00	0	0	1	0	2	1	1	296	6	0	0	303	15	0	1	0	11	16	1	206	1	0	0	208	528	2106
Grand Total	10	0	4	0	60	14	6	3965	126	1	5	4098	159	0	36	0	78	195	36	3351	7	0	0	3394	**7701**	-
Approach%	71.4%	0%	28.6%	0%		-	0.1%	96.8%	3.1%	0%		-	81.5%	0%	18.5%	0%		-	1.1%	98.7%	0.2%	0%		-	-	-
Totals %	0.1%	0%	0.1%	0%		0.2%	0.1%	51.5%	1.6%	0%		53.2%	2.1%	0%	0.5%	0%		2.5%	0.5%	43.5%	0.1%	0%		44.1%	-	-
Heavy	1	0	0	0		-	0	153	14	0		-	10	0	2	0		-	2	135	0	0		-	-	-
Heavy %	10%	0%	0%	0%		-	0%	3.9%	11.1%	0%		-	6.3%	0%	5.6%	0%		-	5.6%	4%	0%	0%		-	-	-
Bicycles	0	0	0	0		-	0	8	0	0		-	3	0	0	0		-	0	12	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	1.9%	0%	0%	0%		-	0%	0.4%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & HYDRO RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)

Start Time	N Approach HYDRO RD						E Approach LAKESHORE RD E						S Approach HYDRO RD						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	0	0	5	0	0	223	17	0	0	240	5	0	1	0	3	6	4	221	0	0	0	225	471
08:15:00	2	0	0	0	6	2	0	273	12	0	0	285	11	0	2	0	1	13	2	215	0	0	0	217	517
08:30:00	2	0	2	0	3	4	0	269	10	0	0	279	10	0	0	0	4	10	3	233	1	0	0	237	530
08:45:00	0	0	0	0	2	0	1	278	12	0	0	291	2	0	2	0	0	4	1	228	1	0	0	230	525
Grand Total	4	0	2	0	16	6	1	1043	51	0	0	1095	28	0	5	0	8	33	10	897	2	0	0	909	**2043**
Approach%	66.7%	0%	33.3%	0%		-	0.1%	95.3%	4.7%	0%		-	84.8%	0%	15.2%	0%		-	1.1%	98.7%	0.2%	0%		-	**-**
Totals %	0.2%	0%	0.1%	0%		0.3%	0%	51.1%	2.5%	0%		53.6%	1.4%	0%	0.2%	0%		1.6%	0.5%	43.9%	0.1%	0%		44.5%	**-**
PHF	0.5	0	0.25	0		0.38	0.25	0.94	0.75	0		0.94	0.64	0	0.63	0		0.63	0.63	0.96	0.5	0		0.96	**-**
Heavy	1	0	0	0		1	0	58	6	0		64	4	0	0	0		4	0	42	0	0		42	**-**
Heavy %	25%	0%	0%	0%		16.7%	0%	5.6%	11.8%	0%		5.8%	14.3%	0%	0%	0%		12.1%	0%	4.7%	0%	0%		4.6%	**-**
Lights	3	0	2	0		5	1	985	45	0		1031	24	0	5	0		29	10	855	2	0		867	**-**
Lights %	75%	0%	100%	0%		83.3%	100%	94.4%	88.2%	0%		94.2%	85.7%	0%	100%	0%		87.9%	100%	95.3%	100%	0%		95.4%	**-**
Single-Unit Trucks	1	0	0	0		1	0	40	6	0		46	4	0	0	0		4	0	29	0	0		29	**-**
Single-Unit Trucks %	25%	0%	0%	0%		16.7%	0%	3.8%	11.8%	0%		4.2%	14.3%	0%	0%	0%		12.1%	0%	3.2%	0%	0%		3.2%	**-**
Buses	0	0	0	0		0	0	14	0	0		14	0	0	0	0		0	0	9	0	0		9	**-**
Buses %	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	**-**
Articulated Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	15	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	62.5%		-	-	-	-	0%		-	-	-	-	16.7%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	4.2%		-	-	-	-	0%		-	-	-	-	16.7%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	5	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & HYDRO RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

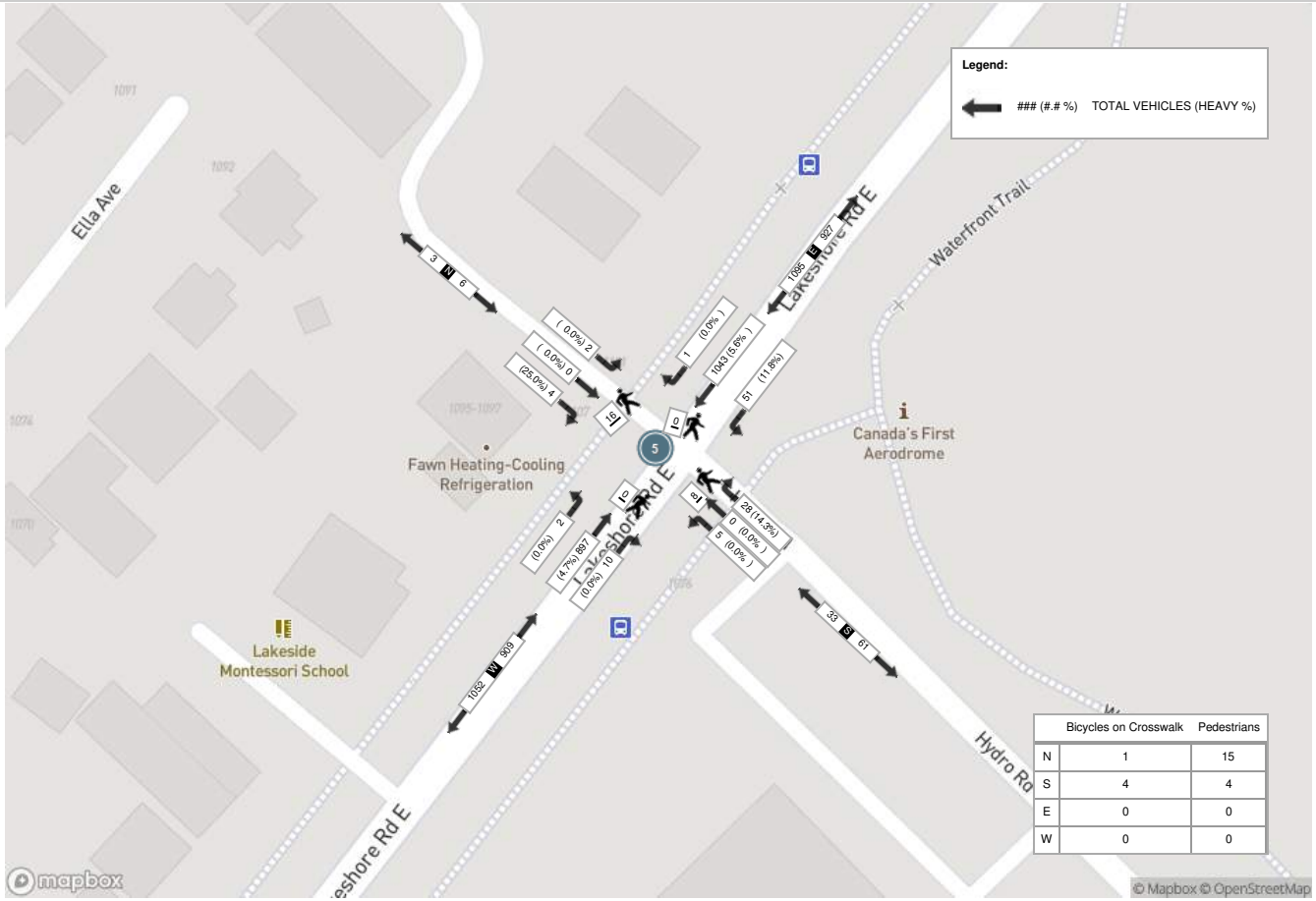
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**

Start Time	N Approach HYDRO RD						E Approach LAKESHORE RD E						S Approach HYDRO RD						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	
17:00:00	2	0	0	0	8	2	0	282	4	0	0	286	18	0	8	0	10	26	2	242	1	0	0	245	559
17:15:00	0	0	0	0	2	0	0	266	4	0	1	270	15	0	1	0	10	16	1	212	1	0	0	214	500
17:30:00	2	0	0	0	1	2	1	282	4	0	1	287	10	0	2	0	7	12	2	216	0	0	0	218	519
17:45:00	0	0	1	0	2	1	1	296	6	0	0	303	15	0	1	0	11	16	1	206	1	0	0	208	528
Grand Total	4	0	1	0	13	5	2	1126	18	0	2	1146	58	0	12	0	38	70	6	876	3	0	0	885	**2106**
Approach%	80%	0%	20%	0%		-	0.2%	98.3%	1.6%	0%		-	82.9%	0%	17.1%	0%		-	0.7%	99%	0.3%	0%		-	**-**
Totals %	0.2%	0%	0%	0%		0.2%	0.1%	53.5%	0.9%	0%		54.4%	2.8%	0%	0.6%	0%		3.3%	0.3%	41.6%	0.1%	0%		42%	**-**
PHF	0.5	0	0.25	0		0.63	0.5	0.95	0.75	0		0.95	0.81	0	0.38	0		0.67	0.75	0.9	0.75	0		0.9	**-**
Heavy	0	0	0	0		0	0	15	0	0		15	2	0	0	0		2	0	18	0	0		18	**-**
Heavy %	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.3%	3.4%	0%	0%	0%		2.9%	0%	2.1%	0%	0%		2%	**-**
Lights	4	0	1	0		5	2	1111	18	0		1131	56	0	12	0		68	6	858	3	0		867	**-**
Lights %	100%	0%	100%	0%		100%	100%	98.7%	100%	0%		98.7%	96.6%	0%	100%	0%		97.1%	100%	97.9%	100%	0%		98%	**-**
Single-Unit Trucks	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	0	9	0	0		9	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	**-**
Buses	0	0	0	0		0	0	9	0	0		9	0	0	0	0		0	0	8	0	0		8	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	2	0	0	0		2	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	3.4%	0%	0%	0%		2.9%	0%	0.1%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	-	11	-	-	-	-	-	2	-	-	-	-	-	11	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	20.8%		-	-	-	-	3.8%		-	-	-	-	20.8%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	27	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	3.8%		-	-	-	-	0%		-	-	-	-	50.9%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	4	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

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

Peak Hour: 08:00 AM - 09:00 AM **Weather: Clear Sky (9.22 °C)**



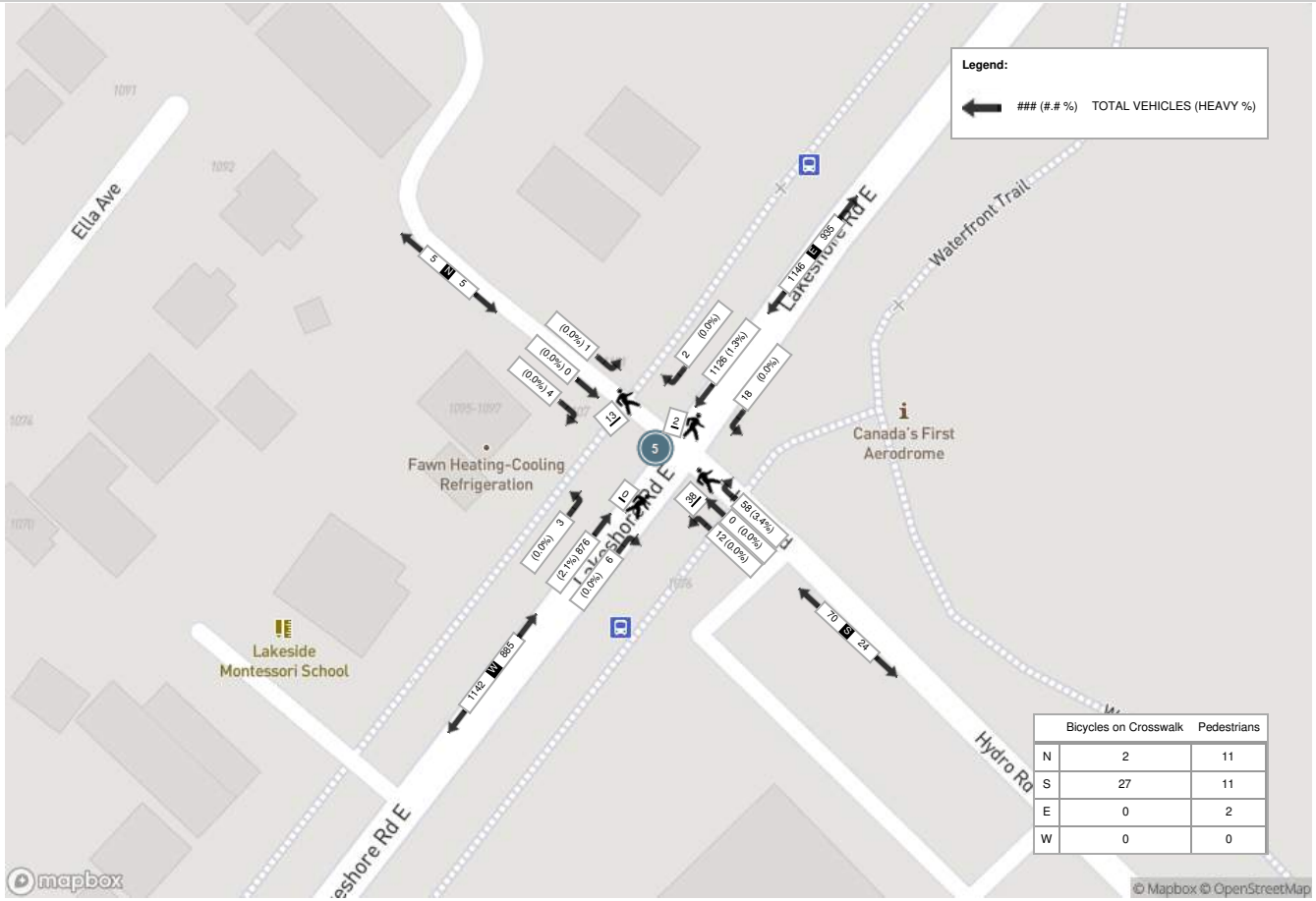
	Bicycles on Crosswalk	Pedestrians
N	1	15
S	4	4
E	0	0
W	0	0

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & HYDRO RD
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	2	11
S	27	11
E	0	2
W	0	0

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & LAKEFRONT PROMENADE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (3 . LAKESHORE RD E & LAKEFRONT PROMENADE)

Start Time	E Approach LAKESHORE RD E					S Approach LAKEFRONT PROMENADE					W Approach LAKESHORE RD E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
07:30:00	120	4	0	2	124	5	8	0	4	13	13	188	0	2	201	338	
07:45:00	168	7	0	1	175	4	4	0	0	8	11	237	0	5	248	431	
08:00:00	220	6	0	0	226	0	4	0	3	4	8	211	0	0	219	449	
08:15:00	273	2	0	0	275	7	4	0	2	11	10	214	0	4	224	510	1728
08:30:00	254	6	0	0	260	2	8	0	0	10	5	210	0	5	215	485	1875
08:45:00	287	6	0	0	293	5	5	0	2	10	11	253	1	2	265	568	2012
09:00:00	179	10	0	1	189	6	10	0	3	16	12	204	0	1	216	421	1984
09:15:00	184	8	0	0	192	8	7	0	1	15	13	152	0	1	165	372	1846
BREAK																	
16:00:00	278	8	0	1	286	18	26	0	2	44	21	178	0	5	199	529	
16:15:00	251	8	0	3	259	8	39	0	6	47	16	213	0	5	229	535	
16:30:00	244	13	0	0	257	10	27	0	3	37	22	207	0	4	229	523	
16:45:00	277	4	0	2	281	6	21	0	6	27	12	174	0	1	186	494	2081
17:00:00	272	6	0	2	278	11	33	0	4	44	19	221	0	7	240	562	2114
17:15:00	244	7	0	0	251	9	33	0	6	42	25	193	0	2	218	511	2090
17:30:00	284	6	0	0	290	9	23	0	1	32	17	209	0	0	226	548	2115
17:45:00	261	15	0	1	276	11	27	0	5	38	29	191	0	3	220	534	2155
Grand Total	3796	116	0	13	3912	119	279	0	48	398	244	3255	1	47	3500	**7810**	-
Approach%	97%	3%	0%		-	29.9%	70.1%	0%		-	7%	93%	0%		-	**-**	-
Totals %	48.6%	1.5%	0%		50.1%	1.5%	3.6%	0%		5.1%	3.1%	41.7%	0%		44.8%	**-**	-
Heavy	121	11	0		-	8	10	0		-	3	108	0		-	**-**	-
Heavy %	3.2%	9.5%	0%		-	6.7%	3.6%	0%		-	1.2%	3.3%	0%		-	**-**	-
Bicycles	7	0	0		-	0	1	0		-	0	11	0		-	**-**	-
Bicycle %	0.2%	0%	0%		-	0%	0.4%	0%		-	0%	0.3%	0%		-	**-**	-

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

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)

Start Time	E Approach LAKESHORE RD E					S Approach LAKEFRONT PROMENADE					W Approach LAKESHORE RD E					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
08:00:00	220	6	0	0	226	0	4	0	3	4	8	211	0	0	219	449
08:15:00	273	2	0	0	275	7	4	0	2	11	10	214	0	4	224	510
08:30:00	254	6	0	0	260	2	8	0	0	10	5	210	0	5	215	485
08:45:00	287	6	0	0	293	5	5	0	2	10	11	253	1	2	265	568
Grand Total	1034	20	0	0	1054	14	21	0	7	35	34	888	1	11	923	**2012**
Approach%	98.1%	1.9%	0%		-	40%	60%	0%		-	3.7%	96.2%	0.1%		-	**-**
Totals %	51.4%	1%	0%		52.4%	0.7%	1%	0%		1.7%	1.7%	44.1%	0%		45.9%	**-**
PHF	0.9	0.83	0		0.9	0.5	0.66	0		0.8	0.77	0.88	0.25		0.87	**-**
Heavy	50	5	0		55	1	5	0		6	1	36	0		37	**-**
Heavy %	4.8%	25%	0%		5.2%	7.1%	23.8%	0%		17.1%	2.9%	4.1%	0%		4%	**-**
Lights	984	15	0		999	13	16	0		29	33	852	1		886	**-**
Lights %	95.2%	75%	0%		94.8%	92.9%	76.2%	0%		82.9%	97.1%	95.9%	100%		96%	**-**
Single-Unit Trucks	32	5	0		37	1	4	0		5	1	26	0		27	**-**
Single-Unit Trucks %	3.1%	25%	0%		3.5%	7.1%	19%	0%		14.3%	2.9%	2.9%	0%		2.9%	**-**
Buses	12	0	0		12	0	0	0		0	0	6	0		6	**-**
Buses %	1.2%	0%	0%		1.1%	0%	0%	0%		0%	0%	0.7%	0%		0.7%	**-**
Articulated Trucks	6	0	0		6	0	1	0		1	0	4	0		4	**-**
Articulated Trucks %	0.6%	0%	0%		0.6%	0%	4.8%	0%		2.9%	0%	0.5%	0%		0.4%	**-**
Pedestrians	-	-	-	0	-	-	-	-	5	-	-	-	-	11	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	27.8%		-	-	-	61.1%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	11.1%		-	-	-	0%		**-**
Bicycles on Road	3	0	0	0	-	0	1	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

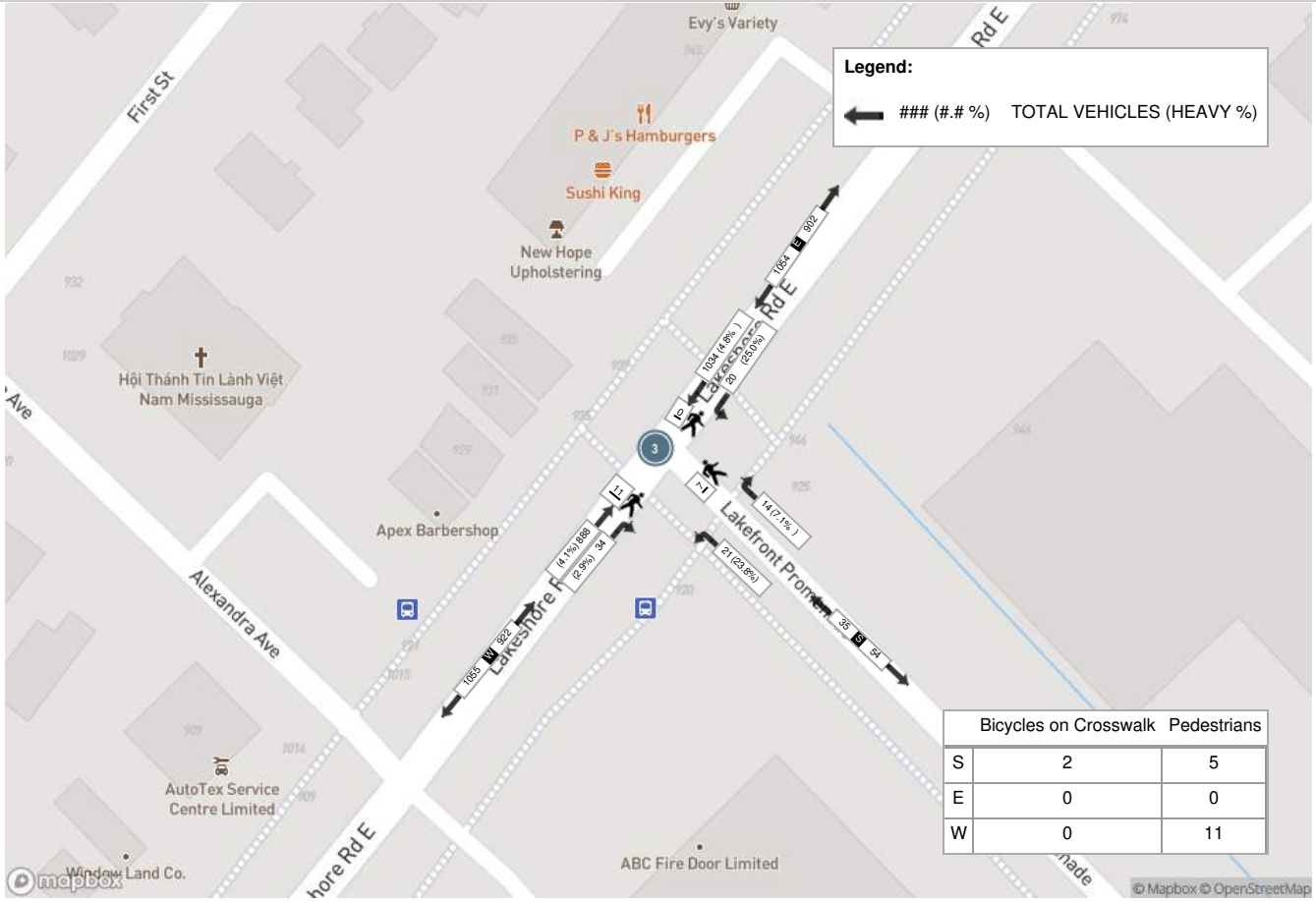
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)

Start Time	E Approach LAKESHORE RD E					S Approach LAKEFRONT PROMENADE					W Approach LAKESHORE RD E					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
17:00:00	272	6	0	2	278	11	33	0	4	44	19	221	0	7	240	562
17:15:00	244	7	0	0	251	9	33	0	6	42	25	193	0	2	218	511
17:30:00	284	6	0	0	290	9	23	0	1	32	17	209	0	0	226	548
17:45:00	261	15	0	1	276	11	27	0	5	38	29	191	0	3	220	534
Grand Total	1061	34	0	3	1095	40	116	0	16	156	90	814	0	12	904	**2155**
Approach%	96.9%	3.1%	0%		-	25.6%	74.4%	0%		-	10%	90%	0%		-	**-**
Totals %	49.2%	1.6%	0%		50.8%	1.9%	5.4%	0%		7.2%	4.2%	37.8%	0%		41.9%	**-**
PHF	0.93	0.57	0		0.94	0.91	0.88	0		0.89	0.78	0.92	0		0.94	**-**
Heavy	5	2	0		7	0	0	0		0	0	15	0		15	**-**
Heavy %	0.5%	5.9%	0%		0.6%	0%	0%	0%		0%	0%	1.8%	0%		1.7%	**-**
Lights	1056	32	0		1088	40	116	0		156	90	799	0		889	**-**
Lights %	99.5%	94.1%	0%		99.4%	100%	100%	0%		100%	100%	98.2%	0%		98.3%	**-**
Single-Unit Trucks	1	2	0		3	0	0	0		0	0	10	0		10	**-**
Single-Unit Trucks %	0.1%	5.9%	0%		0.3%	0%	0%	0%		0%	0%	1.2%	0%		1.1%	**-**
Buses	4	0	0		4	0	0	0		0	0	4	0		4	**-**
Buses %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.5%	0%		0.4%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	**-**
Pedestrians	-	-	-	1	-	-	-	-	4	-	-	-	-	9	-	**-**
Pedestrians%	-	-	-	3.2%		-	-	-	12.9%		-	-	-	29%		**-**
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	12	-	-	-	-	3	-	**-**
Bicycles on Crosswalk%	-	-	-	6.5%		-	-	-	38.7%		-	-	-	9.7%		**-**
Bicycles on Road	3	0	0	0	-	0	0	0	0	-	0	3	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

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

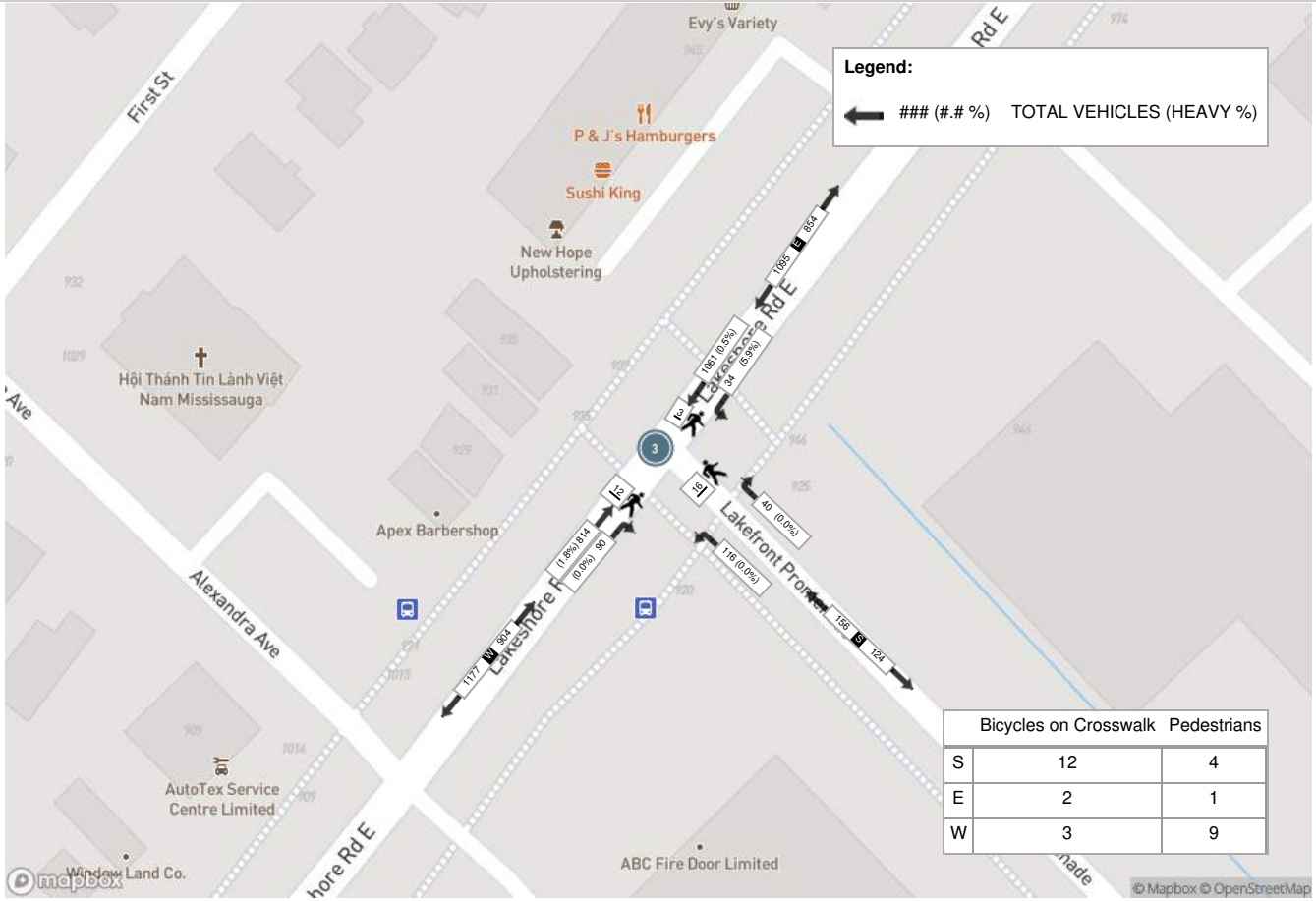
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)



	Bicycles on Crosswalk	Pedestrians
S	2	5
E	0	0
W	0	11

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

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)



	Bicycles on Crosswalk	Pedestrians
S	12	4
E	2	1
W	3	9

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & OGDEN AVE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (4 . LAKESHORE RD E & OGDEN AVE)

Start Time	N Approach OGDEN AVE						E Approach LAKESHORE RD E						S Approach OGDEN 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	6	0	9	0	0	15	8	124	1	0	0	133	0	0	0	0	2	0	1	185	9	0	1	195	343	
07:45:00	4	0	12	0	3	16	14	162	1	0	1	177	0	0	0	0	5	0	1	226	12	0	1	239	432	
08:00:00	21	0	17	0	6	38	18	211	1	0	1	230	0	0	0	0	3	0	1	185	18	0	1	204	472	
08:15:00	20	0	20	0	6	40	17	252	0	0	2	269	0	0	0	0	4	0	0	201	25	0	3	226	535	1782
08:30:00	16	0	24	0	2	40	16	244	0	0	4	260	0	0	0	0	4	0	1	196	11	0	1	208	508	1947
08:45:00	17	0	8	0	4	25	16	273	0	0	2	289	0	0	0	0	1	0	0	236	14	0	1	250	564	2079
09:00:00	10	0	8	0	5	18	11	178	0	0	1	189	0	0	0	0	1	0	0	188	13	0	0	201	408	2015
09:15:00	8	0	7	0	2	15	10	171	0	0	3	181	0	0	0	0	3	0	0	147	6	0	0	153	349	1829
BREAK																										
16:00:00	7	0	14	0	13	21	12	275	0	0	2	287	0	0	1	0	3	1	0	184	9	0	2	193	502	
16:15:00	7	0	7	0	9	14	22	235	0	0	1	257	3	0	0	0	6	3	0	208	13	0	0	221	495	
16:30:00	11	0	7	0	2	18	14	287	1	0	6	302	1	0	0	0	7	1	0	208	9	0	4	217	538	
16:45:00	5	0	8	0	11	13	29	256	0	0	2	285	0	0	1	0	7	1	0	180	10	0	1	190	489	2024
17:00:00	7	0	13	0	5	20	20	270	0	0	4	290	0	0	1	0	8	1	1	231	4	0	2	236	547	2069
17:15:00	11	0	18	0	1	29	19	249	0	0	3	268	1	0	1	0	9	2	0	194	11	0	4	205	504	2078
17:30:00	15	0	11	0	5	26	14	271	0	0	1	285	1	0	0	0	2	1	0	200	9	1	0	210	522	2062
17:45:00	9	0	12	0	3	21	18	280	0	0	4	298	0	0	1	0	5	1	0	195	12	0	1	207	527	2100
Grand Total	174	0	195	0	77	369	258	3738	4	0	37	4000	6	0	5	0	70	11	5	3164	185	1	22	3355	**7735**	-
Approach%	47.2%	0%	52.8%	0%		-	6.5%	93.5%	0.1%	0%		-	54.5%	0%	45.5%	0%		-	0.1%	94.3%	5.5%	0%		-	**-**	-
Totals %	2.2%	0%	2.5%	0%		4.8%	3.3%	48.3%	0.1%	0%		51.7%	0.1%	0%	0.1%	0%		0.1%	0.1%	40.9%	2.4%	0%		43.4%	**-**	-
Heavy	3	0	22	0		-	31	133	0	0		-	0	0	0	0		-	0	115	2	0		-	**-**	-
Heavy %	1.7%	0%	11.3%	0%		-	12%	3.6%	0%	0%		-	0%	0%	0%	0%		-	0%	3.6%	1.1%	0%		-	**-**	-
Bicycles	2	0	0	0		-	1	7	0	0		-	0	0	0	0		-	0	11	0	0		-	**-**	-
Bicycle %	1.1%	0%	0%	0%		-	0.4%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0%	0.3%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (9.22 °C)

Start Time	N Approach OGDEN AVE						E Approach LAKESHORE RD E						S Approach OGDEN 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	21	0	17	0	6	38	18	211	1	0	1	230	0	0	0	0	3	0	1	185	18	0	1	204	472
08:15:00	20	0	20	0	6	40	17	252	0	0	2	269	0	0	0	0	4	0	0	201	25	0	3	226	535
08:30:00	16	0	24	0	2	40	16	244	0	0	4	260	0	0	0	0	4	0	1	196	11	0	1	208	508
08:45:00	17	0	8	0	4	25	16	273	0	0	2	289	0	0	0	0	1	0	0	236	14	0	1	250	564
Grand Total	74	0	69	0	18	143	67	980	1	0	9	1048	0	0	0	0	12	0	2	818	68	0	6	888	**2079**
Approach%	51.7%	0%	48.3%	0%		-	6.4%	93.5%	0.1%	0%		-	0%	0%	0%	0%		-	0.2%	92.1%	7.7%	0%		-	**-**
Totals %	3.6%	0%	3.3%	0%		6.9%	3.2%	47.1%	0%	0%		50.4%	0%	0%	0%	0%		0%	0.1%	39.3%	3.3%	0%		42.7%	**-**
PHF	0.88	0	0.72	0		0.89	0.93	0.9	0.25	0		0.91	0	0	0	0		0	0.5	0.87	0.68	0		0.89	**-**
Heavy	1	0	5	0		6	11	54	0	0		65	0	0	0	0		0	0	39	1	0		40	**-**
Heavy %	1.4%	0%	7.2%	0%		4.2%	16.4%	5.5%	0%	0%		6.2%	0%	0%	0%	0%		0%	0%	4.8%	1.5%	0%		4.5%	**-**
Lights	73	0	64	0		137	56	926	1	0		983	0	0	0	0		0	2	779	67	0		848	**-**
Lights %	98.6%	0%	92.8%	0%		95.8%	83.6%	94.5%	100%	0%		93.8%	0%	0%	0%	0%		0%	100%	95.2%	98.5%	0%		95.5%	**-**
Single-Unit Trucks	1	0	0	0		1	4	37	0	0		41	0	0	0	0		0	0	31	0	0		31	**-**
Single-Unit Trucks %	1.4%	0%	0%	0%		0.7%	6%	3.8%	0%	0%		3.9%	0%	0%	0%	0%		0%	0%	3.8%	0%	0%		3.5%	**-**
Buses	0	0	5	0		5	7	13	0	0		20	0	0	0	0		0	0	4	1	0		5	**-**
Buses %	0%	0%	7.2%	0%		3.5%	10.4%	1.3%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	0.5%	1.5%	0%		0.6%	**-**
Articulated Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	**-**
Pedestrians	-	-	-	-	15	-	-	-	-	-	8	-	-	-	-	-	8	-	-	-	-	-	5	-	**-**
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	17.8%		-	-	-	-	17.8%		-	-	-	-	11.1%		**-**
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	6.7%		-	-	-	-	2.2%		-	-	-	-	8.9%		-	-	-	-	2.2%		**-**
Bicycles on Road	0	0	0	0	0	-	1	3	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: LAKESHORE RD E & OGDEN AVE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

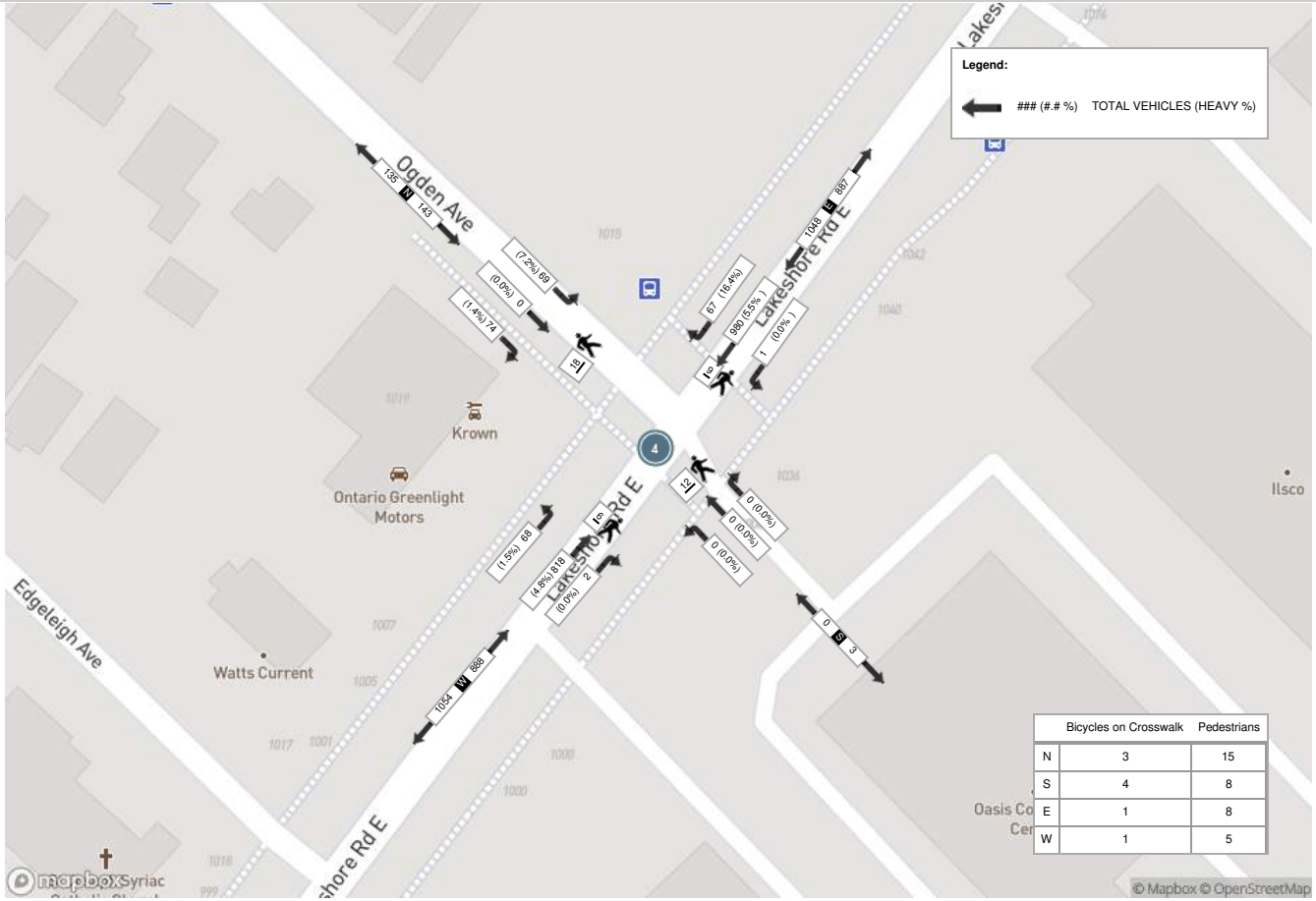
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**

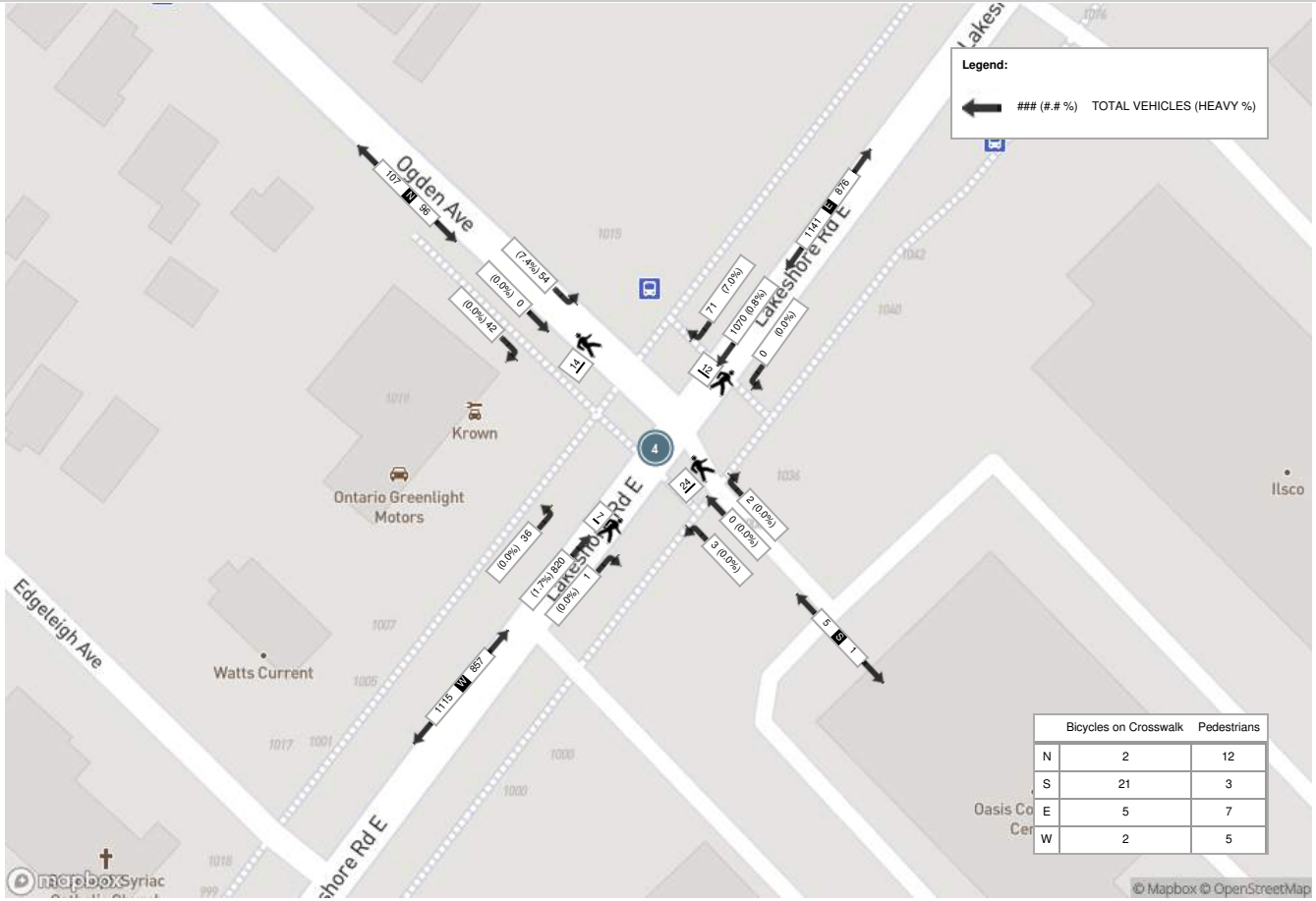
Start Time	N Approach OGDEN AVE						E Approach LAKESHORE RD E						S Approach OGDEN AVE						W Approach LAKESHORE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	7	0	13	0	5	20	20	270	0	0	4	290	0	0	1	0	8	1	1	231	4	0	2	236	547
17:15:00	11	0	18	0	1	29	19	249	0	0	3	268	1	0	1	0	9	2	0	194	11	0	4	205	504
17:30:00	15	0	11	0	5	26	14	271	0	0	1	285	1	0	0	0	2	1	0	200	9	1	0	210	522
17:45:00	9	0	12	0	3	21	18	280	0	0	4	298	0	0	1	0	5	1	0	195	12	0	1	207	527
Grand Total	42	0	54	0	14	96	71	1070	0	0	12	1141	2	0	3	0	24	5	1	820	36	1	7	858	**2100**
Approach%	43.8%	0%	56.3%	0%		-	6.2%	93.8%	0%	0%		-	40%	0%	60%	0%		-	0.1%	95.6%	4.2%	0.1%		-	**-**
Totals %	2%	0%	2.6%	0%		4.6%	3.4%	51%	0%	0%		54.3%	0.1%	0%	0.1%	0%		0.2%	0%	39%	1.7%	0%		40.9%	**-**
PHF	0.7	0	0.75	0		0.83	0.89	0.96	0	0		0.96	0.5	0	0.75	0		0.63	0.25	0.89	0.75	0.25		0.91	**-**
Heavy	0	0	4	0		4	5	9	0	0		14	0	0	0	0		0	0	14	0	0		14	**-**
Heavy %	0%	0%	7.4%	0%		4.2%	7%	0.8%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.6%	**-**
Lights	42	0	50	0		92	66	1061	0	0		1127	2	0	3	0		5	1	806	36	1		844	**-**
Lights %	100%	0%	92.6%	0%		95.8%	93%	99.2%	0%	0%		98.8%	100%	0%	100%	0%		100%	100%	98.3%	100%	100%		98.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	0	9	0	0		9	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1%	**-**
Buses	0	0	4	0		4	5	3	0	0		8	0	0	0	0		0	0	4	0	0		4	**-**
Buses %	0%	0%	7.4%	0%		4.2%	7%	0.3%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	-	12	-	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	5	-	**-**
Pedestrians%	-	-	-	-	21.1%		-	-	-	-	12.3%		-	-	-	-	5.3%		-	-	-	-	8.8%		**-**
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	21	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	3.5%		-	-	-	-	8.8%		-	-	-	-	36.8%		-	-	-	-	3.5%		**-**
Bicycles on Road	1	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	3	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

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

Peak Hour: 08:00 AM - 09:00 AM **Weather: Clear Sky (9.22 °C)**



Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**



Spectrum

Turning Movement Count
Location Name: RANGEVIEW RD & LAKEFRONT PROMENADE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (8 . RANGEVIEW RD & LAKEFRONT PROMENADE)

Start Time	N Approach LAKEFRONT PROMENADE						E Approach RANGEVIEW RD						S Approach LAKEFRONT PROMENADE						W Approach RANGEVIEW RD						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	4	3	5	0	0	12	1	4	2	0	0	7	1	7	0	0	0	8	2	2	1	0	2	5	32	
07:45:00	3	5	9	0	0	17	1	2	0	0	0	3	1	8	0	0	0	9	4	8	0	0	3	12	41	
08:00:00	5	4	2	0	0	11	0	3	1	0	0	4	3	2	0	0	0	5	2	3	0	0	1	5	25	
08:15:00	2	7	1	0	1	10	0	4	1	0	0	5	1	9	1	0	0	11	1	2	2	0	0	5	31	129
08:30:00	3	6	2	0	0	11	3	6	1	0	1	10	0	7	2	0	0	9	2	0	0	0	2	2	32	129
08:45:00	6	8	0	0	0	14	1	5	2	0	0	8	0	6	0	0	0	6	3	5	0	0	2	8	36	124
09:00:00	5	12	3	0	4	20	4	0	4	0	3	8	3	10	1	0	3	14	5	3	1	0	4	9	51	150
09:15:00	0	16	4	0	1	20	1	0	1	0	0	2	3	16	4	0	0	23	6	2	3	0	2	11	56	175
BREAK																										
16:00:00	1	26	2	0	2	29	15	3	7	0	0	25	5	27	8	0	3	40	6	7	1	0	3	14	108	
16:15:00	0	19	1	0	2	20	4	1	1	0	1	6	2	32	1	0	1	35	2	2	2	0	6	6	67	
16:30:00	6	27	4	0	2	37	4	2	4	0	0	10	3	28	0	0	0	31	3	2	2	0	6	7	85	
16:45:00	0	15	1	0	1	16	2	0	0	0	1	2	3	24	3	0	3	30	4	4	0	0	1	8	56	316
17:00:00	1	17	6	0	1	24	13	8	3	0	0	24	5	35	3	0	1	43	5	2	1	0	7	8	99	307
17:15:00	2	31	2	0	4	35	3	4	3	0	0	10	8	32	3	0	7	43	7	1	0	0	7	8	96	336
17:30:00	0	23	1	0	3	24	4	1	1	0	0	6	2	31	2	0	4	35	4	2	1	0	3	7	72	323
17:45:00	3	40	0	0	8	43	3	1	1	0	0	5	7	28	2	0	3	37	6	5	0	0	8	11	96	363
Grand Total	41	259	43	0	29	343	59	44	32	0	6	135	47	302	30	0	25	379	62	50	14	0	57	126	**983**	-
Approach%	12%	75.5%	12.5%	0%		-	43.7%	32.6%	23.7%	0%		-	12.4%	79.7%	7.9%	0%		-	49.2%	39.7%	11.1%	0%		-	-	-
Totals %	4.2%	26.3%	4.4%	0%		34.9%	6%	4.5%	3.3%	0%		13.7%	4.8%	30.7%	3.1%	0%		38.6%	6.3%	5.1%	1.4%	0%		12.8%	-	-
Heavy	8	3	1	0		-	2	2	1	0		-	1	11	0	0		-	0	2	4	0		-	-	-
Heavy %	19.5%	1.2%	2.3%	0%		-	3.4%	4.5%	3.1%	0%		-	2.1%	3.6%	0%	0%		-	0%	4%	28.6%	0%		-	-	-
Bicycles	0	2	1	0		-	1	4	46	0		-	33	3	0	0		-	2	1	0	0		-	-	-
Bicycle %	0%	0.8%	2.3%	0%		-	1.7%	9.1%	143.8%	0%		-	70.2%	1%	0%	0%		-	3.2%	2%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: RANGEVIEW RD & LAKEFRONT PROMENADE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 08:30 AM - 09:30 AM Weather: Clear Sky (9.22 °C)

Start Time	N Approach LAKEFRONT PROMENADE						E Approach RANGEVIEW RD						S Approach LAKEFRONT PROMENADE						W Approach RANGEVIEW RD						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	
08:30:00	3	6	2	0	0	11	3	6	1	0	1	10	0	7	2	0	0	9	2	0	0	0	2	2	32
08:45:00	6	8	0	0	0	14	1	5	2	0	0	8	0	6	0	0	0	6	3	5	0	0	2	8	36
09:00:00	5	12	3	0	4	20	4	0	4	0	3	8	3	10	1	0	3	14	5	3	1	0	4	9	51
09:15:00	0	16	4	0	1	20	1	0	1	0	0	2	3	16	4	0	0	23	6	2	3	0	2	11	56
Grand Total	14	42	9	0	5	65	9	11	8	0	4	28	6	39	7	0	3	52	16	10	4	0	10	30	**175**
Approach%	21.5%	64.6%	13.8%	0%		-	32.1%	39.3%	28.6%	0%		-	11.5%	75%	13.5%	0%		-	53.3%	33.3%	13.3%	0%		-	**-**
Totals %	8%	24%	5.1%	0%		37.1%	5.1%	6.3%	4.6%	0%		16%	3.4%	22.3%	4%	0%		29.7%	9.1%	5.7%	2.3%	0%		17.1%	**-**
PHF	0.58	0.66	0.56	0		0.81	0.56	0.46	0.5	0		0.7	0.5	0.61	0.44	0		0.57	0.67	0.5	0.33	0		0.68	**-**
Heavy	1	1	1	0		3	2	0	1	0		3	0	3	0	0		3	0	1	2	0		3	**-**
Heavy %	7.1%	2.4%	11.1%	0%		4.6%	22.2%	0%	12.5%	0%		10.7%	0%	7.7%	0%	0%		5.8%	0%	10%	50%	0%		10%	**-**
Lights	13	41	8	0		62	7	11	7	0		25	6	36	7	0		49	16	9	2	0		27	**-**
Lights %	92.9%	97.6%	88.9%	0%		95.4%	77.8%	100%	87.5%	0%		89.3%	100%	92.3%	100%	0%		94.2%	100%	90%	50%	0%		90%	**-**
Single-Unit Trucks	1	1	0	0		2	1	0	1	0		2	0	3	0	0		3	0	1	2	0		3	**-**
Single-Unit Trucks %	7.1%	2.4%	0%	0%		3.1%	11.1%	0%	12.5%	0%		7.1%	0%	7.7%	0%	0%		5.8%	0%	10%	50%	0%		10%	**-**
Articulated Trucks	0	0	1	0		1	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	11.1%	0%		1.5%	11.1%	0%	0%	0%		3.6%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	8	-	**-**
Pedestrians%	-	-	-	-	13.6%		-	-	-	-	13.6%		-	-	-	-	9.1%		-	-	-	-	36.4%		**-**
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	9.1%		-	-	-	-	4.5%		-	-	-	-	4.5%		-	-	-	-	9.1%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	11	0	0	-	6	3	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

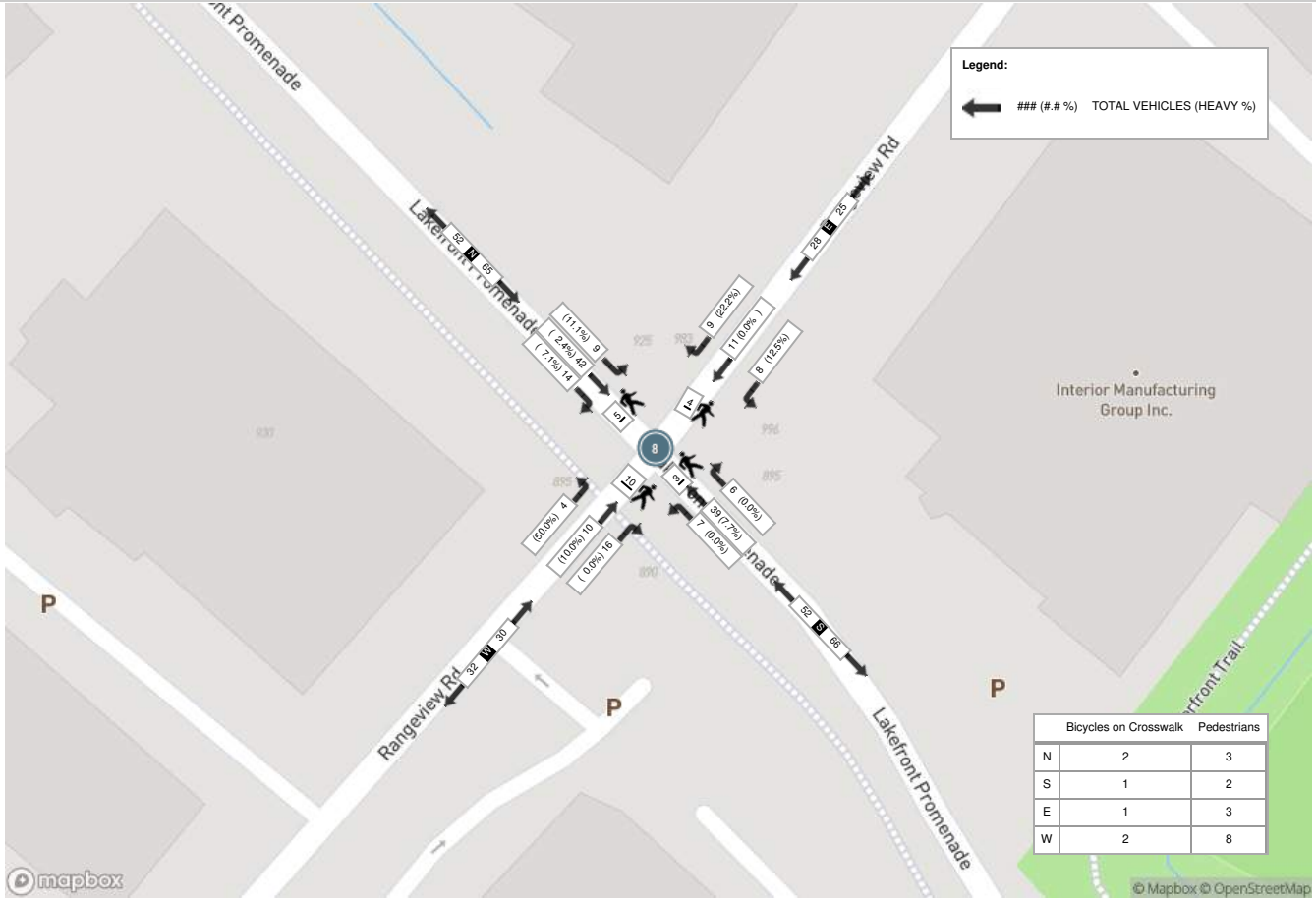
Turning Movement Count
Location Name: RANGEVIEW RD & LAKEFRONT PROMENADE
Date: Wed, Oct 05, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (22.6 °C)

Start Time	N Approach LAKEFRONT PROMENADE						E Approach RANGEVIEW RD						S Approach LAKEFRONT PROMENADE						W Approach RANGEVIEW RD						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	
17:00:00	1	17	6	0	1	24	13	8	3	0	0	24	5	35	3	0	1	43	5	2	1	0	7	8	99
17:15:00	2	31	2	0	4	35	3	4	3	0	0	10	8	32	3	0	7	43	7	1	0	0	7	8	96
17:30:00	0	23	1	0	3	24	4	1	1	0	0	6	2	31	2	0	4	35	4	2	1	0	3	7	72
17:45:00	3	40	0	0	8	43	3	1	1	0	0	5	7	28	2	0	3	37	6	5	0	0	8	11	96
Grand Total	6	111	9	0	16	126	23	14	8	0	0	45	22	126	10	0	15	158	22	10	2	0	25	34	**363**
Approach%	4.8%	88.1%	7.1%	0%		-	51.1%	31.1%	17.8%	0%		-	13.9%	79.7%	6.3%	0%		-	64.7%	29.4%	5.9%	0%		-	**-**
Totals %	1.7%	30.6%	2.5%	0%		34.7%	6.3%	3.9%	2.2%	0%		12.4%	6.1%	34.7%	2.8%	0%		43.5%	6.1%	2.8%	0.6%	0%		9.4%	**-**
PHF	0.5	0.69	0.38	0		0.73	0.44	0.44	0.67	0		0.47	0.69	0.9	0.83	0		0.92	0.79	0.5	0.5	0		0.77	**-**
Heavy	2	0	0	0		2	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Heavy %	33.3%	0%	0%	0%		1.6%	0%	7.1%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Lights	4	111	9	0		124	23	13	8	0		44	22	126	10	0		158	22	10	2	0		34	**-**
Lights %	66.7%	100%	100%	0%		98.4%	100%	92.9%	100%	0%		97.8%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	2	0	0	0		2	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Single-Unit Trucks %	33.3%	0%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
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%	7.1%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	14	-	**-**
Pedestrians%	-	-	-	-	19.6%		-	-	-	-	0%		-	-	-	-	3.6%		-	-	-	-	25%		**-**
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	13	-	-	-	-	-	11	-	**-**
Bicycles on Crosswalk%	-	-	-	-	8.9%		-	-	-	-	0%		-	-	-	-	23.2%		-	-	-	-	19.6%		**-**
Bicycles on Road	0	1	1	0	0	-	1	2	20	0	0	-	6	0	0	0	0	-	2	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

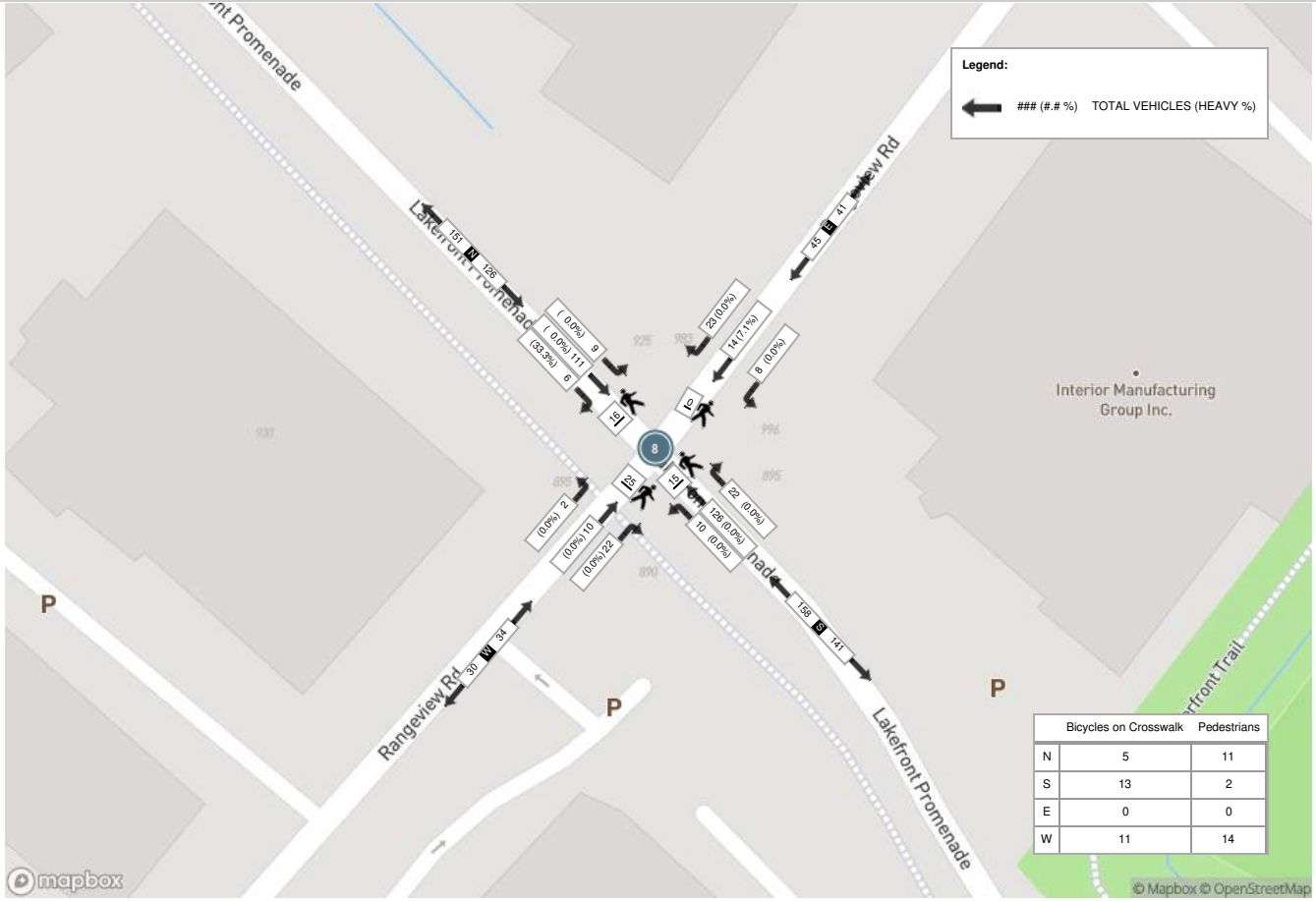
Peak Hour: 08:30 AM - 09:30 AM **Weather: Clear Sky (9.22 °C)**



	Bicycles on Crosswalk	Pedestrians
N	2	3
S	1	2
E	1	3
W	2	8

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

Peak Hour: 05:00 PM - 06:00 PM **Weather: Clear Sky (22.6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	5	11
S	13	2
E	0	0
W	11	14

Appendix H:
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) = 0.74Ln(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) = 0.74Ln(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) = 0.74Ln(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) = 0.74Ln(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 I:
Synchro Detailed Capacity Analysis Results

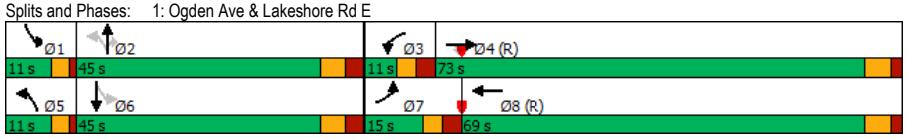
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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		0.93	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.987				0.850		0.882	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3444	1566	1750	3298	0	1750	1883	1566	1750	1637	0
Flt Permitted	0.950			0.950			0.647			0.722		
Satd. Flow (perm)	1738	3444	1463	1741	3298	0	1185	1883	1532	1318	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		9				153		78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	149	1563	107	24	1548	175	53	260	82	21
Future Volume (vph)	149	1563	107	24	1548	175	53	260	82	21
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	15.0	73.0	73.0	11.0	69.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	10.7%	52.1%	52.1%	7.9%	49.3%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	22.9	92.0	92.0	8.4	72.8	28.3	17.3	17.3	28.3	17.3
Actuated g/C Ratio	0.16	0.66	0.66	0.06	0.52	0.20	0.12	0.12	0.20	0.12
v/c Ratio	0.52	0.69	0.11	0.23	0.98	0.65	0.23	0.80	0.28	0.37
Control Delay	67.7	15.6	4.8	83.9	39.9	58.2	54.3	42.0	44.5	19.3
Queue Delay	0.0	0.1	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	15.7	4.8	83.9	62.1	58.2	54.3	42.0	44.5	19.3
LOS	E	B	A	F	E	E	D	D	D	B
Approach Delay		19.3			62.4		49.2			30.7
Approach LOS		B			E		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: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.98		
Intersection Signal Delay: 40.9	Intersection LOS: D	
Intersection Capacity Utilization 89.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	149	1563	107	24	1692	175	53	260	82	99
v/c Ratio	0.52	0.69	0.11	0.23	0.98	0.65	0.23	0.80	0.28	0.37
Control Delay	67.7	15.6	4.8	83.9	39.9	58.2	54.3	42.0	44.5	19.3
Queue Delay	0.0	0.1	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	15.7	4.8	83.9	62.1	58.2	54.3	42.0	44.5	19.3
Queue Length 50th (m)	45.5	64.3	1.0	7.3	41.8	44.4	14.2	31.0	19.7	5.5
Queue Length 95th (m)	m63.5	114.1	m7.5	m11.7	#338.5	61.7	25.7	59.7	31.6	21.4
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	286	2263	999	105	1718	271	524	537	291	512
Starvation Cap Reductn	0	25	0	0	1	0	0	0	0	0
Spillback Cap Reductn	0	104	0	0	118	0	0	4	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.72	0.11	0.23	1.06	0.65	0.10	0.49	0.28	0.19

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	1563	107	24	1548	144	175	53	260	82	21	78
Future Volume (vph)	149	1563	107	24	1548	144	175	53	260	82	21	78
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	0.93	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.88	
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	3444	1463	1750	3299		1744	1883	1532	1738	1637	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.65	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1750	3444	1463	1750	3299		1188	1883	1532	1322	1637	
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)	149	1563	107	24	1548	144	175	53	260	82	21	78
RTOR Reduction (vph)	0	0	39	0	4	0	0	0	134	0	68	0
Lane Group Flow (vph)	149	1563	68	24	1688	0	175	53	126	82	31	0
Confl. Peds. (#/hr)	18		12	12		18	6		9	9		6
Heavy Vehicles (%)	2%	6%	2%	2%	9%	2%	2%	2%	2%	2%	2%	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)	21.9	88.6	88.6	5.1	71.8		23.3	16.3	16.3	23.3	16.3	
Effective Green, g (s)	22.9	89.6	89.6	6.1	72.8		25.3	17.3	17.3	25.3	17.3	
Actuated g/C Ratio	0.16	0.64	0.64	0.04	0.52		0.18	0.12	0.12	0.18	0.12	
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)	286	2204	936	76	1715		246	232	189	262	202	
v/s Ratio Prot	c0.09	c0.45		0.01	c0.51		c0.04	0.03		0.02	0.02	
v/s Ratio Perm			0.05				c0.09		0.08	0.04		
v/c Ratio	0.52	0.71	0.07	0.32	0.98		0.71	0.23	0.67	0.31	0.15	
Uniform Delay, d1	53.5	16.6	9.5	64.9	33.0		53.0	55.3	58.6	49.3	54.8	
Progression Factor	1.15	0.78	1.80	1.29	0.68		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.4	0.1	1.9	15.8		9.3	0.5	8.6	0.7	0.4	
Delay (s)	62.9	14.4	17.2	85.4	38.3		62.3	55.8	67.2	50.0	55.1	
Level of Service	E	B	B	F	D		E	E	E	D	E	
Approach Delay (s)		18.5			38.9			64.2			52.8	
Approach LOS		B			D			E			D	

Intersection Summary

HCM 2000 Control Delay	33.6	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	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		0.91		0.99				0.97
Frt						0.850		0.955				0.850
Flt Protected	0.950			0.950				0.968			0.953	
Satd. Flow (prot)	1653	3476	0	1785	3476	1536	0	1776	0	0	1813	1465
Flt Permitted	0.950			0.950				0.863			0.729	
Satd. Flow (perm)	1620	3476	0	1777	3476	1400	0	1572	0	0	1387	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

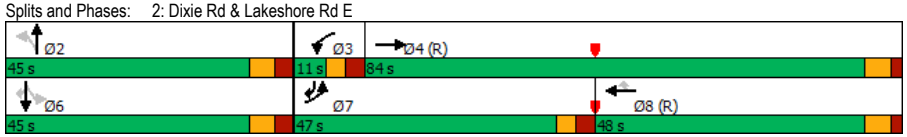
Area Type: Other

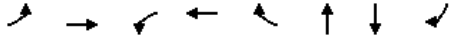
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	556	1282	2	902	199	2	0	155	3	512
Future Volume (vph)	556	1282	2	902	199	2	0	155	3	512
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	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	24.0	12.0	12.0	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
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)	60.1	104.2	6.8	41.6	41.6		22.3		22.3	83.4
Actuated g/C Ratio	0.43	0.74	0.05	0.30	0.30		0.16		0.16	0.60
v/c Ratio	0.78	0.50	0.02	0.87	0.40		0.01		0.71	0.59
Control Delay	44.5	18.0	64.0	57.0	16.9		0.0		72.8	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	44.5	18.0	64.0	57.0	16.9		0.0		72.8	18.2
LOS	D	B	E	E	B		A		E	B
Approach Delay		26.0		49.8					31.1	
Approach LOS		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: 125
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

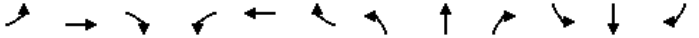




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	556	1285	2	902	199	3	158	512
v/c Ratio	0.78	0.50	0.02	0.87	0.40	0.01	0.71	0.59
Control Delay	44.5	18.0	64.0	57.0	16.9	0.0	72.8	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	18.0	64.0	57.0	16.9	0.0	72.8	18.2
Queue Length 50th (m)	171.0	121.7	0.6	129.5	15.8	0.0	44.3	78.1
Queue Length 95th (m)	#236.2	194.5	3.7	157.5	38.6	0.0	65.7	111.2
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	709	2587	86	1067	516	522	386	875
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	0.50	0.02	0.85	0.39	0.01	0.41	0.59

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	556	1282	3	2	902	199	2	0	1	155	3	512
Future Volume (vph)	556	1282	3	2	902	199	2	0	1	155	3	512
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	0.91		1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			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		0.97			0.95	1.00
Satd. Flow (prot)	1653	3475		1785	3476	1400		1763			1813	1455
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.73	1.00
Satd. Flow (perm)	1653	3475		1785	3476	1400		1572			1386	1455
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)	556	1282	3	2	902	199	2	0	1	155	3	512
RTOR Reduction (vph)	0	0	0	0	0	88	0	3	0	0	0	9
Lane Group Flow (vph)	556	1285	0	2	902	111	0	0	0	0	158	503
Confl. Peds. (#/hr)	18		7	7		18	13					13
Heavy Vehicles (%)	8%	5%	2%	0%	5%	4%	0%	0%	0%	1%	0%	9%
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)	59.1	98.4		1.3	40.6	40.6		21.3			21.3	80.4
Effective Green, g (s)	60.1	99.4		2.3	41.6	41.6		22.3			22.3	82.4
Actuated g/C Ratio	0.43	0.71		0.02	0.30	0.30		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)	709	2467		29	1032	416		250			220	856
v/s Ratio Prot	c0.34	0.37		0.00	c0.26							0.25
v/s Ratio Perm						0.08		0.00			c0.11	0.09
v/c Ratio	0.78	0.52		0.07	0.87	0.27		0.00			0.72	0.59
Uniform Delay, d1	34.4	9.3		67.8	46.7	37.6		49.5			55.9	18.1
Progression Factor	1.06	2.01		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.8	0.5		1.0	10.2	1.6		0.0			10.7	1.0
Delay (s)	40.3	19.3		68.8	57.0	39.1		49.5			66.5	19.1
Level of Service	D	B		E	E	D		D			E	B
Approach Delay (s)		25.6			53.8			49.5			30.3	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	35.1	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)	16.0		
Intersection Capacity Utilization	87.9%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		1.00		0.98						0.97
Frt						0.850		0.865				0.850
Flt Protected	0.950			0.950						0.950	0.953	
Satd. Flow (prot)	3330	3544	0	1785	3476	1426	0	1662	0	1556	1597	1551
Flt Permitted	0.069			0.271						0.950	0.729	
Satd. Flow (perm)	242	3544	0	508	3476	1390	0	1662	0	1556	1222	1506
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						281		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

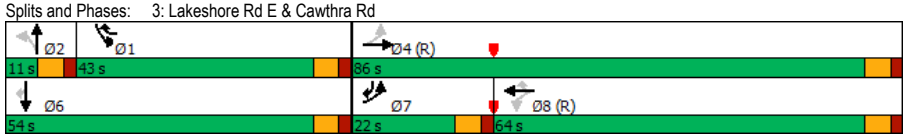
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	419	1023	2	1297	887	0	564	3	440
Future Volume (vph)	419	1023	2	1297	887	0	564	3	440
Turn Type	pm+pt	NA	Perm	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1	2	1	6	7
Permitted Phases	4		8		8				6
Detector Phase	7	4	8	8	1	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	22.0	86.0	64.0	64.0	43.0	11.0	43.0	54.0	22.0
Total Split (%)	15.7%	61.4%	45.7%	45.7%	30.7%	7.9%	30.7%	38.6%	15.7%
Yellow Time (s)	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
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	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	79.0	79.0	57.4	57.4	106.3	6.2	48.8	48.8	67.6
Actuated g/C Ratio	0.56	0.56	0.41	0.41	0.76	0.04	0.35	0.35	0.48
v/c Ratio	0.84	0.51	0.01	0.91	0.78	0.01	0.52	0.51	0.59
Control Delay	49.9	19.6	35.0	52.5	8.7	0.0	42.2	41.9	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	19.6	35.0	52.5	8.7	0.0	42.2	41.9	25.9
LOS	D	B	C	D	A	A	D	D	C
Approach Delay		28.4		34.7				35.0	
Approach LOS		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: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 32.8 Intersection LOS: C
Intersection Capacity Utilization 84.6% ICU Level of Service E
Analysis Period (min) 15

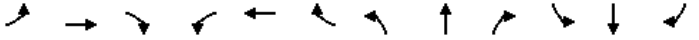
Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	419	1025	2	1297	887	1	282	285	440
v/c Ratio	0.84	0.51	0.01	0.91	0.78	0.01	0.52	0.51	0.59
Control Delay	49.9	19.6	35.0	52.5	8.7	0.0	42.2	41.9	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	19.6	35.0	52.5	8.7	0.0	42.2	41.9	25.9
Queue Length 50th (m)	43.9	89.5	0.4	188.5	4.6	0.0	68.5	68.9	81.1
Queue Length 95th (m)	#67.5	107.3	m0.5	193.0	48.1	0.0	112.9	113.1	115.2
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)	511	2050	214	1464	1135	185	542	556	748
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	0.82	0.50	0.01	0.89	0.78	0.01	0.52	0.51	0.59

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	1023	2	2	1297	887	0	0	1	564	3	440
Future Volume (vph)	419	1023	2	2	1297	887	0	0	1	564	3	440
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
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3330	3543		1779	3476	1408		1662		1556	1597	1516
Flt Permitted	0.07	1.00		0.27	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	243	3543		507	3476	1408		1662		1556	1221	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)	419	1023	2	2	1297	887	0	0	1	564	3	440
RTOR Reduction (vph)	0	0	0	0	0	77	0	1	0	0	0	11
Lane Group Flow (vph)	419	1025	0	2	1297	810	0	0	0	282	285	429
Confl. Peds. (#/hr)	10		6	6		10	13					13
Heavy Vehicles (%)	4%	3%	0%	0%	5%	12%	0%	0%	0%	9%	0%	3%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	73.2	73.2		51.7	51.7	99.5		1.0		47.8	54.8	70.3
Effective Green, g (s)	74.2	74.2		52.7	52.7	101.5		2.0		48.8	55.8	72.3
Actuated g/C Ratio	0.53	0.53		0.38	0.38	0.72		0.01		0.35	0.40	0.52
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)	492	1877		190	1308	1020		23		542	617	837
v/s Ratio Prot	c0.10	0.29			c0.37	c0.28		0.00		0.18	0.16	c0.06
v/s Ratio Perm	0.35			0.00		0.30					0.02	0.22
v/c Ratio	0.85	0.55		0.01	0.99	0.79		0.00		0.52	0.46	0.51
Uniform Delay, d1	42.4	21.8		27.3	43.4	12.5		68.0		36.3	31.0	22.3
Progression Factor	1.00	1.00		1.47	1.18	0.99		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.3	1.1		0.1	17.8	2.8		0.0		0.9	0.5	0.5
Delay (s)	55.7	22.9		40.2	68.9	15.2		68.0		37.2	31.6	22.8
Level of Service	E	C		D	E	B		E		D	C	C
Approach Delay (s)		32.4			47.0			68.0			29.3	
Approach LOS		C			D			E			C	

Intersection Summary

HCM 2000 Control Delay	38.6	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	84.6%	ICU Level of Service	E			
Analysis Period (min)	15					

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00		0.96	1.00				0.98	
Frt		0.995				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3527	0	1785	3444	1413	1785	1633	0	1785	1608	0
Flt Permitted	0.950			0.950			0.754			0.498		
Satd. Flow (perm)	1783	3527	0	1784	3444	1358	1412	1633	0	936	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				78		94			70	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

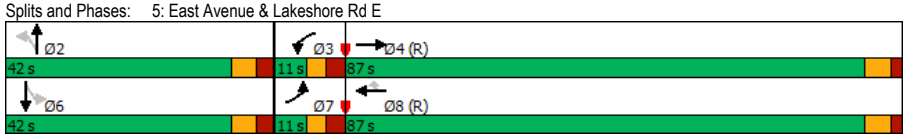
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	1517	11	2168	8	126	0	5	0
Future Volume (vph)	5	1517	11	2168	8	126	0	5	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.0	104.8	7.5	107.6	107.6	18.8	18.8	18.8	18.8
Actuated g/C Ratio	0.05	0.75	0.05	0.77	0.77	0.13	0.13	0.13	0.13
v/c Ratio	0.06	0.59	0.12	0.82	0.01	0.67	0.49	0.04	0.02
Control Delay	70.2	12.0	52.2	13.7	0.0	73.6	26.1	49.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	12.0	52.2	13.7	0.0	73.6	26.1	49.6	0.2
LOS	E	B	D	B	A	E	C	D	A
Approach Delay		12.2		13.9			48.1		24.9
Approach LOS		B		B			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: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 82.7% ICU Level of Service E
Analysis Period (min) 15

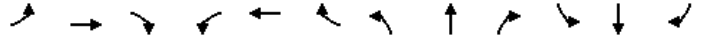
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1564	11	2168	8	126	146	5	5
v/c Ratio	0.06	0.59	0.12	0.82	0.01	0.67	0.49	0.04	0.02
Control Delay	70.2	12.0	52.2	13.7	0.0	73.6	26.1	49.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	12.0	52.2	13.7	0.0	73.6	26.1	49.6	0.2
Queue Length 50th (m)	1.4	86.5	3.0	118.4	0.0	35.4	13.8	1.3	0.0
Queue Length 95th (m)	m2.9	226.3	m4.0	#373.1	m0.0	55.3	34.1	5.4	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	89	2640	95	2646	1061	363	489	240	465
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	0.06	0.59	0.12	0.82	0.01	0.35	0.30	0.02	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1517	47	11	2168	8	126	0	146	5	0	5
Future Volume (vph)	5	1517	47	11	2168	8	126	0	146	5	0	5
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3528		1785	3444	1358	1779	1633		1785	1608	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.50	1.00	
Satd. Flow (perm)	1785	3528		1785	3444	1358	1413	1633		936	1608	
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)	5	1517	47	11	2168	8	126	0	146	5	0	5
RTOR Reduction (vph)	0	1	0	0	0	2	0	81	0	0	4	0
Lane Group Flow (vph)	5	1563	0	11	2168	6	126	65	0	5	1	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	6%	13%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	1.4	100.2		3.0	101.8	101.8	17.8	17.8		17.8	17.8	
Effective Green, g (s)	2.4	101.2		4.0	102.8	102.8	18.8	18.8		18.8	18.8	
Actuated g/C Ratio	0.02	0.72		0.03	0.73	0.73	0.13	0.13		0.13	0.13	
Clearance Time (s)	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	
Lane Grp Cap (vph)	30	2550		51	2528	997	189	219		125	215	
v/s Ratio Prot	0.00	0.44		c0.01	c0.63			0.04			0.00	
v/s Ratio Perm						0.00	c0.09			0.01		
v/c Ratio	0.17	0.61		0.22	0.86	0.01	0.67	0.30		0.04	0.00	
Uniform Delay, d1	67.8	9.7		66.5	13.3	5.0	57.6	54.6		52.7	52.5	
Progression Factor	1.10	1.12		0.81	0.95	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.0		1.2	2.4	0.0	8.6	0.8		0.1	0.0	
Delay (s)	76.7	11.8		55.0	15.1	5.0	66.2	55.4		52.9	52.5	
Level of Service	E	B		D	B	A	E	E		D	D	
Approach Delay (s)		12.0			15.2			60.4			52.7	
Approach LOS		B			B			E			D	

Intersection Summary					
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.82				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	82.7%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

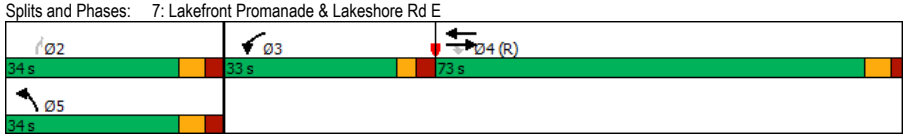
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.95	1.00		0.98	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3510	1551	1750	3476	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3510	1478	1744	3476	3337	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		29				294
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1532	113	31	1793	423	294
Future Volume (vph)	1532	113	31	1793	423	294
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	83.3	83.3	19.6	83.3	23.4	23.4
Actuated g/C Ratio	0.60	0.60	0.14	0.60	0.17	0.17
v/c Ratio	0.73	0.13	0.13	0.87	0.75	0.58
Control Delay	15.9	9.0	53.2	20.2	63.8	10.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	15.9	9.0	53.2	20.3	63.8	10.0
LOS	B	A	D	C	E	B
Approach Delay	15.4			20.9	41.7	
Approach LOS	B			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 22.3	Intersection LOS: C	
Intersection Capacity Utilization 70.8%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1532	113	31	1793	423	294
v/c Ratio	0.73	0.13	0.13	0.87	0.75	0.58
Control Delay	15.9	9.0	53.2	20.2	63.8	10.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	15.9	9.0	53.2	20.3	63.8	10.0
Queue Length 50th (m)	147.3	3.7	8.9	117.4	61.1	0.0
Queue Length 95th (m)	110.7	14.6	m10.5	m#309.6	77.2	25.9
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2087	890	350	2067	679	548
Starvation Cap Reductn	0	0	0	21	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.13	0.09	0.88	0.62	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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1532	113	31	1793	423	294
Future Volume (vph)	1532	113	31	1793	423	294
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	5.0	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	0.95	1.00	1.00	1.00	1.00
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)	3510	1478	1750	3476	3395	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3510	1478	1750	3476	3395	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1532	113	31	1793	423	294
RTOR Reduction (vph)	0	12	0	0	0	245
Lane Group Flow (vph)	1532	101	31	1793	423	49
Confl. Peds. (#/hr)		7	7		11	
Heavy Vehicles (%)	4%	3%	2%	5%	2%	2%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	81.1	81.1	17.5	81.1	22.4	22.4
Effective Green, g (s)	82.1	82.1	18.5	82.1	23.4	23.4
Actuated g/C Ratio	0.59	0.59	0.13	0.59	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	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)	2058	866	231	2038	567	261
v/s Ratio Prot	0.44		c0.02	c0.52	c0.12	
v/s Ratio Perm		0.07				0.03
v/c Ratio	0.74	0.12	0.13	0.88	0.75	0.19
Uniform Delay, d1	21.2	12.9	53.7	24.7	55.5	50.1
Progression Factor	0.56	0.69	1.10	0.60	1.00	1.00
Incremental Delay, d2	2.1	0.2	0.1	2.5	5.3	0.4
Delay (s)	13.9	9.1	59.2	17.4	60.8	50.5
Level of Service	B	A	E	B	E	D
Approach Delay (s)	13.6			18.1	56.6	
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	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

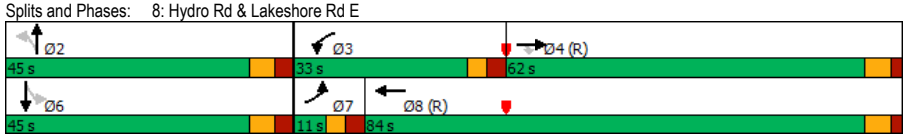
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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		0.95	1.00	1.00							
Frt			0.850					0.850			0.910	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1785	3476	1597	1750	3443	0	1750	1601	0	0	1687	0
Flt Permitted	0.950			0.950			0.754				0.911	
Satd. Flow (perm)	1771	3476	1516	1745	3443	0	1389	1601	0	0	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125					299			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	1788	138	41	1501	234	0	2	0
Future Volume (vph)	2	1788	138	41	1501	234	0	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.5	86.9	86.9	9.7	97.1	29.7	29.7		29.7
Actuated g/C Ratio	0.05	0.62	0.62	0.07	0.69	0.21	0.21		0.21
v/c Ratio	0.02	0.83	0.14	0.34	0.63	0.80	0.53		0.01
Control Delay	64.5	23.5	5.1	76.0	13.4	70.9	8.1		0.0
Queue Delay	0.0	0.2	0.0	0.0	0.1	0.0	0.0		0.0
Total Delay	64.5	23.7	5.1	76.0	13.5	70.9	8.1		0.0
LOS	E	C	A	E	B	E	A		A
Approach Delay		22.4			15.2		35.4		
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: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 21.3	Intersection LOS: C	
Intersection Capacity Utilization 78.2%	ICU Level of Service D	
Analysis Period (min) 15		

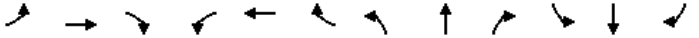
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	2	1788	138	41	1502	234	304	6
v/c Ratio	0.02	0.83	0.14	0.34	0.63	0.80	0.53	0.01
Control Delay	64.5	23.5	5.1	76.0	13.4	70.9	8.1	0.0
Queue Delay	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	64.5	23.7	5.1	76.0	13.5	70.9	8.1	0.0
Queue Length 50th (m)	0.5	188.4	4.9	12.6	78.5	65.1	1.2	0.0
Queue Length 95th (m)	m0.9	#324.3	m8.6	m18.6	77.2	90.0	24.3	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	82	2157	988	350	2387	386	661	519
Starvation Cap Reductn	0	28	0	0	68	0	0	0
Spillback Cap Reductn	0	48	0	0	168	0	4	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.85	0.14	0.12	0.68	0.61	0.46	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1788	138	41	1501	1	234	0	304	2	0	4
Future Volume (vph)	2	1788	138	41	1501	1	234	0	304	2	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		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	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1785	3476	1516	1750	3443		1750	1601			1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.91	
Satd. Flow (perm)	1785	3476	1516	1750	3443		1389	1601			1562	
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)	2	1788	138	41	1501	1	234	0	304	2	0	4
RTOR Reduction (vph)	0	0	48	0	0	0	0	236	0	0	5	0
Lane Group Flow (vph)	2	1788	90	41	1502	0	234	68	0	0	1	0
Confl. Peds. (#/hr)	16		8	8		16						
Heavy Vehicles (%)	0%	5%	0%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.0	84.7	84.7	7.6	91.3		28.7	28.7			28.7	
Effective Green, g (s)	2.0	85.7	85.7	8.6	92.3		29.7	29.7			29.7	
Actuated g/C Ratio	0.01	0.61	0.61	0.06	0.66		0.21	0.21			0.21	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	25	2127	928	107	2269		294	339			331	
v/s Ratio Prot	0.00	c0.51		c0.02	c0.44			0.04				
v/s Ratio Perm			0.06				c0.17				0.00	
v/c Ratio	0.08	0.84	0.10	0.38	0.66		0.80	0.20			0.00	
Uniform Delay, d1	68.1	21.7	11.2	63.2	14.4		52.3	45.4			43.5	
Progression Factor	1.00	0.85	1.45	1.15	0.91		1.00	1.00			1.00	
Incremental Delay, d2	1.1	3.3	0.2	1.7	1.1		13.8	0.3			0.0	
Delay (s)	69.0	21.8	16.4	74.3	14.2		66.1	45.7			43.5	
Level of Service	E	C	B	E	B		E	D			D	
Approach Delay (s)		21.4			15.8			54.6			43.5	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	23.8	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)	16.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

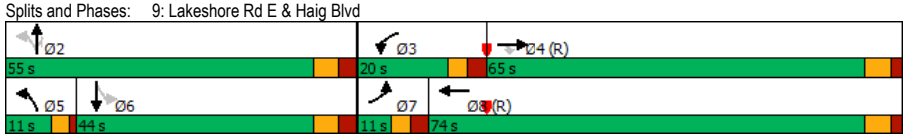
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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			1.00	0.98		0.99	
Frt			0.850		0.997				0.850		0.942	
Flt Protected	0.950			0.950				0.960			0.982	
Satd. Flow (prot)	1750	3476	1566	1750	3461	0	0	1808	1566	0	1728	0
Flt Permitted	0.950			0.950				0.662			0.741	
Satd. Flow (perm)	1732	3476	1566	1750	3461	0	0	1241	1537	0	1301	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		2				134		26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	107	1733	241	118	1425	103	21	150	36	19
Future Volume (vph)	107	1733	241	118	1425	103	21	150	36	19
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	20.6	88.0	88.0	15.7	83.0		20.3	20.3		20.3
Actuated g/C Ratio	0.15	0.63	0.63	0.11	0.59		0.14	0.14		0.14
v/c Ratio	0.41	0.79	0.23	0.60	0.71		0.69	0.45		0.46
Control Delay	69.7	11.4	2.3	57.1	31.2		75.3	14.7		45.0
Queue Delay	0.0	0.3	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	69.7	11.7	2.3	57.1	31.2		75.3	14.7		45.0
LOS	E	B	A	E	C		E	B		D
Approach Delay		13.6			33.2		42.1			45.0
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: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.79		
Intersection Signal Delay: 23.9	Intersection LOS: C	
Intersection Capacity Utilization 86.8%	ICU Level of Service E	
Analysis Period (min) 15		

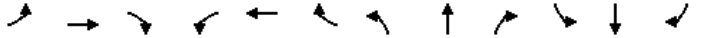
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	107	1733	241	118	1458	124	150	96
v/c Ratio	0.41	0.79	0.23	0.60	0.71	0.69	0.45	0.46
Control Delay	69.7	11.4	2.3	57.1	31.2	75.3	14.7	45.0
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	11.7	2.3	57.1	31.2	75.3	14.7	45.0
Queue Length 50th (m)	32.7	52.0	3.3	33.2	153.6	34.8	4.1	18.7
Queue Length 95th (m)	m41.3	#75.8	m5.4	m45.2	193.6	54.2	23.5	35.4
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	258	2183	1041	212	2053	434	625	372
Starvation Cap Reductn	0	103	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	0.41	0.83	0.23	0.56	0.71	0.29	0.24	0.26

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	1733	241	118	1425	33	103	21	150	36	19	41
Future Volume (vph)	107	1733	241	118	1425	33	103	21	150	36	19	41
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1750	3476	1566	1750	3459			1800	1537		1725	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.66	1.00		0.74	
Satd. Flow (perm)	1750	3476	1566	1750	3459			1241	1537		1302	
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)	107	1733	241	118	1425	33	103	21	150	36	19	41
RTOR Reduction (vph)	0	0	58	0	1	0	0	0	115	0	22	0
Lane Group Flow (vph)	107	1733	183	118	1457	0	0	124	35	0	74	0
Confl. Peds. (#/hr)	20					20	6		6	6		6
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	19.6	87.0	87.0	14.7	82.1			19.3	19.3		19.3	
Effective Green, g (s)	20.6	88.0	88.0	15.7	83.1			20.3	20.3		20.3	
Actuated g/C Ratio	0.15	0.63	0.63	0.11	0.59			0.15	0.15		0.15	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	257	2184	984	196	2053			179	222		188	
v/s Ratio Prot	0.06	c0.50		c0.07	0.42							
v/s Ratio Perm			0.12					c0.10	0.02		0.06	
v/c Ratio	0.42	0.79	0.19	0.60	0.71			0.69	0.16		0.39	
Uniform Delay, d1	54.2	19.3	10.9	59.2	20.0			56.9	52.4		54.3	
Progression Factor	1.20	0.41	0.38	0.81	1.41			1.00	1.00		1.00	
Incremental Delay, d2	0.7	1.9	0.3	3.8	1.5			11.0	0.3		1.4	
Delay (s)	65.8	9.8	4.4	51.9	29.8			67.9	52.7		55.6	
Level of Service	E	A	A	D	C			E	D		E	
Approach Delay (s)		12.0			31.4			59.6			55.6	
Approach LOS		B			C			E			E	

Intersection Summary

HCM 2000 Control Delay	23.9	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)	19.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

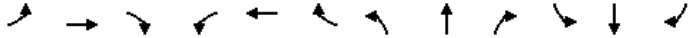
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.870					
Flt Protected	0.998					0.972
Satd. Flow (prot)	1599	0	1842	0	0	1790
Flt Permitted	0.998					0.972
Satd. Flow (perm)	1599	0	1842	0	0	1790
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	7	185	88	0	34	24
Future Volume (vph)	7	185	88	0	34	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	185	88	0	34	24

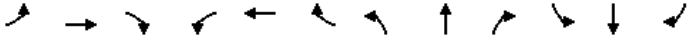
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	192	88	58
Volume Left (vph)	7	0	34
Volume Right (vph)	185	0	0
Hadj (s)	-0.54	0.03	0.15
Departure Headway (s)	3.7	4.4	4.5
Degree Utilization, x	0.20	0.11	0.07
Capacity (veh/h)	937	781	747
Control Delay (s)	7.6	7.9	7.9
Approach Delay (s)	7.6	7.9	7.9
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.872			0.979			0.976	
Flt Protected		0.950			0.999			0.999			0.984	
Satd. Flow (prot)	0	1750	0	0	1605	0	0	1802	0	0	1769	0
Flt Permitted		0.950			0.999			0.999			0.984	
Satd. Flow (perm)	0	1750	0	0	1605	0	0	1802	0	0	1769	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



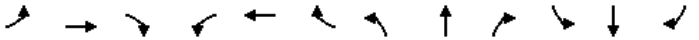
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	57	0	0	7	6	252	6	407	77	47	71	25
Future Volume (vph)	57	0	0	7	6	252	6	407	77	47	71	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	57	0	0	7	6	252	6	407	77	47	71	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	57	265	490	143
Volume Left (vph)	57	7	6	47
Volume Right (vph)	0	252	77	25
Hadj (s)	0.23	-0.53	-0.06	-0.01
Departure Headway (s)	6.3	5.1	5.0	5.5
Degree Utilization, x	0.10	0.38	0.68	0.22
Capacity (veh/h)	487	640	699	594
Control Delay (s)	10.0	11.2	17.7	10.0
Approach Delay (s)	10.0	11.2	17.7	10.0
Approach LOS	A	B	C	B

Intersection Summary				
Delay		14.3		
Level of Service		B		
Intersection Capacity Utilization		67.2%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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		0.995			0.910			0.973			0.986	
Flt Protected		0.964			0.998			0.988			0.989	
Satd. Flow (prot)	0	1767	0	0	1673	0	0	1771	0	0	1796	0
Flt Permitted		0.964			0.998			0.988			0.989	
Satd. Flow (perm)	0	1767	0	0	1673	0	0	1771	0	0	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



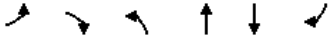
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	139	42	7	8	49	114	104	236	85	34	103	16
Future Volume (vph)	139	42	7	8	49	114	104	236	85	34	103	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	139	42	7	8	49	114	104	236	85	34	103	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	188	171	425	153
Volume Left (vph)	139	8	104	34
Volume Right (vph)	7	114	85	16
Hadj (s)	0.16	-0.36	-0.04	0.02
Departure Headway (s)	6.0	5.5	5.2	5.7
Degree Utilization, x	0.31	0.26	0.61	0.24
Capacity (veh/h)	544	579	661	572
Control Delay (s)	11.6	10.4	16.0	10.5
Approach Delay (s)	11.6	10.4	16.0	10.5
Approach LOS	B	B	C	B

Intersection Summary				
Delay		13.2		
Level of Service		B		
Intersection Capacity Utilization		60.4%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.996				0.986	
Flt Protected	0.954			0.990		
Satd. Flow (prot)	1750	0	0	1824	1816	0
Flt Permitted	0.954			0.990		
Satd. Flow (perm)	1750	0	0	1824	1816	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	208	7	83	331	161	18
Future Volume (vph)	208	7	83	331	161	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	208	7	83	331	161	18

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	215	414	179
Volume Left (vph)	208	83	0
Volume Right (vph)	7	0	18
Hadj (s)	0.21	0.07	-0.03
Departure Headway (s)	5.6	4.9	5.1
Degree Utilization, x	0.33	0.56	0.25
Capacity (veh/h)	596	718	669
Control Delay (s)	11.3	13.8	9.7
Approach Delay (s)	11.3	13.8	9.7
Approach LOS	B	B	A

Intersection Summary			
Delay	12.2		
Level of Service	B		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

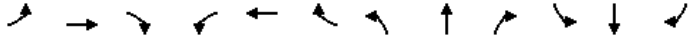
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1593	0	1842	0	0	1781
Flt Permitted						0.967
Satd. Flow (perm)	1593	0	1842	0	0	1781
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	73	14	0	21	10
Future Volume (vph)	0	73	14	0	21	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	73	14	0	21	10

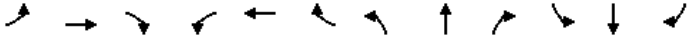
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	73	14	31
Volume Left (vph)	0	0	21
Volume Right (vph)	73	0	0
Hadj (s)	-0.57	0.03	0.17
Departure Headway (s)	3.4	4.1	4.2
Degree Utilization, x	0.07	0.02	0.04
Capacity (veh/h)	1029	850	834
Control Delay (s)	6.7	7.2	7.4
Approach Delay (s)	6.7	7.2	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	6.9		
Level of Service	A		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.952			0.874			0.968			0.991	
Flt Protected		0.969			0.998		0.950				0.987	
Satd. Flow (prot)	0	1699	0	0	1607	0	1750	1783	0	0	1802	0
Flt Permitted		0.969			0.998		0.950				0.987	
Satd. Flow (perm)	0	1699	0	0	1607	0	1750	1783	0	0	1802	0
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	

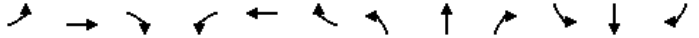
Intersection Summary	
Area Type:	Other



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	10	7	6	191	12	280	77	21	51	5
Future Volume (vph)	18	0	10	7	6	191	12	280	77	21	51	5
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	10	7	6	191	12	280	77	21	51	5

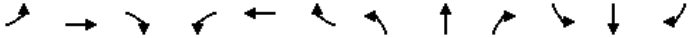
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	28	204	12	357	77
Volume Left (vph)	18	7	12	0	21
Volume Right (vph)	10	191	0	77	5
Hadj (s)	-0.05	-0.52	0.53	-0.12	0.05
Departure Headway (s)	5.3	4.5	5.7	5.0	5.1
Degree Utilization, x	0.04	0.26	0.02	0.50	0.11
Capacity (veh/h)	608	727	611	693	657
Control Delay (s)	8.5	9.1	7.6	11.7	8.7
Approach Delay (s)	8.5	9.1	11.6		8.7
Approach LOS	A	A	B		A

Intersection Summary					
Delay		10.4			
Level of Service		B			
Intersection Capacity Utilization		40.7%	ICU Level of Service		A
Analysis Period (min)		15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.993			0.928			0.976			0.985	
Flt Protected		0.970			0.997			0.989			0.992	
Satd. Flow (prot)	0	1774	0	0	1704	0	0	1778	0	0	1800	0
Flt Permitted		0.970			0.997			0.989			0.992	
Satd. Flow (perm)	0	1774	0	0	1704	0	0	1778	0	0	1800	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



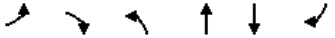
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	78	42	7	8	49	65	104	282	85	18	86	13
Future Volume (vph)	78	42	7	8	49	65	104	282	85	18	86	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	78	42	7	8	49	65	104	282	85	18	86	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	122	471	117
Volume Left (vph)	78	8	104	18
Volume Right (vph)	7	65	85	13
Hadj (s)	0.12	-0.27	-0.03	0.00
Departure Headway (s)	5.7	5.3	4.8	5.3
Degree Utilization, x	0.20	0.18	0.62	0.17
Capacity (veh/h)	564	598	728	629
Control Delay (s)	10.2	9.5	15.3	9.3
Approach Delay (s)	10.2	9.5	15.3	9.3
Approach LOS	B	A	C	A

Intersection Summary			
Delay	12.8		
Level of Service	B		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

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	0.994				0.990	
Flt Protected	0.954			0.988		
Satd. Flow (prot)	1747	0	0	1820	1824	0
Flt Permitted	0.954			0.988		
Satd. Flow (perm)	1747	0	0	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	159	7	83	255	156	12
Future Volume (vph)	159	7	83	255	156	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	159	7	83	255	156	12

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	166	338	168
Volume Left (vph)	159	83	0
Volume Right (vph)	7	0	12
Hadj (s)	0.20	0.08	-0.01
Departure Headway (s)	5.3	4.7	4.8
Degree Utilization, x	0.24	0.44	0.22
Capacity (veh/h)	626	747	714
Control Delay (s)	10.0	11.2	9.1
Approach Delay (s)	10.0	11.2	9.1
Approach LOS	B	B	A

Intersection Summary			
Delay	10.4		
Level of Service	B		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

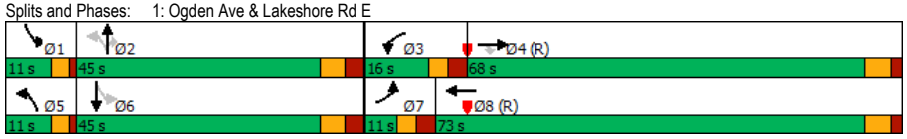
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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	1.00		0.89	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.989				0.850		0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3579	1597	1785	3540	0	1785	1921	1597	1668	1724	0
Flt Permitted	0.950			0.950			0.380			0.707		
Satd. Flow (perm)	1776	3579	1419	1761	3540	0	710	1921	1557	1226	1724	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		8				106		56	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	66	1399	283	233	1600	103	55	106	129	65
Future Volume (vph)	66	1399	283	233	1600	103	55	106	129	65
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	11.0	68.0	68.0	16.0	73.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	7.9%	48.6%	48.6%	11.4%	52.1%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	12.6	62.2	62.2	34.9	84.5	26.6	15.4	15.4	27.2	15.7
Actuated g/C Ratio	0.09	0.44	0.44	0.25	0.60	0.19	0.11	0.11	0.19	0.11
v/c Ratio	0.41	0.88	0.41	0.52	0.81	0.52	0.26	0.40	0.49	0.69
Control Delay	60.3	29.8	13.9	56.6	18.3	54.9	57.8	13.7	53.2	53.2
Queue Delay	0.0	0.6	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	30.3	13.9	56.6	18.7	54.9	57.8	13.7	53.2	53.2
LOS	E	C	B	E	B	D	E	B	D	D
Approach Delay		28.8			23.2		38.9			53.2
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: 135		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 28.6	Intersection LOS: C	
Intersection Capacity Utilization 89.5%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	66	1399	283	233	1723	103	55	106	129	167
v/c Ratio	0.41	0.88	0.41	0.52	0.81	0.52	0.26	0.40	0.49	0.69
Control Delay	60.3	29.8	13.9	56.6	18.3	54.9	57.8	13.7	53.2	53.2
Queue Delay	0.0	0.6	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	30.3	13.9	56.6	18.7	54.9	57.8	13.7	53.2	53.2
Queue Length 50th (m)	20.4	63.7	14.9	52.1	53.0	25.3	14.9	0.0	32.4	31.5
Queue Length 95th (m)	m25.0	99.4	m30.2	96.9	64.2	40.3	27.5	17.3	49.7	54.6
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	161	1623	703	444	2138	197	535	510	264	520
Starvation Cap Reductn	0	8	0	0	91	0	0	0	0	0
Spillback Cap Reductn	0	47	0	0	2	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.89	0.40	0.52	0.84	0.52	0.10	0.21	0.49	0.32

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	1399	283	233	1600	123	103	55	106	129	65	102
Future Volume (vph)	66	1399	283	233	1600	123	103	55	106	129	65	102
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	0.89	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
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)	1785	3579	1419	1785	3542		1781	1921	1557	1654	1724	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.38	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	1785	3579	1419	1785	3542		713	1921	1557	1232	1724	
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)	66	1399	283	233	1600	123	103	55	106	129	65	102
RTOR Reduction (vph)	0	0	61	0	3	0	0	0	94	0	50	0
Lane Group Flow (vph)	66	1399	222	233	1720	0	103	55	12	129	117	0
Confl. Peds. (#/hr)	14		24	24		14	7		12	12		7
Heavy Vehicles (%)	0%	2%	0%	0%	1%	7%	0%	0%	0%	7%	0%	0%
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)	11.6	61.2	61.2	33.9	83.5		21.6	14.4	14.4	22.2	14.7	
Effective Green, g (s)	12.6	62.2	62.2	34.9	84.5		23.6	15.4	15.4	24.2	15.7	
Actuated g/C Ratio	0.09	0.44	0.44	0.25	0.60		0.17	0.11	0.11	0.17	0.11	
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)	160	1590	630	444	2137		182	211	171	238	193	
v/s Ratio Prot	0.04	c0.39		c0.13	c0.49		c0.03	0.03		0.03	c0.07	
v/s Ratio Perm			0.16				0.06		0.01	0.06		
v/c Ratio	0.41	0.88	0.35	0.52	0.80		0.57	0.26	0.07	0.54	0.61	
Uniform Delay, d1	60.2	35.5	25.6	45.4	21.4		51.5	57.1	55.9	52.0	59.2	
Progression Factor	0.94	0.71	0.83	1.11	0.68		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	4.3	0.9	0.8	2.5		4.0	0.7	0.2	2.5	5.3	
Delay (s)	57.5	29.6	22.2	51.2	17.0		55.5	57.7	56.0	54.5	64.5	
Level of Service	E	C	C	D	B		E	E	E	D	E	
Approach Delay (s)		29.5			21.1			56.2			60.2	
Approach LOS		C			C			E			E	

Intersection Summary				
HCM 2000 Control Delay	29.4	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)	19.0	
Intersection Capacity Utilization	89.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

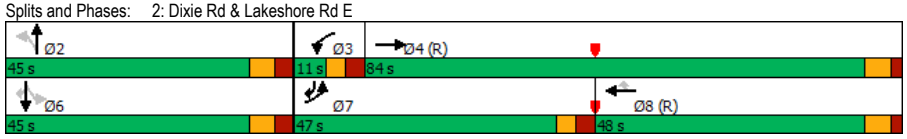
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	44.0		0.0	25.0		30.0	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			0.99		0.87		0.99			1.00	0.97
Frt						0.850		0.910				0.850
Flt Protected	0.950			0.950							0.953	
Satd. Flow (prot)	1750	3544	0	1785	3579	1566	0	1732	0	0	1813	1581
Flt Permitted	0.950			0.950							0.727	
Satd. Flow (perm)	1701	3544	0	1760	3579	1355	0	1732	0	0	1380	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		2				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

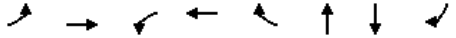
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	383	1015	1	1035	242	1	248	2	846
Future Volume (vph)	383	1015	1	1035	242	1	248	2	846
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8		2		6	7
Permitted Phases					8		6		6
Detector Phase	7	4	3	8	8	2	6	6	7
Switch Phase									
Minimum Initial (s)	5.0	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	24.0	12.0	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	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	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	3.0
All-Red Time (s)	3.0	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
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
Act Effct Green (s)	45.7	95.8	6.5	47.3	47.3	31.0		31.0	77.7
Actuated g/C Ratio	0.33	0.68	0.05	0.34	0.34	0.22		0.22	0.56
v/c Ratio	0.67	0.42	0.01	0.86	0.45	0.01		0.82	0.97
Control Delay	40.2	25.4	64.0	52.2	20.9	28.7		72.2	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	40.2	25.4	64.0	52.2	20.9	28.7		72.2	50.6
LOS	D	C	E	D	C	C		E	D
Approach Delay		29.5		46.3		28.7		55.5	
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: 0.97		
Intersection Signal Delay: 42.7	Intersection LOS: D	
Intersection Capacity Utilization 100.5%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

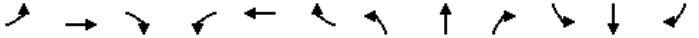




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	383	1015	1	1035	242	3	250	846
v/c Ratio	0.67	0.42	0.01	0.86	0.45	0.01	0.82	0.97
Control Delay	40.2	25.4	64.0	52.2	20.9	28.7	72.2	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	25.4	64.0	52.2	20.9	28.7	72.2	50.6
Queue Length 50th (m)	114.2	126.0	0.3	155.0	26.8	0.2	69.5	184.5
Queue Length 95th (m)	151.2	183.1	2.3	#198.3	54.2	2.8	96.8	#312.3
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	571	2424	82	1208	540	483	384	875
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	0.42	0.01	0.86	0.45	0.01	0.65	0.97

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	1015	0	1	1035	242	0	1	2	248	2	846
Future Volume (vph)	383	1015	0	1	1035	242	0	1	2	248	2	846
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	0.87		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1750	3544		1785	3579	1355		1731			1808	1559
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.73	1.00
Satd. Flow (perm)	1750	3544		1785	3579	1355		1731			1379	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)	383	1015	0	1	1035	242	0	1	2	248	2	846
RTOR Reduction (vph)	0	0	0	0	0	83	0	2	0	0	0	10
Lane Group Flow (vph)	383	1015	0	1	1035	159	0	1	0	0	250	836
Confl. Peds. (#/hr)	30		15	15		30	21		2	2		21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	0%	0%	0%	1%	0%	1%
Turn Type	Prot	NA		Prot	NA	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)	44.7	90.0		1.0	46.3	46.3		30.0			30.0	74.7
Effective Green, g (s)	45.7	91.0		2.0	47.3	47.3		31.0			31.0	76.7
Actuated g/C Ratio	0.33	0.65		0.01	0.34	0.34		0.22			0.22	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)	571	2303		25	1209	457		383			305	854
v/s Ratio Prot	0.22	0.29		0.00	c0.29			0.00				c0.32
v/s Ratio Perm						0.12					0.18	0.22
v/c Ratio	0.67	0.44		0.04	0.86	0.35		0.00			0.82	0.98
Uniform Delay, d1	40.7	12.0		68.1	43.2	34.8		42.5			51.8	30.8
Progression Factor	0.84	2.22		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.5	0.5		0.7	7.9	2.1		0.0			15.7	25.3
Delay (s)	36.8	27.2		68.7	51.1	36.9		42.5			67.5	56.1
Level of Service	D	C		E	D	D		D			E	E
Approach Delay (s)		29.9			48.4			42.5			58.7	
Approach LOS		C			D			D			E	

Intersection Summary					
HCM 2000 Control Delay	44.5	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	100.5%	ICU Level of Service	G		
Analysis Period (min)	15				
c Critical Lane Group					

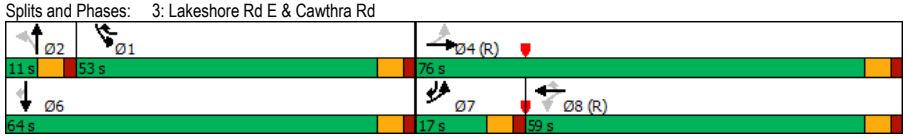
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	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		1.00				0.94						0.96
Frt						0.850		0.955				0.850
Flt Protected	0.950									0.950	0.952	
Satd. Flow (prot)	3429	3578	0	1879	3614	1581	0	1835	0	1679	1720	1566
Flt Permitted	0.079									0.950	0.725	
Satd. Flow (perm)	285	3578	0	1879	3614	1485	0	1835	0	1679	1310	1497
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						330		1				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	

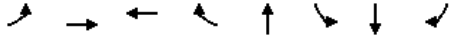
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	394	1137	1132	573	2	986	1	565
Future Volume (vph)	394	1137	1132	573	2	986	1	565
Turn Type	pm+pt	NA	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4	8	1	2	1	6	7
Permitted Phases	4			8				6
Detector Phase	7	4	8	1	2	1	6	7
Switch Phase								
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	17.0	76.0	59.0	53.0	11.0	53.0	64.0	17.0
Total Split (%)	12.1%	54.3%	42.1%	37.9%	7.9%	37.9%	45.7%	12.1%
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	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	67.2	67.2	50.2	110.8	6.3	60.6	60.6	74.8
Actuated g/C Ratio	0.48	0.48	0.36	0.79	0.04	0.43	0.43	0.53
v/c Ratio	0.97	0.66	0.87	0.45	0.04	0.68	0.66	0.69
Control Delay	71.2	29.6	52.5	1.8	57.3	39.3	38.6	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	29.6	52.5	1.8	57.3	39.3	38.6	26.1
LOS	E	C	D	A	E	D	D	C
Approach Delay		40.3	35.4		57.3		34.3	
Approach LOS		D	D		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.97		
Intersection Signal Delay: 36.6	Intersection LOS: D	
Intersection Capacity Utilization 89.0%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd

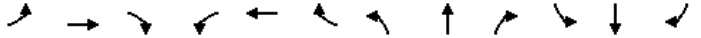




Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	394	1138	1132	573	3	493	494	565
v/c Ratio	0.97	0.66	0.87	0.45	0.04	0.68	0.66	0.69
Control Delay	71.2	29.6	52.5	1.8	57.3	39.3	38.6	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	29.6	52.5	1.8	57.3	39.3	38.6	26.1
Queue Length 50th (m)	41.4	128.1	169.9	5.3	0.6	118.2	117.3	104.0
Queue Length 95th (m)	#73.7	146.3	160.3	17.3	4.0	#205.0	#201.2	152.1
Internal Link Dist (m)		297.4	113.2		71.8		931.9	
Turn Bay Length (m)	35.0			70.0		115.0		
Base Capacity (vph)	406	1814	1393	1285	83	726	744	816
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	0.97	0.63	0.81	0.45	0.04	0.68	0.66	0.69

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	1137	1	0	1132	573	0	2	1	986	1	565
Future Volume (vph)	394	1137	1	0	1132	573	0	2	1	986	1	565
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
Lane Util. Factor	0.97	0.95			0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3429	3578			3614	1540		1835		1679	1721	1507
Flt Permitted	0.08	1.00			1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	286	3578			3614	1540		1835		1679	1311	1507
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)	394	1137	1	0	1132	573	0	2	1	986	1	565
RTOR Reduction (vph)	0	0	0	0	0	80	0	1	0	0	0	10
Lane Group Flow (vph)	394	1138	0	0	1132	493	0	2	0	493	494	555
Confl. Peds. (#/hr)	38		20	20		38	25					25
Heavy Vehicles (%)	1%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	61.4	61.4			44.4	104.0		1.0		59.6	66.6	77.6
Effective Green, g (s)	62.4	62.4			45.4	106.0		2.0		60.6	67.6	79.6
Actuated g/C Ratio	0.45	0.45			0.32	0.76		0.01		0.43	0.48	0.57
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)	396	1594			1171	1166		26		726	810	910
v/s Ratio Prot	c0.09	0.32			0.31	0.18		0.00		c0.29	0.26	c0.05
v/s Ratio Perm	c0.36					0.14					0.03	0.32
v/c Ratio	0.99	0.71			0.97	0.42		0.08		0.68	0.61	0.61
Uniform Delay, d1	41.6	31.5			46.6	6.1		68.1		31.9	26.5	19.9
Progression Factor	1.00	1.00			1.08	0.73		1.00		1.00	1.00	1.00
Incremental Delay, d2	43.6	2.8			17.5	0.2		1.3		2.5	1.3	1.2
Delay (s)	85.2	34.3			67.9	4.6		69.4		34.4	27.8	21.1
Level of Service	F	C			E	A		E		C	C	C
Approach Delay (s)		47.4			46.6			69.4			27.5	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D			
HCM 2000 Volume to Capacity ratio	0.86					
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	89.0%	ICU Level of Service	E			
Analysis Period (min)	15					
c Critical Lane Group						

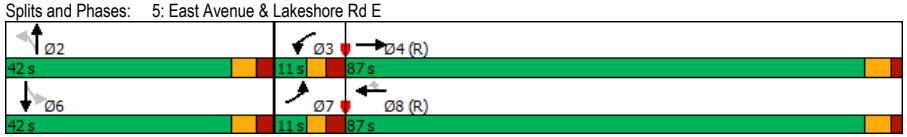
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		0.90	0.99	0.98		1.00	0.98	
Frt		0.991				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3567	0	1785	3650	1597	1785	1576	0	1785	1594	0
Flt Permitted	0.950			0.950			0.751			0.744		
Satd. Flow (perm)	1772	3567	0	1781	3650	1443	1394	1576	0	1393	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				78		73			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	11	1958	65	1729	63	70	0	8	0
Future Volume (vph)	11	1958	65	1729	63	70	0	8	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.5	100.9	12.5	114.0	114.0	13.6	13.6	13.6	13.6
Actuated g/C Ratio	0.05	0.72	0.09	0.81	0.81	0.10	0.10	0.10	0.10
v/c Ratio	0.12	0.81	0.41	0.58	0.05	0.52	0.09	0.06	0.04
Control Delay	66.4	22.0	61.3	7.6	1.3	72.7	0.8	55.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	22.0	61.3	7.6	1.3	72.7	0.8	55.8	0.4
LOS	E	C	E	A	A	E	A	E	A
Approach Delay		22.2		9.3			56.8		25.0
Approach LOS		C		A			E		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: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.81		
Intersection Signal Delay: 17.1	Intersection LOS: B	
Intersection Capacity Utilization 80.4%	ICU Level of Service D	
Analysis Period (min) 15		

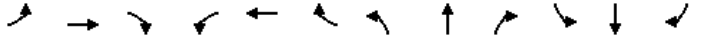
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2083	65	1729	63	70	20	8	10
v/c Ratio	0.12	0.81	0.41	0.58	0.05	0.52	0.09	0.06	0.04
Control Delay	66.4	22.0	61.3	7.6	1.3	72.7	0.8	55.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	22.0	61.3	7.6	1.3	72.7	0.8	55.8	0.4
Queue Length 50th (m)	3.0	303.2	17.8	80.5	0.1	19.8	0.0	2.2	0.0
Queue Length 95th (m)	m5.1	346.1	m30.4	131.1	m2.3	35.5	0.0	7.6	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	95	2573	159	2972	1189	358	459	358	469
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	0.12	0.81	0.41	0.58	0.05	0.20	0.04	0.02	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1958	125	65	1729	63	70	0	20	8	0	10
Future Volume (vph)	11	1958	125	65	1729	63	70	0	20	8	0	10
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.90	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3567		1785	3650	1443	1764	1576		1779	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.74	1.00	
Satd. Flow (perm)	1785	3567		1785	3650	1443	1394	1576		1394	1594	
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)	11	1958	125	65	1729	63	70	0	20	8	0	10
RTOR Reduction (vph)	0	2	0	0	0	14	0	18	0	0	9	0
Lane Group Flow (vph)	11	2081	0	65	1729	49	70	2	0	8	1	0
Confl. Peds. (#/hr)	20		10	10		20	10		3	3		10
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	3.0	98.5		11.5	107.0	107.0	11.0	11.0		11.0	11.0	
Effective Green, g (s)	4.0	99.5		12.5	108.0	108.0	12.0	12.0		12.0	12.0	
Actuated g/C Ratio	0.03	0.71		0.09	0.77	0.77	0.09	0.09		0.09	0.09	
Clearance Time (s)	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	
Lane Grp Cap (vph)	51	2535		159	2815	1113	119	135		119	136	
v/s Ratio Prot	0.01	c0.58		c0.04	c0.47			0.00			0.00	
v/s Ratio Perm						0.03	c0.05			0.01		
v/c Ratio	0.22	0.82		0.41	0.61	0.04	0.59	0.01		0.07	0.01	
Uniform Delay, d1	66.5	14.1		60.3	7.0	3.8	61.6	58.6		58.9	58.5	
Progression Factor	1.03	1.26		0.90	0.94	1.35	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	2.5		1.7	1.0	0.1	7.2	0.0		0.2	0.0	
Delay (s)	69.9	20.2		55.9	7.5	5.2	68.9	58.6		59.1	58.6	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		20.4			9.1			66.6			58.8	
Approach LOS		C			A			E			E	

Intersection Summary					
HCM 2000 Control Delay	16.4	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)	16.0		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

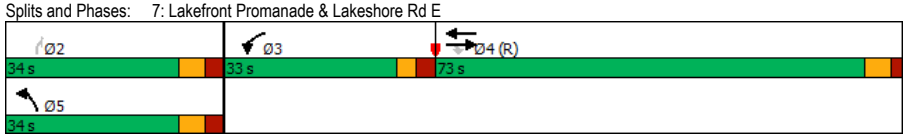
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.92	0.99		0.98	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1597	1750	3650	3463	1597
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	1468	1738	3650	3398	1571
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84				132
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1616	348	287	1493	399	132
Future Volume (vph)	1616	348	287	1493	399	132
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	74.2	74.2	27.5	74.2	22.3	22.3
Actuated g/C Ratio	0.53	0.53	0.20	0.53	0.16	0.16
v/c Ratio	0.85	0.43	0.83	0.77	0.72	0.37
Control Delay	30.0	16.3	84.9	17.3	63.6	10.6
Queue Delay	0.1	0.0	0.0	0.2	0.0	0.0
Total Delay	30.1	16.3	84.9	17.5	63.6	10.6
LOS	C	B	F	B	E	B
Approach Delay	27.6			28.4	50.4	
Approach LOS	C			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 125		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 30.8	Intersection LOS: C	
Intersection Capacity Utilization 86.3%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1616	348	287	1493	399	132
v/c Ratio	0.85	0.43	0.83	0.77	0.72	0.37
Control Delay	30.0	16.3	84.9	17.3	63.6	10.6
Queue Delay	0.1	0.0	0.0	0.2	0.0	0.0
Total Delay	30.1	16.3	84.9	17.5	63.6	10.6
Queue Length 50th (m)	160.4	30.1	89.1	144.6	57.6	0.0
Queue Length 95th (m)	#256.1	m57.6	m#113.0	125.4	72.9	18.2
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1895	817	365	1933	692	419
Starvation Cap Reductn	0	0	0	60	0	0
Spillback Cap Reductn	12	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.43	0.79	0.80	0.58	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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1616	348	287	1493	399	132
Future Volume (vph)	1616	348	287	1493	399	132
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	5.0	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	0.92	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1468	1750	3650	3463	1569
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	1468	1750	3650	3463	1569
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1616	348	287	1493	399	132
RTOR Reduction (vph)	0	39	0	0	0	111
Lane Group Flow (vph)	1616	309	287	1493	399	21
Confl. Peds. (#/hr)		16	16		12	3
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	73.2	73.2	26.5	73.2	21.3	21.3
Effective Green, g (s)	74.2	74.2	27.5	74.2	22.3	22.3
Actuated g/C Ratio	0.53	0.53	0.20	0.53	0.16	0.16
Clearance Time (s)	6.0	6.0	6.0	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)	1896	778	343	1934	551	249
v/s Ratio Prot	c0.45		c0.16	0.41	c0.12	
v/s Ratio Perm		0.21				0.01
v/c Ratio	0.85	0.40	0.84	0.77	0.72	0.08
Uniform Delay, d1	28.2	19.6	54.1	26.2	55.9	50.2
Progression Factor	0.84	0.92	1.33	0.55	1.00	1.00
Incremental Delay, d2	4.7	1.4	10.7	1.9	4.7	0.1
Delay (s)	28.5	19.4	82.6	16.4	60.6	50.3
Level of Service	C	B	F	B	E	D
Approach Delay (s)	26.9			27.1	58.1	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay	30.8	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)	17.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00		0.84	0.98	1.00			0.99			1.00	
Frt			0.850					0.850			0.892	
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1750	3579	1597	1750	3578	0	1750	1578	0	0	1696	0
Flt Permitted	0.950			0.950			0.754				0.961	
Satd. Flow (perm)	1742	3579	1334	1708	3578	0	1389	1578	0	0	1646	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158					305			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary

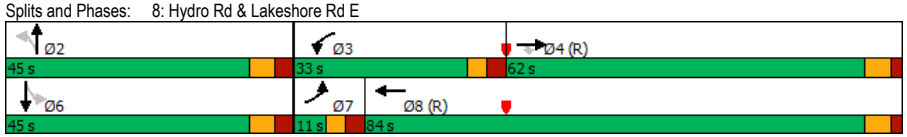
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	3	1302	345	250	1760	195	0	1	0
Future Volume (vph)	3	1302	345	250	1760	195	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.9	72.3	72.3	25.7	100.5	26.0	26.0		26.0
Actuated g/C Ratio	0.05	0.52	0.52	0.18	0.72	0.19	0.19		0.19
v/c Ratio	0.04	0.70	0.45	0.78	0.69	0.76	0.26		0.01
Control Delay	54.0	24.2	13.4	74.0	11.6	71.8	1.2		0.0
Queue Delay	0.0	0.2	0.0	0.0	0.3	0.0	0.0		0.0
Total Delay	54.0	24.4	13.4	74.0	11.9	71.8	1.2		0.0
LOS	D	C	B	E	B	E	A		A
Approach Delay		22.1			19.6		42.3		
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: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 84.6% ICU Level of Service E
Analysis Period (min) 15

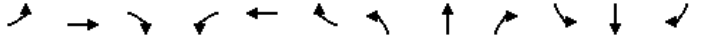
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	3	1302	345	250	1762	195	140	5
v/c Ratio	0.04	0.70	0.45	0.78	0.69	0.76	0.26	0.01
Control Delay	54.0	24.2	13.4	74.0	11.6	71.8	1.2	0.0
Queue Delay	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	54.0	24.4	13.4	74.0	11.9	71.8	1.2	0.0
Queue Length 50th (m)	0.8	86.4	26.4	76.9	87.7	54.5	0.0	0.0
Queue Length 95th (m)	m1.2	141.3	m33.9	m89.5	110.6	77.2	0.0	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	85	1849	765	363	2568	386	659	542
Starvation Cap Reductn	0	90	0	0	241	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.74	0.45	0.69	0.76	0.51	0.21	0.01

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1302	345	250	1760	2	195	0	140	1	0	4
Future Volume (vph)	3	1302	345	250	1760	2	195	0	140	1	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		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	
Frpb, ped/bikes	1.00	1.00	0.84	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			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1750	3579	1334	1750	3578		1750	1578			1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.96	
Satd. Flow (perm)	1750	3579	1334	1750	3578		1390	1578			1645	
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)	3	1302	345	250	1760	2	195	0	140	1	0	4
RTOR Reduction (vph)	0	0	76	0	0	0	0	114	0	0	4	0
Lane Group Flow (vph)	3	1302	269	250	1762	0	195	26	0	0	1	0
Confl. Peds. (#/hr)	13		38	38		13			2	2		
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	2%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.3	71.3	71.3	24.7	94.7		25.0	25.0			25.0	
Effective Green, g (s)	2.3	72.3	72.3	25.7	95.7		26.0	26.0			26.0	
Actuated g/C Ratio	0.02	0.52	0.52	0.18	0.68		0.19	0.19			0.19	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	28	1848	688	321	2445		258	293			305	
v/s Ratio Prot	0.00	0.36		c0.14	c0.49			0.02				
v/s Ratio Perm			0.20				c0.14				0.00	
v/c Ratio	0.11	0.70	0.39	0.78	0.72		0.76	0.09			0.00	
Uniform Delay, d1	67.8	25.7	20.5	54.4	13.8		54.0	47.2			46.4	
Progression Factor	0.85	0.80	0.94	1.20	0.81		1.00	1.00			1.00	
Incremental Delay, d2	1.0	1.4	1.0	6.3	1.0		11.9	0.1			0.0	
Delay (s)	58.5	22.0	20.2	71.4	12.2		65.9	47.3			46.4	
Level of Service	E	C	C	E	B		E	D			D	
Approach Delay (s)		21.7			19.6			58.1			46.4	
Approach LOS		C			B			E			D	

Intersection Summary					
HCM 2000 Control Delay	23.7	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	84.6%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0		1	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	1.00				1.00			1.00	0.97		0.99	
Frt			0.850		0.994				0.850		0.900	
Flt Protected	0.950			0.950				0.960			0.993	
Satd. Flow (prot)	1684	3579	1597	1785	3585	0	0	1844	1597	0	1695	0
Flt Permitted	0.950			0.950				0.552			0.925	
Satd. Flow (perm)	1678	3579	1597	1785	3585	0	0	1057	1557	0	1576	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		4				151		100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary

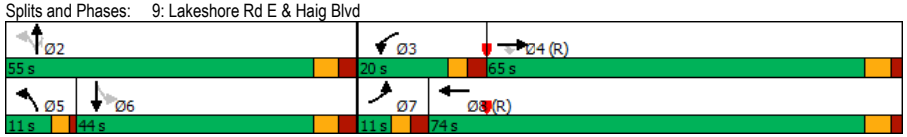
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	60	1208	162	111	1696	180	35	169	27	20
Future Volume (vph)	60	1208	162	111	1696	180	35	169	27	20
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	10.4	73.7	73.7	14.0	77.3		36.3	36.3		36.3
Actuated g/C Ratio	0.07	0.53	0.53	0.10	0.55		0.26	0.26		0.26
v/c Ratio	0.48	0.64	0.18	0.62	0.89		0.79	0.33		0.37
Control Delay	83.9	14.2	1.8	64.8	33.8		67.0	8.7		19.0
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	83.9	14.3	1.8	64.8	33.8		67.0	8.7		19.0
LOS	F	B	A	E	C		E	A		B
Approach Delay		15.8			35.7		41.4			19.0
Approach LOS		B			D		D			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: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 28.1 Intersection LOS: C
Intersection Capacity Utilization 103.9% ICU Level of Service G
Analysis Period (min) 15

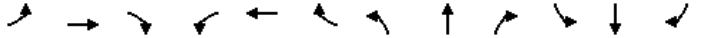
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	60	1208	162	111	1767	215	169	180
v/c Ratio	0.48	0.64	0.18	0.62	0.89	0.79	0.33	0.37
Control Delay	83.9	14.2	1.8	64.8	33.8	67.0	8.7	19.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	14.3	1.8	64.8	33.8	67.0	8.7	19.0
Queue Length 50th (m)	18.5	36.2	1.7	31.9	221.6	58.5	4.0	18.3
Queue Length 95th (m)	m#31.0	52.1	m5.7	m36.2	m#307.8	80.6	19.9	35.6
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	124	1884	914	197	1982	369	643	530
Starvation Cap Reductn	0	85	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	0.48	0.67	0.18	0.56	0.89	0.58	0.26	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1208	162	111	1696	71	180	35	169	27	20	133
Future Volume (vph)	60	1208	162	111	1696	71	180	35	169	27	20	133
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1684	3579	1597	1785	3585			1838	1557		1692	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.55	1.00		0.93	
Satd. Flow (perm)	1684	3579	1597	1785	3585			1058	1557		1577	
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)	60	1208	162	111	1696	71	180	35	169	27	20	133
RTOR Reduction (vph)	0	0	74	0	2	0	0	0	112	0	74	0
Lane Group Flow (vph)	60	1208	88	111	1765	0	0	215	57	0	106	0
Confl. Peds. (#/hr)	11					11	5		12	12		5
Heavy Vehicles (%)	6%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.4	72.7	72.7	13.0	76.3			35.3	35.3		35.3	
Effective Green, g (s)	10.4	73.7	73.7	14.0	77.3			36.3	36.3		36.3	
Actuated g/C Ratio	0.07	0.53	0.53	0.10	0.55			0.26	0.26		0.26	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	125	1884	840	178	1979			274	403		408	
v/s Ratio Prot	0.04	0.34		c0.06	c0.49							
v/s Ratio Perm			0.06					c0.20	0.04		0.07	
v/c Ratio	0.48	0.64	0.10	0.62	0.89			0.78	0.14		0.26	
Uniform Delay, d1	62.2	23.7	16.6	60.5	27.7			48.2	39.9		41.2	
Progression Factor	1.22	0.49	0.38	0.97	1.06			1.00	1.00		1.00	
Incremental Delay, d2	2.2	1.3	0.2	2.7	2.9			13.7	0.2		0.3	
Delay (s)	78.1	13.0	6.6	61.3	32.3			61.9	40.0		41.5	
Level of Service	E	B	A	E	C			E	D		D	
Approach Delay (s)		15.0			34.0			52.3			41.5	
Approach LOS		B			C			D			D	

Intersection Summary

HCM 2000 Control Delay	29.1	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)	19.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

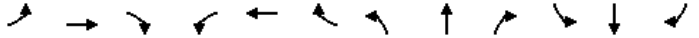
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.911					
Flt Protected	0.983					0.967
Satd. Flow (prot)	1650	0	1842	0	0	1781
Flt Permitted	0.983					0.967
Satd. Flow (perm)	1650	0	1842	0	0	1781
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	31	59	18	0	127	61
Future Volume (vph)	31	59	18	0	127	61
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	31	59	18	0	127	61

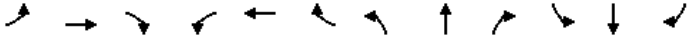
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	90	18	188
Volume Left (vph)	31	0	127
Volume Right (vph)	59	0	0
Hadj (s)	-0.29	0.03	0.17
Departure Headway (s)	4.1	4.3	4.3
Degree Utilization, x	0.10	0.02	0.22
Capacity (veh/h)	840	798	822
Control Delay (s)	7.5	7.4	8.5
Approach Delay (s)	7.5	7.4	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.884			0.981			0.983	
Flt Protected		0.950			0.993						0.990	
Satd. Flow (prot)	0	1750	0	0	1617	0	0	1807	0	0	1793	0
Flt Permitted		0.950			0.993						0.990	
Satd. Flow (perm)	0	1750	0	0	1617	0	0	1807	0	0	1793	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



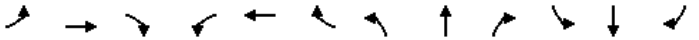
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	0	0	29	0	173	0	337	54	128	426	82
Future Volume (vph)	21	0	0	29	0	173	0	337	54	128	426	82
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	0	0	29	0	173	0	337	54	128	426	82

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	21	202	391	636
Volume Left (vph)	21	29	0	128
Volume Right (vph)	0	173	54	82
Hadj (s)	0.23	-0.45	-0.05	0.00
Departure Headway (s)	7.4	6.1	5.5	5.2
Degree Utilization, x	0.04	0.34	0.60	0.93
Capacity (veh/h)	432	556	637	636
Control Delay (s)	10.8	12.3	16.4	41.1
Approach Delay (s)	10.8	12.3	16.4	41.1
Approach LOS	B	B	C	E

Intersection Summary				
Delay		28.2		
Level of Service		D		
Intersection Capacity Utilization		77.1%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.966			0.941			0.973			0.978	
Flt Protected		0.975			0.990			0.985			0.992	
Satd. Flow (prot)	0	1735	0	0	1716	0	0	1765	0	0	1787	0
Flt Permitted		0.975			0.990			0.985			0.992	
Satd. Flow (perm)	0	1735	0	0	1716	0	0	1765	0	0	1787	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



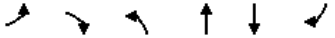
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	64	29	31	25	44	54	87	146	58	94	393	93
Future Volume (vph)	64	29	31	25	44	54	87	146	58	94	393	93
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	64	29	31	25	44	54	87	146	58	94	393	93

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	124	123	291	580
Volume Left (vph)	64	25	87	94
Volume Right (vph)	31	54	58	93
Hadj (s)	-0.01	-0.19	-0.03	-0.03
Departure Headway (s)	6.5	6.3	5.6	5.2
Degree Utilization, x	0.22	0.22	0.45	0.83
Capacity (veh/h)	504	512	602	685
Control Delay (s)	11.3	11.0	13.0	28.1
Approach Delay (s)	11.3	11.0	13.0	28.1
Approach LOS	B	B	B	D

Intersection Summary			
Delay	20.4		
Level of Service	C		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

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	0.973				0.981	
Flt Protected	0.961			0.988		
Satd. Flow (prot)	1722	0	0	1820	1807	0
Flt Permitted	0.961			0.988		
Satd. Flow (perm)	1722	0	0	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	117	29	70	217	511	83
Future Volume (vph)	117	29	70	217	511	83
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	117	29	70	217	511	83

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	146	287	594
Volume Left (vph)	117	70	0
Volume Right (vph)	29	0	83
Hadj (s)	0.08	0.08	-0.05
Departure Headway (s)	6.1	5.2	4.7
Degree Utilization, x	0.25	0.41	0.78
Capacity (veh/h)	546	667	751
Control Delay (s)	11.0	11.8	22.1
Approach Delay (s)	11.0	11.8	22.1
Approach LOS	B	B	C

Intersection Summary			
Delay	17.7		
Level of Service	C		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

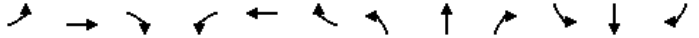
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.974
Satd. Flow (prot)	1593	0	1842	0	0	1794
Flt Permitted						0.974
Satd. Flow (perm)	1593	0	1842	0	0	1794
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	13	5	0	50	42
Future Volume (vph)	0	13	5	0	50	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	13	5	0	50	42

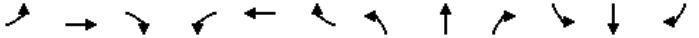
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	13	5	92
Volume Left (vph)	0	0	50
Volume Right (vph)	13	0	0
Hadj (s)	-0.57	0.03	0.14
Departure Headway (s)	3.5	4.0	4.1
Degree Utilization, x	0.01	0.01	0.10
Capacity (veh/h)	983	870	877
Control Delay (s)	6.6	7.1	7.5
Approach Delay (s)	6.6	7.1	7.5
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.916			0.887			0.972			0.995	
Flt Protected		0.982			0.992						0.993	
Satd. Flow (prot)	0	1657	0	0	1621	0	1842	1790	0	0	1820	0
Flt Permitted		0.982			0.992						0.993	
Satd. Flow (perm)	0	1657	0	0	1621	0	1842	1790	0	0	1820	0
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



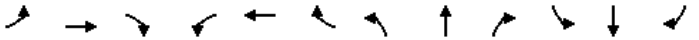
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	0	10	29	0	150	0	231	54	63	375	16
Future Volume (vph)	6	0	10	29	0	150	0	231	54	63	375	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	0	10	29	0	150	0	231	54	63	375	16

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	16	179	0	285	454
Volume Left (vph)	6	29	0	0	63
Volume Right (vph)	10	150	0	54	16
Hadj (s)	-0.27	-0.44	0.00	-0.10	0.04
Departure Headway (s)	5.9	5.4	5.5	5.4	5.0
Degree Utilization, x	0.03	0.27	0.00	0.43	0.63
Capacity (veh/h)	493	597	633	635	699
Control Delay (s)	9.1	10.3	7.3	11.3	16.2
Approach Delay (s)	9.1	10.3	11.3		16.2
Approach LOS	A	B	B		C

Intersection Summary				
Delay	13.5			
Level of Service	B			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.959			0.954			0.978			0.980	
Flt Protected		0.980			0.988			0.988			0.994	
Satd. Flow (prot)	0	1731	0	0	1736	0	0	1780	0	0	1794	0
Flt Permitted		0.980			0.988			0.988			0.994	
Satd. Flow (perm)	0	1731	0	0	1736	0	0	1780	0	0	1794	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



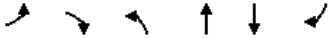
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	41	29	31	25	44	36	87	213	58	54	330	65
Future Volume (vph)	41	29	31	25	44	36	87	213	58	54	330	65
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	29	31	25	44	36	87	213	58	54	330	65

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	101	105	358	449
Volume Left (vph)	41	25	87	54
Volume Right (vph)	31	36	58	65
Hadj (s)	-0.07	-0.12	-0.01	-0.03
Departure Headway (s)	6.1	6.0	5.2	5.0
Degree Utilization, x	0.17	0.18	0.51	0.63
Capacity (veh/h)	497	507	659	693
Control Delay (s)	10.4	10.3	13.5	16.1
Approach Delay (s)	10.4	10.3	13.5	16.1
Approach LOS	B	B	B	C

Intersection Summary					
Delay		14.0			
Level of Service		B			
Intersection Capacity Utilization		51.0%	ICU Level of Service		A
Analysis Period (min)		15			

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	0.970				0.988	
Flt Protected	0.963			0.987		
Satd. Flow (prot)	1721	0	0	1818	1820	0
Flt Permitted	0.963			0.987		
Satd. Flow (perm)	1721	0	0	1818	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	100	29	70	187	492	48
Future Volume (vph)	100	29	70	187	492	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	29	70	187	492	48

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	129	257	540
Volume Left (vph)	100	70	0
Volume Right (vph)	29	0	48
Hadj (s)	0.05	0.09	-0.02
Departure Headway (s)	5.8	5.0	4.6
Degree Utilization, x	0.21	0.36	0.69
Capacity (veh/h)	554	688	764
Control Delay (s)	10.3	10.8	17.2
Approach Delay (s)	10.3	10.8	17.2
Approach LOS	B	B	C

Intersection Summary			
Delay	14.5		
Level of Service	B		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

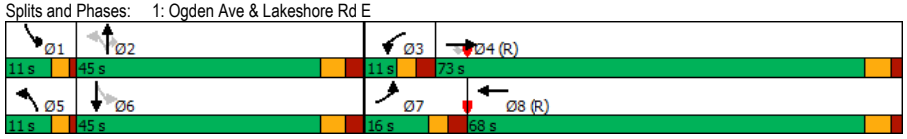
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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		0.93	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.987				0.850		0.884	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3444	1566	1750	3298	0	1750	1883	1566	1750	1641	0
Flt Permitted	0.950			0.950			0.645			0.720		
Satd. Flow (perm)	1739	3444	1463	1741	3298	0	1181	1883	1532	1314	1641	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		9				154		78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	148	1594	113	24	1570	181	56	270	82	23
Future Volume (vph)	148	1594	113	24	1570	181	56	270	82	23
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	16.0	73.0	73.0	11.0	68.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	11.4%	52.1%	52.1%	7.9%	48.6%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	21.5	91.2	91.2	8.4	73.3	29.2	18.2	18.2	29.2	18.2
Actuated g/C Ratio	0.15	0.65	0.65	0.06	0.52	0.21	0.13	0.13	0.21	0.13
v/c Ratio	0.55	0.71	0.11	0.23	0.99	0.65	0.23	0.81	0.28	0.36
Control Delay	68.6	17.1	5.4	81.4	40.7	57.8	53.5	43.0	43.6	19.2
Queue Delay	0.0	0.2	0.0	0.0	35.4	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	17.3	5.4	81.4	76.1	57.8	53.5	43.1	43.6	19.2
LOS	E	B	A	F	E	E	D	D	D	B
Approach Delay		20.6			76.2		49.5			30.1
Approach LOS		C			E		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: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.99		
Intersection Signal Delay: 47.0	Intersection LOS: D	
Intersection Capacity Utilization 90.5%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	1594	113	24	1721	181	56	270	82	101
v/c Ratio	0.55	0.71	0.11	0.23	0.99	0.65	0.23	0.81	0.28	0.36
Control Delay	68.6	17.1	5.4	81.4	40.7	57.8	53.5	43.0	43.6	19.2
Queue Delay	0.0	0.2	0.0	0.0	35.4	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	17.3	5.4	81.4	76.1	57.8	53.5	43.1	43.6	19.2
Queue Length 50th (m)	45.2	73.7	1.9	7.3	123.0	45.7	14.9	33.7	19.5	6.0
Queue Length 95th (m)	m62.1	120.4	m8.5	m11.4	#351.7	62.9	26.2	62.3	31.3	22.0
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	269	2242	990	105	1731	278	524	537	298	513
Starvation Cap Reductn	0	22	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	113	0	0	158	0	0	5	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.75	0.11	0.23	1.09	0.65	0.11	0.51	0.28	0.20

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	1594	113	24	1570	151	181	56	270	82	23	78
Future Volume (vph)	148	1594	113	24	1570	151	181	56	270	82	23	78
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	0.93	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.88	
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	3444	1463	1750	3298		1744	1883	1532	1739	1641	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.64	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1750	3444	1463	1750	3298		1183	1883	1532	1319	1641	
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)	148	1594	113	24	1570	151	181	56	270	82	23	78
RTOR Reduction (vph)	0	0	40	0	4	0	0	0	134	0	68	0
Lane Group Flow (vph)	148	1594	73	24	1717	0	181	56	136	82	33	0
Confl. Peds. (#/hr)	18		12	12		18	6		9	9		6
Heavy Vehicles (%)	2%	6%	2%	2%	9%	2%	2%	2%	2%	2%	2%	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)	20.5	87.7	87.7	5.1	72.3		24.2	17.2	17.2	24.2	17.2	
Effective Green, g (s)	21.5	88.7	88.7	6.1	73.3		26.2	18.2	18.2	26.2	18.2	
Actuated g/C Ratio	0.15	0.63	0.63	0.04	0.52		0.19	0.13	0.13	0.19	0.13	
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)	268	2182	926	76	1726		253	244	199	270	213	
v/s Ratio Prot	c0.08	c0.46		0.01	c0.52		c0.04	0.03		0.02	0.02	
v/s Ratio Perm			0.05				c0.09		0.09	0.04		
v/c Ratio	0.55	0.73	0.08	0.32	0.99		0.72	0.23	0.68	0.30	0.16	
Uniform Delay, d1	54.8	17.5	9.9	64.9	33.2		52.4	54.6	58.2	48.5	54.1	
Progression Factor	1.14	0.81	1.76	1.25	0.64		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	1.5	0.1	1.8	17.7		9.2	0.5	9.3	0.6	0.3	
Delay (s)	64.1	15.7	17.5	82.8	38.9		61.7	55.1	67.5	49.2	54.4	
Level of Service	E	B	B	F	D		E	E	E	D	D	
Approach Delay (s)		19.7			39.5			64.0			52.1	
Approach LOS		B			D			E			D	

Intersection Summary

HCM 2000 Control Delay	34.4	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)	19.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		0.91		0.99				0.97
Frt						0.850		0.955				0.850
Flt Protected	0.950			0.950				0.968			0.953	
Satd. Flow (prot)	1653	3476	0	1785	3476	1536	0	1776	0	0	1813	1465
Flt Permitted	0.950			0.950				0.863			0.729	
Satd. Flow (perm)	1620	3476	0	1777	3476	1400	0	1572	0	0	1387	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

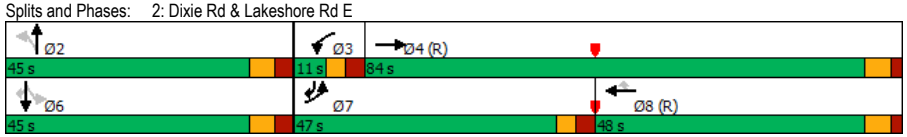
Area Type: Other

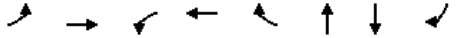
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	571	1317	2	905	199	2	0	155	3	522
Future Volume (vph)	571	1317	2	905	199	2	0	155	3	522
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	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	24.0	12.0	12.0	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
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)	60.5	104.2	6.8	41.2	41.2		22.3		22.3	83.8
Actuated g/C Ratio	0.43	0.74	0.05	0.29	0.29		0.16		0.16	0.60
v/c Ratio	0.80	0.51	0.02	0.89	0.40		0.01		0.71	0.59
Control Delay	43.7	19.2	64.0	58.3	16.9		0.0		72.8	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	43.7	19.2	64.0	58.3	16.9		0.0		72.8	18.5
LOS	D	B	E	E	B		A		E	B
Approach Delay		26.6		50.9					31.1	
Approach LOS		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: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 34.7 Intersection LOS: C
Intersection Capacity Utilization 88.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

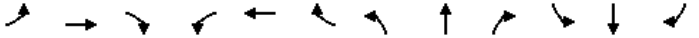




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	571	1320	2	905	199	3	158	522
v/c Ratio	0.80	0.51	0.02	0.89	0.40	0.01	0.71	0.59
Control Delay	43.7	19.2	64.0	58.3	16.9	0.0	72.8	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	19.2	64.0	58.3	16.9	0.0	72.8	18.5
Queue Length 50th (m)	175.8	139.2	0.6	130.2	15.8	0.0	44.3	80.5
Queue Length 95th (m)	m#243.6	206.5	3.7	158.0	38.6	0.0	65.7	114.6
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	714	2587	86	1067	516	522	386	879
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	0.51	0.02	0.85	0.39	0.01	0.41	0.59

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	571	1317	3	2	905	199	2	0	1	155	3	522
Future Volume (vph)	571	1317	3	2	905	199	2	0	1	155	3	522
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	0.91		1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			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		0.97			0.95	1.00
Satd. Flow (prot)	1653	3475		1785	3476	1400		1763			1813	1455
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.73	1.00
Satd. Flow (perm)	1653	3475		1785	3476	1400		1572			1386	1455
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)	571	1317	3	2	905	199	2	0	1	155	3	522
RTOR Reduction (vph)	0	0	0	0	0	88	0	3	0	0	0	9
Lane Group Flow (vph)	571	1320	0	2	905	111	0	0	0	0	158	513
Confl. Peds. (#/hr)	18		7	7		18	13					13
Heavy Vehicles (%)	8%	5%	2%	0%	5%	4%	0%	0%	0%	1%	0%	9%
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)	59.5	98.4		1.3	40.2	40.2		21.3			21.3	80.8
Effective Green, g (s)	60.5	99.4		2.3	41.2	41.2		22.3			22.3	82.8
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)	714	2467		29	1022	412		250			220	860
v/s Ratio Prot	c0.35	0.38		0.00	c0.26							0.26
v/s Ratio Perm						0.08		0.00			c0.11	0.09
v/c Ratio	0.80	0.54		0.07	0.89	0.27		0.00			0.72	0.60
Uniform Delay, d1	34.5	9.5		67.8	47.1	37.9		49.5			55.9	18.0
Progression Factor	1.03	2.11		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.9	0.5		1.0	11.2	1.6		0.0			10.7	1.1
Delay (s)	39.5	20.6		68.8	58.3	39.5		49.5			66.5	19.2
Level of Service	D	C		E	E	D		D			E	B
Approach Delay (s)		26.3			55.0			49.5			30.2	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.81				
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					

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		1.00		1.00		0.98						0.97
Frt						0.850		0.865				0.850
Flt Protected	0.950			0.950						0.950	0.953	
Satd. Flow (prot)	3330	3544	0	1785	3476	1426	0	1662	0	1556	1597	1551
Flt Permitted	0.068			0.259						0.950	0.729	
Satd. Flow (perm)	238	3544	0	485	3476	1390	0	1662	0	1556	1222	1506
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						290		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

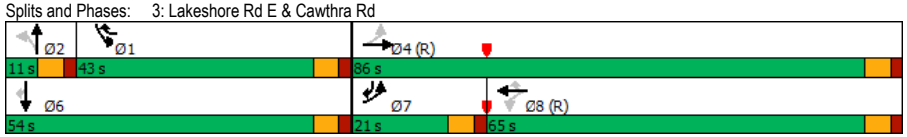
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	419	1040	2	1312	923	0	585	3	440
Future Volume (vph)	419	1040	2	1312	923	0	585	3	440
Turn Type	pm+pt	NA	Perm	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1	2	1	6	7
Permitted Phases	4		8		8				6
Detector Phase	7	4	8	8	1	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	21.0	86.0	65.0	65.0	43.0	11.0	43.0	54.0	21.0
Total Split (%)	15.0%	61.4%	46.4%	46.4%	30.7%	7.9%	30.7%	38.6%	15.0%
Yellow Time (s)	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
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	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	79.0	79.0	58.1	58.1	107.0	6.2	48.8	48.8	66.9
Actuated g/C Ratio	0.56	0.56	0.42	0.42	0.76	0.04	0.35	0.35	0.48
v/c Ratio	0.87	0.52	0.01	0.91	0.81	0.01	0.54	0.53	0.60
Control Delay	53.9	19.8	30.5	51.7	9.6	0.0	42.7	42.4	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	19.8	30.5	51.7	9.6	0.0	42.7	42.4	26.6
LOS	D	B	C	D	A	A	D	D	C
Approach Delay		29.6		34.3				35.7	
Approach LOS		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: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 33.2 Intersection LOS: C
Intersection Capacity Utilization 86.8% ICU Level of Service E
Analysis Period (min) 15

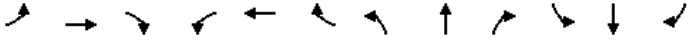
Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	419	1042	2	1312	923	1	292	296	440
v/c Ratio	0.87	0.52	0.01	0.91	0.81	0.01	0.54	0.53	0.60
Control Delay	53.9	19.8	30.5	51.7	9.6	0.0	42.7	42.4	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	19.8	30.5	51.7	9.6	0.0	42.7	42.4	26.6
Queue Length 50th (m)	44.4	91.4	0.4	190.2	4.3	0.0	71.4	72.3	82.4
Queue Length 95th (m)	#71.4	109.7	m0.5	192.2	180.7	0.0	117.6	118.3	117.0
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)	487	2050	207	1489	1143	185	542	557	738
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	0.86	0.51	0.01	0.88	0.81	0.01	0.54	0.53	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	1040	2	2	1312	923	0	0	1	585	3	440
Future Volume (vph)	419	1040	2	2	1312	923	0	0	1	585	3	440
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
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3330	3543		1780	3476	1407		1662		1556	1597	1516
Flt Permitted	0.07	1.00		0.26	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	240	3543		486	3476	1407		1662		1556	1221	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)	419	1040	2	2	1312	923	0	0	1	585	3	440
RTOR Reduction (vph)	0	0	0	0	0	78	0	1	0	0	0	11
Lane Group Flow (vph)	419	1042	0	2	1312	845	0	0	0	292	296	429
Confl. Peds. (#/hr)	10		6	6		10	13					13
Heavy Vehicles (%)	4%	3%	0%	0%	5%	12%	0%	0%	0%	9%	0%	3%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	73.2	73.2		52.4	52.4	100.2		1.0		47.8	54.8	69.6
Effective Green, g (s)	74.2	74.2		53.4	53.4	102.2		2.0		48.8	55.8	71.6
Actuated g/C Ratio	0.53	0.53		0.38	0.38	0.73		0.01		0.35	0.40	0.51
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	1877		185	1325	1027		23		542	617	829
v/s Ratio Prot	c0.10	0.29			c0.38	c0.29		0.00		0.19	0.17	c0.06
v/s Ratio Perm	0.37			0.00		0.31					0.02	0.22
v/c Ratio	0.88	0.56		0.01	0.99	0.82		0.00		0.54	0.48	0.52
Uniform Delay, d1	43.1	21.9		26.9	43.0	12.8		68.0		36.6	31.3	22.7
Progression Factor	1.00	1.00		1.31	1.17	1.03		1.00		1.00	1.00	1.00
Incremental Delay, d2	17.3	1.2		0.1	17.4	3.5		0.0		1.0	0.6	0.5
Delay (s)	60.3	23.1		35.3	67.8	16.6		68.0		37.6	31.9	23.3
Level of Service	E	C		D	E	B		E		D	C	C
Approach Delay (s)		33.8			46.7			68.0			29.8	
Approach LOS		C			D			E			C	

Intersection Summary

HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00		0.96	1.00				0.98	
Frt		0.996				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3530	0	1785	3444	1413	1785	1633	0	1785	1608	0
Flt Permitted	0.950			0.950			0.754			0.523		
Satd. Flow (perm)	1783	3530	0	1784	3444	1358	1412	1633	0	983	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				78		92			70	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

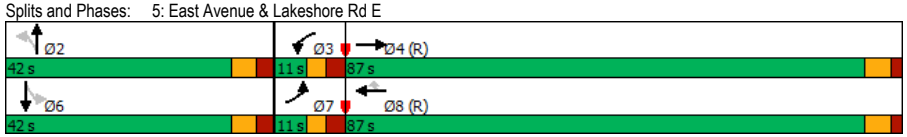
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	1556	11	2216	8	128	0	5	0
Future Volume (vph)	5	1556	11	2216	8	128	0	5	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.0	104.6	7.5	107.4	107.4	19.0	19.0	19.0	19.0
Actuated g/C Ratio	0.05	0.75	0.05	0.77	0.77	0.14	0.14	0.14	0.14
v/c Ratio	0.06	0.61	0.12	0.84	0.01	0.67	0.46	0.04	0.02
Control Delay	70.4	12.2	51.5	14.3	0.0	73.5	24.8	49.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	12.2	51.5	14.3	0.0	73.5	24.8	49.4	0.2
LOS	E	B	D	B	A	E	C	D	A
Approach Delay		12.4		14.5			48.1		24.8
Approach LOS		B		B			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: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15

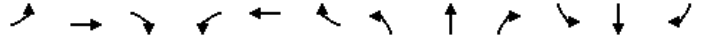
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1602	11	2216	8	128	139	5	5
v/c Ratio	0.06	0.61	0.12	0.84	0.01	0.67	0.46	0.04	0.02
Control Delay	70.4	12.2	51.5	14.3	0.0	73.5	24.8	49.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	12.2	51.5	14.3	0.0	73.5	24.8	49.4	0.2
Queue Length 50th (m)	1.3	91.1	3.1	124.1	0.0	36.0	12.4	1.3	0.0
Queue Length 95th (m)	m3.1	233.7	m4.1	#390.0	m0.0	55.8	31.9	5.4	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	89	2637	95	2641	1059	363	488	252	465
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	0.06	0.61	0.12	0.84	0.01	0.35	0.28	0.02	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1556	46	11	2216	8	128	0	139	5	0	5
Future Volume (vph)	5	1556	46	11	2216	8	128	0	139	5	0	5
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3529		1785	3444	1358	1779	1633		1785	1608	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.52	1.00	
Satd. Flow (perm)	1785	3529		1785	3444	1358	1413	1633		983	1608	
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)	5	1556	46	11	2216	8	128	0	139	5	0	5
RTOR Reduction (vph)	0	1	0	0	0	2	0	80	0	0	4	0
Lane Group Flow (vph)	5	1601	0	11	2216	6	128	59	0	5	1	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	6%	13%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	1.4	100.0		3.0	101.6	101.6	18.0	18.0		18.0	18.0	
Effective Green, g (s)	2.4	101.0		4.0	102.6	102.6	19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.02	0.72		0.03	0.73	0.73	0.14	0.14		0.14	0.14	
Clearance Time (s)	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	
Lane Grp Cap (vph)	30	2545		51	2523	995	191	221		133	218	
v/s Ratio Prot	0.00	0.45		c0.01	c0.64			0.04			0.00	
v/s Ratio Perm						0.00	c0.09			0.01		
v/c Ratio	0.17	0.63		0.22	0.88	0.01	0.67	0.27		0.04	0.00	
Uniform Delay, d1	67.8	9.9		66.5	14.0	5.0	57.5	54.3		52.6	52.3	
Progression Factor	1.10	1.10		0.80	0.93	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.1		1.2	2.8	0.0	8.9	0.7		0.1	0.0	
Delay (s)	76.9	12.0		54.3	16.0	5.0	66.4	54.9		52.7	52.3	
Level of Service	E	B		D	B	A	E	D		D	D	
Approach Delay (s)		12.2			16.1			60.4			52.5	
Approach LOS		B			B			E			D	

Intersection Summary

HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

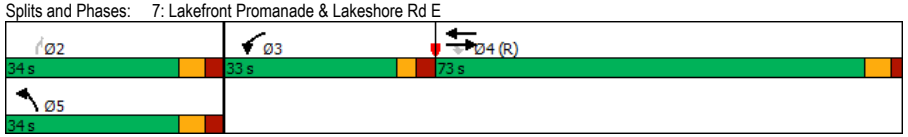
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.95	1.00		0.98	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3510	1551	1750	3476	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3510	1478	1744	3476	3337	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		30				303
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1558	119	31	1820	444	303
Future Volume (vph)	1558	119	31	1820	444	303
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	82.6	82.6	19.6	82.6	24.1	24.1
Actuated g/C Ratio	0.59	0.59	0.14	0.59	0.17	0.17
v/c Ratio	0.75	0.13	0.13	0.89	0.76	0.58
Control Delay	17.4	9.8	54.0	21.0	64.0	9.8
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	17.5	9.8	54.0	21.2	64.0	9.8
LOS	B	A	D	C	E	A
Approach Delay	16.9			21.8	42.0	
Approach LOS	B			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.89		
Intersection Signal Delay: 23.4	Intersection LOS: C	
Intersection Capacity Utilization 72.1%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1558	119	31	1820	444	303
v/c Ratio	0.75	0.13	0.13	0.89	0.76	0.58
Control Delay	17.4	9.8	54.0	21.0	64.0	9.8
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	17.5	9.8	54.0	21.2	64.0	9.8
Queue Length 50th (m)	153.7	4.1	9.0	~292.0	64.0	0.0
Queue Length 95th (m)	148.9	17.2	m10.2	m#313.0	81.0	26.4
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2070	884	350	2050	679	555
Starvation Cap Reductn	0	0	0	20	0	0
Spillback Cap Reductn	19	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.13	0.09	0.90	0.65	0.55

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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1558	119	31	1820	444	303
Future Volume (vph)	1558	119	31	1820	444	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	5.0	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	0.95	1.00	1.00	1.00	1.00
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)	3510	1478	1750	3476	3395	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3510	1478	1750	3476	3395	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1558	119	31	1820	444	303
RTOR Reduction (vph)	0	13	0	0	0	251
Lane Group Flow (vph)	1558	106	31	1820	444	52
Confl. Peds. (#/hr)		7	7		11	
Heavy Vehicles (%)	4%	3%	2%	5%	2%	2%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	80.4	80.4	17.5	80.4	23.1	23.1
Effective Green, g (s)	81.4	81.4	18.5	81.4	24.1	24.1
Actuated g/C Ratio	0.58	0.58	0.13	0.58	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	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)	2040	859	231	2021	584	269
v/s Ratio Prot	0.44		c0.02	c0.52	c0.13	
v/s Ratio Perm		0.07				0.03
v/c Ratio	0.76	0.12	0.13	0.90	0.76	0.19
Uniform Delay, d1	22.1	13.2	53.7	25.7	55.2	49.6
Progression Factor	0.59	0.73	1.12	0.59	1.00	1.00
Incremental Delay, d2	2.4	0.3	0.1	2.9	5.8	0.4
Delay (s)	15.4	9.9	60.2	18.1	61.0	50.0
Level of Service	B	A	E	B	E	D
Approach Delay (s)	15.0			18.8	56.5	
Approach LOS	B			B	E	

Intersection Summary

HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

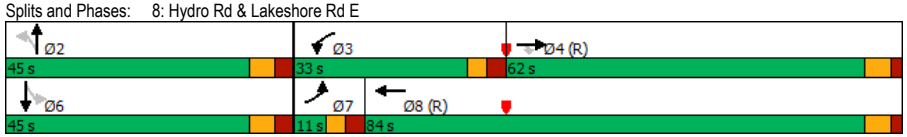
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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		0.95	1.00	1.00							
Frt			0.850					0.850			0.910	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1785	3476	1597	1750	3443	0	1750	1601	0	0	1687	0
Flt Permitted	0.950			0.950			0.754				0.910	
Satd. Flow (perm)	1771	3476	1516	1746	3443	0	1389	1601	0	0	1560	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125					299			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	1815	151	45	1510	255	0	2	0
Future Volume (vph)	2	1815	151	45	1510	255	0	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.5	84.9	84.9	10.0	95.4	31.4	31.4		31.4
Actuated g/C Ratio	0.05	0.61	0.61	0.07	0.68	0.22	0.22		0.22
v/c Ratio	0.02	0.86	0.16	0.36	0.64	0.82	0.56		0.01
Control Delay	64.5	25.5	5.8	76.0	13.7	71.7	10.2		0.0
Queue Delay	0.0	0.6	0.0	0.0	0.1	0.0	0.0		0.0
Total Delay	64.5	26.0	5.8	76.0	13.7	71.7	10.3		0.0
LOS	E	C	A	E	B	E	B		A
Approach Delay		24.5			15.5		37.0		
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: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.86		
Intersection Signal Delay: 22.9	Intersection LOS: C	
Intersection Capacity Utilization 80.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	2	1815	151	45	1511	255	330	6
v/c Ratio	0.02	0.86	0.16	0.36	0.64	0.82	0.56	0.01
Control Delay	64.5	25.5	5.8	76.0	13.7	71.7	10.2	0.0
Queue Delay	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	64.5	26.0	5.8	76.0	13.7	71.7	10.3	0.0
Queue Length 50th (m)	0.5	198.3	5.5	13.9	79.4	70.8	7.2	0.0
Queue Length 95th (m)	m0.9	#334.7	m9.5	m19.8	78.4	98.4	33.6	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	82	2107	968	350	2345	386	661	518
Starvation Cap Reductn	0	30	0	0	69	0	0	0
Spillback Cap Reductn	0	76	0	0	2	0	6	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.89	0.16	0.13	0.66	0.66	0.50	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1815	151	45	1510	1	255	0	330	2	0	4
Future Volume (vph)	2	1815	151	45	1510	1	255	0	330	2	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		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	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1785	3476	1516	1750	3443		1750	1601			1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.91	
Satd. Flow (perm)	1785	3476	1516	1750	3443		1389	1601			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)	2	1815	151	45	1510	1	255	0	330	2	0	4
RTOR Reduction (vph)	0	0	50	0	0	0	0	232	0	0	5	0
Lane Group Flow (vph)	2	1815	101	45	1511	0	255	98	0	0	1	0
Confl. Peds. (#/hr)	16		8	8		16						
Heavy Vehicles (%)	0%	5%	0%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.0	82.7	82.7	7.9	89.6		30.4	30.4			30.4	
Effective Green, g (s)	2.0	83.7	83.7	8.9	90.6		31.4	31.4			31.4	
Actuated g/C Ratio	0.01	0.60	0.60	0.06	0.65		0.22	0.22			0.22	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	25	2078	906	111	2228		311	359			349	
v/s Ratio Prot	0.00	c0.52		c0.03	c0.44			0.06				
v/s Ratio Perm			0.07				c0.18				0.00	
v/c Ratio	0.08	0.87	0.11	0.41	0.68		0.82	0.27			0.00	
Uniform Delay, d1	68.1	23.7	12.1	63.0	15.5		51.6	44.9			42.2	
Progression Factor	1.00	0.83	1.33	1.15	0.87		1.00	1.00			1.00	
Incremental Delay, d2	1.0	4.2	0.2	1.7	1.2		15.4	0.4			0.0	
Delay (s)	69.3	24.0	16.4	74.2	14.7		67.0	45.3			42.2	
Level of Service	E	C	B	E	B		E	D			D	
Approach Delay (s)		23.4			16.4			54.8			42.2	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	25.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	80.1%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

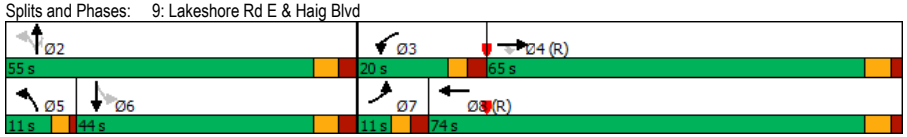
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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			1.00	0.98		0.99	
Frt			0.850		0.997				0.850		0.944	
Flt Protected	0.950			0.950				0.960			0.982	
Satd. Flow (prot)	1750	3476	1566	1750	3461	0	0	1808	1566	0	1733	0
Flt Permitted	0.950			0.950				0.665			0.737	
Satd. Flow (perm)	1732	3476	1566	1750	3461	0	0	1247	1537	0	1298	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		2				133		25	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	111	1764	260	126	1430	113	23	167	36	21
Future Volume (vph)	111	1764	260	126	1430	113	23	167	36	21
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	21.4	85.8	85.8	16.5	80.8		21.8	21.8		21.8
Actuated g/C Ratio	0.15	0.61	0.61	0.12	0.58		0.16	0.16		0.16
v/c Ratio	0.42	0.83	0.26	0.61	0.73		0.70	0.48		0.43
Control Delay	69.2	13.3	2.9	56.7	33.4		74.1	17.3		43.8
Queue Delay	0.0	0.5	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	69.2	13.8	2.9	56.7	33.4		74.1	17.3		43.8
LOS	E	B	A	E	C		E	B		D
Approach Delay		15.4			35.2		42.8			43.8
Approach LOS		B			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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 25.7	Intersection LOS: C	
Intersection Capacity Utilization 88.6%	ICU Level of Service E	
Analysis Period (min) 15		

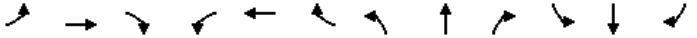
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	111	1764	260	126	1463	136	167	97
v/c Ratio	0.42	0.83	0.26	0.61	0.73	0.70	0.48	0.43
Control Delay	69.2	13.3	2.9	56.7	33.4	74.1	17.3	43.8
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	13.8	2.9	56.7	33.4	74.1	17.3	43.8
Queue Length 50th (m)	34.0	56.0	3.6	35.5	156.6	38.1	8.7	19.0
Queue Length 95th (m)	m42.0	#317.1	m5.9	m48.1	197.2	58.1	29.5	35.3
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	267	2129	1019	218	1998	436	624	370
Starvation Cap Reductn	0	101	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	0.42	0.87	0.26	0.58	0.73	0.31	0.27	0.26

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	1764	260	126	1430	33	113	23	167	36	21	40
Future Volume (vph)	111	1764	260	126	1430	33	113	23	167	36	21	40
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1750	3476	1566	1750	3459			1800	1537		1729	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.66	1.00		0.74	
Satd. Flow (perm)	1750	3476	1566	1750	3459			1246	1537		1299	
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)	111	1764	260	126	1430	33	113	23	167	36	21	40
RTOR Reduction (vph)	0	0	61	0	1	0	0	0	112	0	21	0
Lane Group Flow (vph)	111	1764	199	126	1462	0	0	136	55	0	76	0
Confl. Peds. (#/hr)	20					20	6		6	6		6
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	20.4	84.7	84.7	15.5	79.8			20.8	20.8		20.8	
Effective Green, g (s)	21.4	85.7	85.7	16.5	80.8			21.8	21.8		21.8	
Actuated g/C Ratio	0.15	0.61	0.61	0.12	0.58			0.16	0.16		0.16	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	267	2127	958	206	1996			194	239		202	
v/s Ratio Prot	0.06	c0.51		c0.07	0.42							
v/s Ratio Perm			0.13					c0.11	0.04		0.06	
v/c Ratio	0.42	0.83	0.21	0.61	0.73			0.70	0.23		0.38	
Uniform Delay, d1	53.6	21.4	12.1	58.7	21.7			56.0	51.7		53.0	
Progression Factor	1.21	0.43	0.41	0.81	1.39			1.00	1.00		1.00	
Incremental Delay, d2	0.6	2.3	0.3	3.9	1.8			10.9	0.5		1.2	
Delay (s)	65.3	11.4	5.2	51.6	31.9			66.9	52.2		54.2	
Level of Service	E	B	A	D	C			E	D		D	
Approach Delay (s)		13.4			33.5			58.8			54.2	
Approach LOS		B			C			E			D	

Intersection Summary

HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

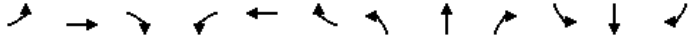
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.870					
Flt Protected	0.998					0.972
Satd. Flow (prot)	1599	0	1842	0	0	1790
Flt Permitted	0.998					0.972
Satd. Flow (perm)	1599	0	1842	0	0	1790
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	7	177	89	0	32	24
Future Volume (vph)	7	177	89	0	32	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	177	89	0	32	24

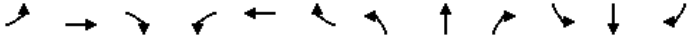
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	184	89	56
Volume Left (vph)	7	0	32
Volume Right (vph)	177	0	0
Hadj (s)	-0.54	0.03	0.15
Departure Headway (s)	3.7	4.4	4.5
Degree Utilization, x	0.19	0.11	0.07
Capacity (veh/h)	938	785	752
Control Delay (s)	7.6	7.9	7.8
Approach Delay (s)	7.6	7.9	7.8
Approach LOS	A	A	A

Intersection Summary				
Delay	7.7			
Level of Service	A			
Intersection Capacity Utilization	27.7%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.873			0.978			0.978	
Flt Protected		0.950			0.999			0.999			0.985	
Satd. Flow (prot)	0	1750	0	0	1606	0	0	1800	0	0	1775	0
Flt Permitted		0.950			0.999			0.999			0.985	
Satd. Flow (perm)	0	1750	0	0	1606	0	0	1800	0	0	1775	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	

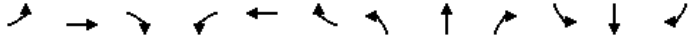
Intersection Summary	
Area Type:	Other



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	53	0	0	8	8	259	8	435	88	45	81	24
Future Volume (vph)	53	0	0	8	8	259	8	435	88	45	81	24
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)	53	0	0	8	8	259	8	435	88	45	81	24

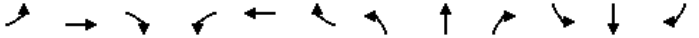
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	53	275	531	150
Volume Left (vph)	53	8	8	45
Volume Right (vph)	0	259	88	24
Hadj (s)	0.23	-0.53	-0.06	0.00
Departure Headway (s)	6.5	5.3	5.0	5.6
Degree Utilization, x	0.10	0.40	0.74	0.23
Capacity (veh/h)	481	623	697	581
Control Delay (s)	10.2	11.8	20.9	10.3
Approach Delay (s)	10.2	11.8	20.9	10.3
Approach LOS	B	B	C	B

Intersection Summary				
Delay		16.3		
Level of Service		C		
Intersection Capacity Utilization		66.0%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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		0.995			0.912			0.972			0.987	
Flt Protected		0.966			0.998			0.988			0.990	
Satd. Flow (prot)	0	1771	0	0	1677	0	0	1769	0	0	1800	0
Flt Permitted		0.966			0.998			0.988			0.990	
Satd. Flow (perm)	0	1771	0	0	1677	0	0	1769	0	0	1800	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



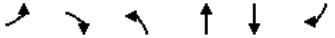
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	137	48	7	8	53	114	115	256	96	32	113	15
Future Volume (vph)	137	48	7	8	53	114	115	256	96	32	113	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	137	48	7	8	53	114	115	256	96	32	113	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	192	175	467	160
Volume Left (vph)	137	8	115	32
Volume Right (vph)	7	114	96	15
Hadj (s)	0.15	-0.35	-0.04	0.02
Departure Headway (s)	6.1	5.7	5.3	5.8
Degree Utilization, x	0.33	0.28	0.68	0.26
Capacity (veh/h)	525	555	656	554
Control Delay (s)	12.1	10.9	18.8	10.8
Approach Delay (s)	12.1	10.9	18.8	10.8
Approach LOS	B	B	C	B

Intersection Summary				
Delay		14.8		
Level of Service		B		
Intersection Capacity Utilization		67.9%	ICU Level of Service	C
Analysis Period (min)		15		

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	0.995				0.988	
Flt Protected	0.954			0.990		
Satd. Flow (prot)	1749	0	0	1824	1820	0
Flt Permitted	0.954			0.990		
Satd. Flow (perm)	1749	0	0	1824	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	219	8	93	367	177	18
Future Volume (vph)	219	8	93	367	177	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	219	8	93	367	177	18

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	227	460	195
Volume Left (vph)	219	93	0
Volume Right (vph)	8	0	18
Hadj (s)	0.21	0.07	-0.02
Departure Headway (s)	5.7	5.0	5.2
Degree Utilization, x	0.36	0.63	0.28
Capacity (veh/h)	578	700	652
Control Delay (s)	12.0	16.1	10.2
Approach Delay (s)	12.0	16.1	10.2
Approach LOS	B	C	B

Intersection Summary			
Delay	13.8		
Level of Service	B		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

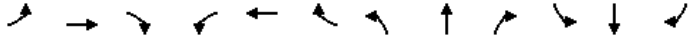
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1593	0	1842	0	0	1781
Flt Permitted						0.967
Satd. Flow (perm)	1593	0	1842	0	0	1781
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	75	13	0	21	10
Future Volume (vph)	0	75	13	0	21	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	75	13	0	21	10

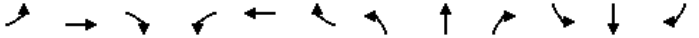
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	75	13	31
Volume Left (vph)	0	0	21
Volume Right (vph)	75	0	0
Hadj (s)	-0.57	0.03	0.17
Departure Headway (s)	3.4	4.1	4.2
Degree Utilization, x	0.07	0.01	0.04
Capacity (veh/h)	1029	849	833
Control Delay (s)	6.7	7.2	7.4
Approach Delay (s)	6.7	7.2	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	6.9		
Level of Service	A		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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			0.875			0.967			0.992	
Flt Protected		0.971			0.998		0.950				0.988	
Satd. Flow (prot)	0	1694	0	0	1609	0	1750	1781	0	0	1805	0
Flt Permitted		0.971			0.998		0.950				0.988	
Satd. Flow (perm)	0	1694	0	0	1609	0	1750	1781	0	0	1805	0
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



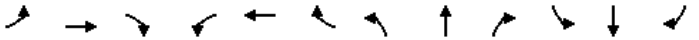
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	17	0	11	8	8	202	16	311	88	21	62	5
Future Volume (vph)	17	0	11	8	8	202	16	311	88	21	62	5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	0	11	8	8	202	16	311	88	21	62	5

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	28	218	16	399	88
Volume Left (vph)	17	8	16	0	21
Volume Right (vph)	11	202	0	88	5
Hadj (s)	-0.08	-0.51	0.53	-0.12	0.05
Departure Headway (s)	5.4	4.7	5.8	5.1	5.2
Degree Utilization, x	0.04	0.28	0.03	0.56	0.13
Capacity (veh/h)	580	701	604	686	640
Control Delay (s)	8.7	9.6	7.7	13.3	9.0
Approach Delay (s)	8.7	9.6	13.1		9.0
Approach LOS	A	A	B		A

Intersection Summary				
Delay	11.4			
Level of Service	B			
Intersection Capacity Utilization	41.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.993			0.929			0.976			0.986	
Flt Protected		0.971			0.997			0.989			0.993	
Satd. Flow (prot)	0	1776	0	0	1706	0	0	1778	0	0	1804	0
Flt Permitted		0.971			0.997			0.989			0.993	
Satd. Flow (perm)	0	1776	0	0	1706	0	0	1778	0	0	1804	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



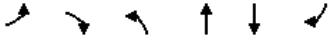
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	80	48	7	9	53	69	115	318	96	17	98	13
Future Volume (vph)	80	48	7	9	53	69	115	318	96	17	98	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	48	7	9	53	69	115	318	96	17	98	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	135	131	529	128
Volume Left (vph)	80	9	115	17
Volume Right (vph)	7	69	96	13
Hadj (s)	0.12	-0.27	-0.03	0.00
Departure Headway (s)	6.0	5.6	4.9	5.4
Degree Utilization, x	0.22	0.20	0.71	0.19
Capacity (veh/h)	536	565	718	604
Control Delay (s)	10.7	10.0	19.1	9.7
Approach Delay (s)	10.7	10.0	19.1	9.7
Approach LOS	B	B	C	A

Intersection Summary				
Delay		15.3		
Level of Service		C		
Intersection Capacity Utilization		60.5%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.994				0.991	
Flt Protected	0.954			0.988		
Satd. Flow (prot)	1747	0	0	1820	1825	0
Flt Permitted	0.954			0.988		
Satd. Flow (perm)	1747	0	0	1820	1825	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	173	8	93	286	172	12
Future Volume (vph)	173	8	93	286	172	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	173	8	93	286	172	12

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	181	379	184
Volume Left (vph)	173	93	0
Volume Right (vph)	8	0	12
Hadj (s)	0.20	0.08	-0.01
Departure Headway (s)	5.4	4.7	4.9
Degree Utilization, x	0.27	0.50	0.25
Capacity (veh/h)	606	734	695
Control Delay (s)	10.5	12.4	9.5
Approach Delay (s)	10.5	12.4	9.5
Approach LOS	B	B	A

Intersection Summary			
Delay	11.2		
Level of Service	B		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00		0.89	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.989				0.850		0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3579	1597	1785	3540	0	1785	1921	1597	1668	1728	0
Flt Permitted	0.950			0.950			0.367			0.717		
Satd. Flow (perm)	1776	3579	1419	1762	3540	0	686	1921	1557	1244	1728	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		8				112		53	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary

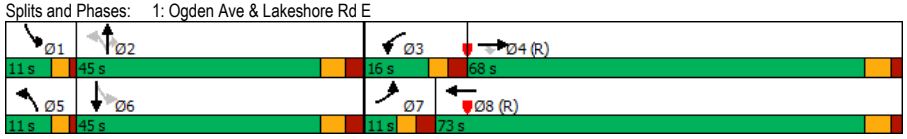
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	66	1442	298	246	1626	108	61	112	136	69
Future Volume (vph)	66	1442	298	246	1626	108	61	112	136	69
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	11.0	68.0	68.0	16.0	73.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	7.9%	48.6%	48.6%	11.4%	52.1%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	12.6	63.0	63.0	33.7	84.0	27.3	16.3	16.3	27.3	16.3
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60	0.20	0.12	0.12	0.20	0.12
v/c Ratio	0.41	0.90	0.43	0.57	0.82	0.55	0.27	0.40	0.51	0.69
Control Delay	59.7	29.9	14.9	58.7	18.6	55.8	57.5	13.1	53.5	54.6
Queue Delay	0.0	1.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	31.1	14.9	58.7	19.0	55.8	57.5	13.1	53.5	54.6
LOS	E	C	B	E	B	E	E	B	D	D
Approach Delay		29.5			23.9		39.2			54.1
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: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 91.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	66	1442	298	246	1752	108	61	112	136	172
v/c Ratio	0.41	0.90	0.43	0.57	0.82	0.55	0.27	0.40	0.51	0.69
Control Delay	59.7	29.9	14.9	58.7	18.6	55.8	57.5	13.1	53.5	54.6
Queue Delay	0.0	1.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	31.1	14.9	58.7	19.0	55.8	57.5	13.1	53.5	54.6
Queue Length 50th (m)	20.4	80.3	22.4	55.4	140.2	26.5	16.5	0.0	34.2	33.8
Queue Length 95th (m)	m23.8	102.3	m30.3	#104.6	#70.4	41.9	29.5	17.5	51.6	56.7
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	161	1610	698	429	2127	196	535	514	267	519
Starvation Cap Reductn	0	3	0	0	92	0	0	0	0	0
Spillback Cap Reductn	0	56	0	0	10	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.93	0.43	0.57	0.86	0.55	0.11	0.22	0.51	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	1442	298	246	1626	126	108	61	112	136	69	103
Future Volume (vph)	66	1442	298	246	1626	126	108	61	112	136	69	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	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	0.89	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
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)	1785	3579	1419	1785	3541		1782	1921	1557	1654	1728	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.37	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1785	3579	1419	1785	3541		689	1921	1557	1249	1728	
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)	66	1442	298	246	1626	126	108	61	112	136	69	103
RTOR Reduction (vph)	0	0	60	0	3	0	0	0	99	0	47	0
Lane Group Flow (vph)	66	1442	238	246	1749	0	108	61	13	136	125	0
Confl. Peds. (#/hr)	14		24	24		14	7		12	12		7
Heavy Vehicles (%)	0%	2%	0%	0%	1%	7%	0%	0%	0%	7%	0%	0%
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)	11.6	62.0	62.0	32.7	83.1		22.3	15.3	15.3	22.3	15.3	
Effective Green, g (s)	12.6	63.0	63.0	33.7	84.1		24.3	16.3	16.3	24.3	16.3	
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60		0.17	0.12	0.12	0.17	0.12	
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)	160	1610	638	429	2127		182	223	181	239	201	
v/s Ratio Prot	0.04	c0.40		c0.14	c0.49		c0.03	0.03		0.03	c0.07	
v/s Ratio Perm			0.17				0.07		0.01	0.07		
v/c Ratio	0.41	0.90	0.37	0.57	0.82		0.59	0.27	0.07	0.57	0.62	
Uniform Delay, d1	60.2	35.5	25.4	46.8	22.1		51.1	56.4	55.1	52.2	58.9	
Progression Factor	0.94	0.71	0.86	1.12	0.65		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	4.3	0.8	1.3	2.7		5.1	0.7	0.2	3.1	5.9	
Delay (s)	57.2	29.4	22.8	53.7	17.1		56.2	57.1	55.3	55.3	64.8	
Level of Service	E	C	C	D	B		E	E	E	E	E	
Approach Delay (s)		29.3			21.6			56.0			60.6	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	29.7	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)	19.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.99		0.87		0.99			1.00	0.97
Frt						0.850		0.910				0.850
Flt Protected	0.950			0.950							0.953	
Satd. Flow (prot)	1750	3544	0	1785	3579	1566	0	1732	0	0	1813	1581
Flt Permitted	0.950			0.950							0.727	
Satd. Flow (perm)	1702	3544	0	1760	3579	1355	0	1732	0	0	1380	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		2				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

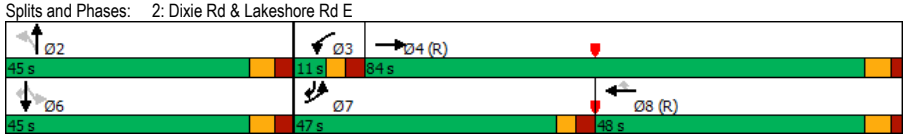
Area Type: Other

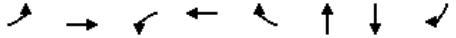
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	391	1040	1	1047	242	1	248	2	879
Future Volume (vph)	391	1040	1	1047	242	1	248	2	879
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8		2		6	7
Permitted Phases					8		6		6
Detector Phase	7	4	3	8	8	2	6	6	7
Switch Phase									
Minimum Initial (s)	5.0	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	24.0	12.0	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	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	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	3.0
All-Red Time (s)	3.0	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
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
Act Effct Green (s)	47.8	95.8	6.5	45.2	45.2	31.0		31.0	79.8
Actuated g/C Ratio	0.34	0.68	0.05	0.32	0.32	0.22		0.22	0.57
v/c Ratio	0.65	0.43	0.01	0.91	0.46	0.01		0.82	0.98
Control Delay	37.8	26.3	64.0	57.8	21.5	28.7		72.2	52.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	37.8	26.3	64.0	57.8	21.5	28.7		72.2	52.1
LOS	D	C	E	E	C	C		E	D
Approach Delay		29.5		51.0		28.7		56.6	
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: 0.98
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 102.9% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

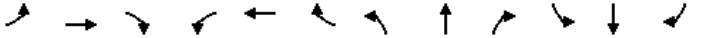




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	391	1040	1	1047	242	3	250	879
v/c Ratio	0.65	0.43	0.01	0.91	0.46	0.01	0.82	0.98
Control Delay	37.8	26.3	64.0	57.8	21.5	28.7	72.2	52.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	26.3	64.0	57.8	21.5	28.7	72.2	52.1
Queue Length 50th (m)	115.4	130.0	0.3	157.5	26.8	0.2	69.5	200.7
Queue Length 95th (m)	153.7	187.2	2.3	#202.2	54.2	2.8	96.8	#332.5
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	597	2424	82	1155	521	483	384	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	0.65	0.43	0.01	0.91	0.46	0.01	0.65	0.98

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	391	1040	0	1	1047	242	0	1	2	248	2	879
Future Volume (vph)	391	1040	0	1	1047	242	0	1	2	248	2	879
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	0.87		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1750	3544		1785	3579	1355		1731			1808	1560
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.73	1.00
Satd. Flow (perm)	1750	3544		1785	3579	1355		1731			1379	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)	391	1040	0	1	1047	242	0	1	2	248	2	879
RTOR Reduction (vph)	0	0	0	0	0	85	0	2	0	0	0	10
Lane Group Flow (vph)	391	1040	0	1	1047	157	0	1	0	0	250	869
Confl. Peds. (#/hr)	30		15	15		30	21		2	2		21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	0%	0%	0%	1%	0%	1%
Turn Type	Prot	NA		Prot	NA	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)	46.8	90.0		1.0	44.2	44.2		30.0			30.0	76.8
Effective Green, g (s)	47.8	91.0		2.0	45.2	45.2		31.0			31.0	78.8
Actuated g/C Ratio	0.34	0.65		0.01	0.32	0.32		0.22			0.22	0.56
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)	597	2303		25	1155	437		383			305	878
v/s Ratio Prot	0.22	0.29		0.00	c0.29			0.00				c0.34
v/s Ratio Perm						0.12					0.18	0.22
v/c Ratio	0.65	0.45		0.04	0.91	0.36		0.00			0.82	0.99
Uniform Delay, d1	39.1	12.1		68.1	45.4	36.3		42.5			51.8	30.2
Progression Factor	0.82	2.28		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.5		0.7	11.8	2.3		0.0			15.7	27.5
Delay (s)	34.2	28.2		68.7	57.2	38.6		42.5			67.5	57.7
Level of Service	C	C		E	E	D		D			E	E
Approach Delay (s)		29.8			53.7			42.5			59.9	
Approach LOS		C			D			D			E	

Intersection Summary

HCM 2000 Control Delay	46.6	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)	16.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

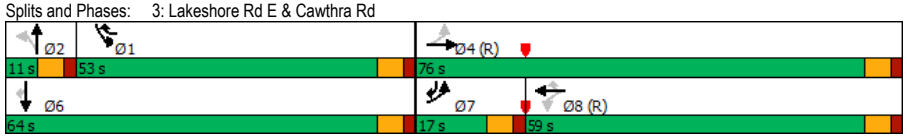
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	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		1.00				0.94						0.96
Frt						0.850		0.955				0.850
Flt Protected	0.950									0.950	0.952	
Satd. Flow (prot)	3429	3578	0	1879	3614	1581	0	1835	0	1679	1720	1566
Flt Permitted	0.078									0.950	0.725	
Satd. Flow (perm)	281	3578	0	1879	3614	1485	0	1835	0	1679	1310	1497
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						330		1				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

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	394	1160	1156	599	2	1033	1	565
Future Volume (vph)	394	1160	1156	599	2	1033	1	565
Turn Type	pm+pt	NA	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4	8	1	2	1	6	7
Permitted Phases	4			8				6
Detector Phase	7	4	8	1	2	1	6	7
Switch Phase								
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	17.0	76.0	59.0	53.0	11.0	53.0	64.0	17.0
Total Split (%)	12.1%	54.3%	42.1%	37.9%	7.9%	37.9%	45.7%	12.1%
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	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	67.9	67.9	50.9	110.8	6.3	59.9	59.9	74.1
Actuated g/C Ratio	0.48	0.48	0.36	0.79	0.04	0.43	0.43	0.53
v/c Ratio	0.97	0.67	0.88	0.47	0.04	0.72	0.70	0.70
Control Delay	71.5	29.4	53.3	2.0	57.3	41.3	40.6	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	29.4	53.3	2.0	57.3	41.3	40.6	26.7
LOS	E	C	D	A	E	D	D	C
Approach Delay		40.1	35.8		57.3		35.9	
Approach LOS		D	D		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.97		
Intersection Signal Delay: 37.2	Intersection LOS: D	
Intersection Capacity Utilization 91.0%	ICU Level of Service F	
Analysis Period (min) 15		

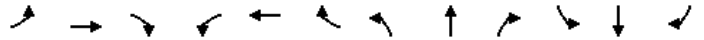
Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	394	1161	1156	599	3	516	518	565
v/c Ratio	0.97	0.67	0.88	0.47	0.04	0.72	0.70	0.70
Control Delay	71.5	29.4	53.3	2.0	57.3	41.3	40.6	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	29.4	53.3	2.0	57.3	41.3	40.6	26.7
Queue Length 50th (m)	41.2	129.3	175.4	4.9	0.6	128.5	127.7	106.5
Queue Length 95th (m)	#74.2	150.7	166.2	19.0	4.0	#220.9	#217.7	152.1
Internal Link Dist (m)		297.4	113.2		71.8		931.9	
Turn Bay Length (m)	35.0			70.0		115.0		
Base Capacity (vph)	406	1814	1393	1285	83	717	735	808
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	0.97	0.64	0.83	0.47	0.04	0.72	0.70	0.70

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	1160	1	0	1156	599	0	2	1	1033	1	565
Future Volume (vph)	394	1160	1	0	1156	599	0	2	1	1033	1	565
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
Lane Util. Factor	0.97	0.95			0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3429	3578			3614	1539		1835		1679	1721	1507
Flt Permitted	0.08	1.00			1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	283	3578			3614	1539		1835		1679	1311	1507
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)	394	1160	1	0	1156	599	0	2	1	1033	1	565
RTOR Reduction (vph)	0	0	0	0	0	80	0	1	0	0	0	10
Lane Group Flow (vph)	394	1161	0	0	1156	519	0	2	0	516	518	555
Confl. Peds. (#/hr)	38		20	20		38	25					25
Heavy Vehicles (%)	1%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	62.1	62.1			45.1	104.0		1.0		58.9	65.9	76.9
Effective Green, g (s)	63.1	63.1			46.1	106.0		2.0		59.9	66.9	78.9
Actuated g/C Ratio	0.45	0.45			0.33	0.76		0.01		0.43	0.48	0.56
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)	397	1612			1190	1165		26		718	801	903
v/s Ratio Prot	c0.09	0.32			0.32	0.19		0.00		c0.31	0.28	0.05
v/s Ratio Perm	c0.36					0.15					c0.03	0.32
v/c Ratio	0.99	0.72			0.97	0.45		0.08		0.72	0.65	0.61
Uniform Delay, d1	41.7	31.3			46.3	6.2		68.1		33.1	27.6	20.4
Progression Factor	1.00	1.00			1.10	0.70		1.00		1.00	1.00	1.00
Incremental Delay, d2	43.0	2.8			18.2	0.2		1.3		3.5	1.8	1.2
Delay (s)	84.7	34.1			69.1	4.6		69.4		36.5	29.4	21.6
Level of Service	F	C			E	A		E		D	C	C
Approach Delay (s)		46.9			47.1			69.4			29.0	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		0.90	0.99	0.98		1.00	0.98	
Frt		0.991				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3567	0	1785	3650	1597	1785	1576	0	1785	1594	0
Flt Permitted	0.950			0.950			0.751			0.746		
Satd. Flow (perm)	1773	3567	0	1781	3650	1443	1394	1576	0	1397	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				78		72			78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

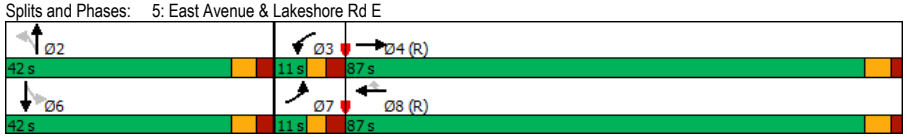
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	11	2027	61	1778	63	71	0	8	0
Future Volume (vph)	11	2027	61	1778	63	71	0	8	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.5	101.4	11.9	113.9	113.9	13.7	13.7	13.7	13.7
Actuated g/C Ratio	0.05	0.72	0.08	0.81	0.81	0.10	0.10	0.10	0.10
v/c Ratio	0.12	0.83	0.40	0.60	0.05	0.52	0.08	0.06	0.04
Control Delay	67.9	23.3	60.4	7.9	1.4	72.8	0.7	55.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	23.3	60.4	7.9	1.4	72.8	0.7	55.6	0.4
LOS	E	C	E	A	A	E	A	E	A
Approach Delay		23.6		9.4			58.2		24.9
Approach LOS		C		A			E		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: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15

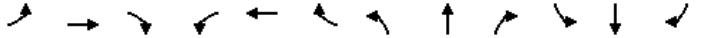
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2154	61	1778	63	71	18	8	10
v/c Ratio	0.12	0.83	0.40	0.60	0.05	0.52	0.08	0.06	0.04
Control Delay	67.9	23.3	60.4	7.9	1.4	72.8	0.7	55.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	23.3	60.4	7.9	1.4	72.8	0.7	55.6	0.4
Queue Length 50th (m)	2.9	314.4	16.7	85.1	0.1	20.0	0.0	2.2	0.0
Queue Length 95th (m)	m4.8	362.8	m27.3	136.5	m2.3	35.7	0.0	7.6	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	95	2585	151	2969	1188	358	458	359	467
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	0.12	0.83	0.40	0.60	0.05	0.20	0.04	0.02	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	2027	127	61	1778	63	71	0	18	8	0	10
Future Volume (vph)	11	2027	127	61	1778	63	71	0	18	8	0	10
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.90	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3568		1785	3650	1443	1764	1576		1779	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)	1785	3568		1785	3650	1443	1394	1576		1396	1594	
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)	11	2027	127	61	1778	63	71	0	18	8	0	10
RTOR Reduction (vph)	0	2	0	0	0	14	0	16	0	0	9	0
Lane Group Flow (vph)	11	2152	0	61	1778	49	71	2	0	8	1	0
Confl. Peds. (#/hr)	20		10	10		20	10		3	3		10
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	3.0	99.0		10.9	106.9	106.9	11.1	11.1		11.1	11.1	
Effective Green, g (s)	4.0	100.0		11.9	107.9	107.9	12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.03	0.71		0.09	0.77	0.77	0.09	0.09		0.09	0.09	
Clearance Time (s)	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	
Lane Grp Cap (vph)	51	2548		151	2813	1112	120	136		120	137	
v/s Ratio Prot	0.01	c0.60		c0.03	c0.49			0.00			0.00	
v/s Ratio Perm						0.03	c0.05			0.01		
v/c Ratio	0.22	0.84		0.40	0.63	0.04	0.59	0.01		0.07	0.01	
Uniform Delay, d1	66.5	14.4		60.7	7.2	3.8	61.6	58.5		58.8	58.5	
Progression Factor	1.05	1.29		0.88	0.93	1.42	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	2.9		1.7	1.0	0.1	7.6	0.0		0.2	0.0	
Delay (s)	71.5	21.5		55.1	7.7	5.5	69.2	58.5		59.0	58.5	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		21.8			9.2			67.0			58.7	
Approach LOS		C			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	17.2	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)	16.0	
Intersection Capacity Utilization	82.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

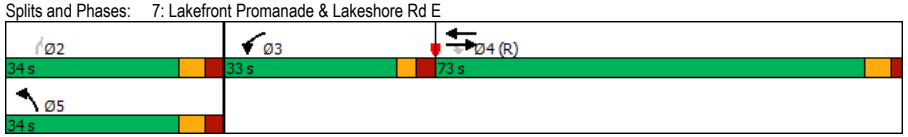
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.92	0.99		0.98	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1597	1750	3650	3463	1597
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	1468	1739	3650	3398	1571
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		85				138
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1669	363	300	1513	424	138
Future Volume (vph)	1669	363	300	1513	424	138
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	72.7	72.7	28.1	72.7	23.2	23.2
Actuated g/C Ratio	0.52	0.52	0.20	0.52	0.17	0.17
v/c Ratio	0.90	0.45	0.85	0.80	0.74	0.37
Control Delay	33.3	17.2	85.3	19.2	63.5	10.1
Queue Delay	0.4	0.0	0.0	0.2	0.0	0.0
Total Delay	33.7	17.2	85.3	19.4	63.5	10.1
LOS	C	B	F	B	E	B
Approach Delay	30.8			30.3	50.4	
Approach LOS	C			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 125		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 33.1	Intersection LOS: C	
Intersection Capacity Utilization 89.2%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1669	363	300	1513	424	138
v/c Ratio	0.90	0.45	0.85	0.80	0.74	0.37
Control Delay	33.3	17.2	85.3	19.2	63.5	10.1
Queue Delay	0.4	0.0	0.0	0.2	0.0	0.0
Total Delay	33.7	17.2	85.3	19.4	63.5	10.1
Queue Length 50th (m)	195.5	32.3	93.1	169.1	61.2	0.0
Queue Length 95th (m)	#296.5	m57.7	m#120.6	126.8	77.0	18.3
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1858	802	365	1895	692	424
Starvation Cap Reductn	0	0	0	50	0	0
Spillback Cap Reductn	29	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.45	0.82	0.82	0.61	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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1669	363	300	1513	424	138
Future Volume (vph)	1669	363	300	1513	424	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)	5.0	5.0	5.0	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	0.92	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1468	1750	3650	3463	1569
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	1468	1750	3650	3463	1569
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1669	363	300	1513	424	138
RTOR Reduction (vph)	0	41	0	0	0	115
Lane Group Flow (vph)	1669	322	300	1513	424	23
Confl. Peds. (#/hr)		16	16		12	3
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	71.7	71.7	27.1	71.7	22.2	22.2
Effective Green, g (s)	72.7	72.7	28.1	72.7	23.2	23.2
Actuated g/C Ratio	0.52	0.52	0.20	0.52	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	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)	1858	762	351	1895	573	260
v/s Ratio Prot	c0.47		c0.17	0.41	c0.12	
v/s Ratio Perm		0.22				0.01
v/c Ratio	0.90	0.42	0.85	0.80	0.74	0.09
Uniform Delay, d1	30.3	20.7	54.0	27.6	55.5	49.4
Progression Factor	0.84	0.92	1.32	0.59	1.00	1.00
Incremental Delay, d2	6.6	1.5	11.7	2.2	5.0	0.1
Delay (s)	32.0	20.5	83.2	18.4	60.5	49.6
Level of Service	C	C	F	B	E	D
Approach Delay (s)	29.9			29.1	57.8	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay	33.2	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)	17.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00		0.84	0.98	1.00			0.99			1.00	
Frt			0.850					0.850			0.892	
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1750	3579	1597	1750	3578	0	1750	1578	0	0	1696	0
Flt Permitted	0.950			0.950			0.754				0.961	
Satd. Flow (perm)	1743	3579	1334	1709	3578	0	1389	1578	0	0	1646	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169					304			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary

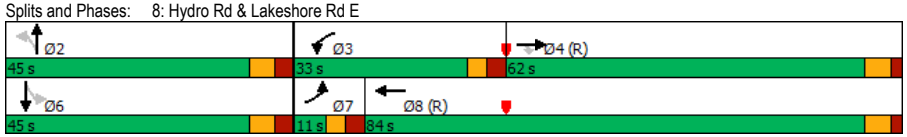
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	3	1326	376	271	1782	214	0	1	0
Future Volume (vph)	3	1326	376	271	1782	214	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.9	69.3	69.3	26.9	98.7	27.8	27.8		27.8
Actuated g/C Ratio	0.05	0.50	0.50	0.19	0.70	0.20	0.20		0.20
v/c Ratio	0.04	0.75	0.50	0.81	0.71	0.78	0.27		0.01
Control Delay	56.0	26.6	14.6	75.7	12.7	71.2	1.2		0.0
Queue Delay	0.0	0.3	0.0	0.0	0.3	0.0	0.0		0.0
Total Delay	56.0	26.8	14.6	75.7	13.1	71.2	1.2		0.0
LOS	E	C	B	E	B	E	A		A
Approach Delay		24.2			21.3		42.1		
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: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 24.3 Intersection LOS: C
Intersection Capacity Utilization 86.2% ICU Level of Service E
Analysis Period (min) 15

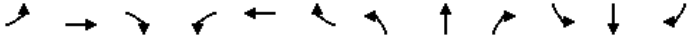
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	3	1326	376	271	1784	214	152	5
v/c Ratio	0.04	0.75	0.50	0.81	0.71	0.78	0.27	0.01
Control Delay	56.0	26.6	14.6	75.7	12.7	71.2	1.2	0.0
Queue Delay	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	56.0	26.8	14.6	75.7	13.1	71.2	1.2	0.0
Queue Length 50th (m)	0.8	86.8	28.2	83.6	88.2	59.7	0.0	0.0
Queue Length 95th (m)	m1.2	#161.5	m36.4	m94.6	112.2	83.0	0.0	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	85	1770	745	364	2521	386	658	542
Starvation Cap Reductn	0	81	0	0	237	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.79	0.50	0.74	0.78	0.55	0.23	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1326	376	271	1782	2	214	0	152	1	0	4
Future Volume (vph)	3	1326	376	271	1782	2	214	0	152	1	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		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	
Frpb, ped/bikes	1.00	1.00	0.84	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			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1750	3579	1334	1750	3578		1750	1578			1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.96	
Satd. Flow (perm)	1750	3579	1334	1750	3578		1390	1578			1647	
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)	3	1326	376	271	1782	2	214	0	152	1	0	4
RTOR Reduction (vph)	0	0	85	0	0	0	0	122	0	0	4	0
Lane Group Flow (vph)	3	1326	291	271	1784	0	214	30	0	0	1	0
Confl. Peds. (#/hr)	13		38	38		13			2	2		
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	2%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.3	68.3	68.3	25.9	92.9		26.8	26.8			26.8	
Effective Green, g (s)	2.3	69.3	69.3	26.9	93.9		27.8	27.8			27.8	
Actuated g/C Ratio	0.02	0.49	0.49	0.19	0.67		0.20	0.20			0.20	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	28	1771	660	336	2399		276	313			327	
v/s Ratio Prot	0.00	0.37		c0.15	c0.50			0.02				
v/s Ratio Perm			0.22				c0.15				0.00	
v/c Ratio	0.11	0.75	0.44	0.81	0.74		0.78	0.10			0.00	
Uniform Delay, d1	67.8	28.4	22.8	54.1	15.1		53.1	45.8			45.0	
Progression Factor	0.88	0.80	0.92	1.22	0.81		1.00	1.00			1.00	
Incremental Delay, d2	0.9	1.7	1.2	7.0	1.1		12.8	0.1			0.0	
Delay (s)	60.5	24.5	22.1	73.0	13.3		65.9	46.0			45.0	
Level of Service	E	C	C	E	B		E	D			D	
Approach Delay (s)		24.0			21.2			57.6			45.0	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	25.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.78				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	86.2%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

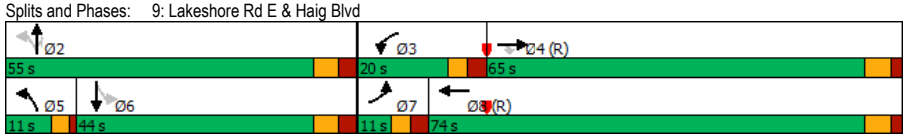
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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	1.00				1.00			1.00	0.97		0.99	
Frt			0.850		0.994				0.850		0.900	
Flt Protected	0.950			0.950				0.960			0.993	
Satd. Flow (prot)	1684	3579	1597	1785	3585	0	0	1844	1597	0	1695	0
Flt Permitted	0.950			0.950				0.547			0.928	
Satd. Flow (perm)	1678	3579	1597	1785	3585	0	0	1048	1557	0	1581	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		4				150		100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	62	1225	179	121	1731	183	37	188	27	22
Future Volume (vph)	62	1225	179	121	1731	183	37	188	27	22
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	10.3	72.2	72.2	14.5	76.5		37.3	37.3		37.3
Actuated g/C Ratio	0.07	0.52	0.52	0.10	0.55		0.27	0.27		0.27
v/c Ratio	0.50	0.66	0.20	0.65	0.92		0.79	0.36		0.38
Control Delay	84.0	13.7	2.0	64.6	36.4		66.6	10.7		19.5
Queue Delay	0.0	0.1	0.0	0.0	0.2		0.0	0.0		0.0
Total Delay	84.0	13.9	2.0	64.6	36.6		66.6	10.7		19.5
LOS	F	B	A	E	D		E	B		B
Approach Delay		15.4			38.3		40.8			19.5
Approach LOS		B			D		D			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: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.92		
Intersection Signal Delay: 29.3	Intersection LOS: C	
Intersection Capacity Utilization 105.5%	ICU Level of Service G	
Analysis Period (min) 15		

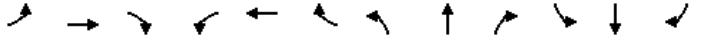
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	62	1225	179	121	1802	220	188	188
v/c Ratio	0.50	0.66	0.20	0.65	0.92	0.79	0.36	0.38
Control Delay	84.0	13.7	2.0	64.6	36.4	66.6	10.7	19.5
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	84.0	13.9	2.0	64.6	36.6	66.6	10.7	19.5
Queue Length 50th (m)	19.0	36.6	1.9	34.8	231.1	59.5	8.3	19.9
Queue Length 95th (m)	m#31.2	53.2	m6.1	m38.1	m#315.8	83.2	25.6	37.7
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	123	1845	899	201	1959	366	642	535
Starvation Cap Reductn	0	84	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	11	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.70	0.20	0.60	0.93	0.60	0.29	0.35

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	1225	179	121	1731	71	183	37	188	27	22	139
Future Volume (vph)	62	1225	179	121	1731	71	183	37	188	27	22	139
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1684	3579	1597	1785	3585			1839	1557		1693	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.55	1.00		0.93	
Satd. Flow (perm)	1684	3579	1597	1785	3585			1047	1557		1581	
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)	62	1225	179	121	1731	71	183	37	188	27	22	139
RTOR Reduction (vph)	0	0	76	0	2	0	0	0	110	0	73	0
Lane Group Flow (vph)	62	1225	103	121	1800	0	0	220	78	0	115	0
Confl. Peds. (#/hr)	11					11	5		12	12		5
Heavy Vehicles (%)	6%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.3	71.2	71.2	13.5	75.4			36.3	36.3		36.3	
Effective Green, g (s)	10.3	72.2	72.2	14.5	76.4			37.3	37.3		37.3	
Actuated g/C Ratio	0.07	0.52	0.52	0.10	0.55			0.27	0.27		0.27	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	123	1845	823	184	1956			278	414		421	
v/s Ratio Prot	0.04	0.34		c0.07	c0.50							
v/s Ratio Perm			0.06					c0.21	0.05		0.07	
v/c Ratio	0.50	0.66	0.13	0.66	0.92			0.79	0.19		0.27	
Uniform Delay, d1	62.4	25.0	17.6	60.4	29.0			47.7	39.7		40.6	
Progression Factor	1.22	0.45	0.34	0.97	1.10			1.00	1.00		1.00	
Incremental Delay, d2	2.3	1.4	0.2	2.9	3.3			14.2	0.2		0.4	
Delay (s)	78.4	12.7	6.1	61.5	35.2			61.9	39.9		41.0	
Level of Service	E	B	A	E	D			E	D		D	
Approach Delay (s)		14.6			36.9			51.8			41.0	
Approach LOS		B			D			D			D	

Intersection Summary

HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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	0.914					
Flt Protected	0.982					0.967
Satd. Flow (prot)	1653	0	1842	0	0	1781
Flt Permitted	0.982					0.967
Satd. Flow (perm)	1653	0	1842	0	0	1781
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

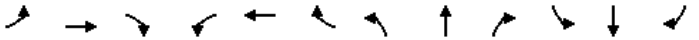
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	33	57	19	0	125	61
Future Volume (vph)	33	57	19	0	125	61
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	33	57	19	0	125	61

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	90	19	186
Volume Left (vph)	33	0	125
Volume Right (vph)	57	0	0
Hadj (s)	-0.27	0.03	0.17
Departure Headway (s)	4.1	4.3	4.3
Degree Utilization, x	0.10	0.02	0.22
Capacity (veh/h)	837	799	822
Control Delay (s)	7.6	7.4	8.5
Approach Delay (s)	7.6	7.4	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.1		
Level of Service	A		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.884			0.980			0.985	
Flt Protected		0.950			0.993						0.991	
Satd. Flow (prot)	0	1750	0	0	1617	0	0	1805	0	0	1798	0
Flt Permitted		0.950			0.993						0.991	
Satd. Flow (perm)	0	1750	0	0	1617	0	0	1805	0	0	1798	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



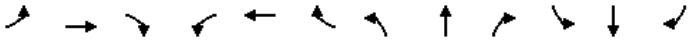
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	0	0	30	0	181	0	361	61	123	466	73
Future Volume (vph)	20	0	0	30	0	181	0	361	61	123	466	73
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	0	0	30	0	181	0	361	61	123	466	73

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	20	211	422	662
Volume Left (vph)	20	30	0	123
Volume Right (vph)	0	181	61	73
Hadj (s)	0.23	-0.45	-0.05	0.00
Departure Headway (s)	7.7	6.3	5.6	5.4
Degree Utilization, x	0.04	0.37	0.66	0.99
Capacity (veh/h)	413	551	625	664
Control Delay (s)	11.0	12.9	18.9	54.1
Approach Delay (s)	11.0	12.9	18.9	54.1
Approach LOS	B	B	C	F

Intersection Summary				
Delay		35.5		
Level of Service		E		
Intersection Capacity Utilization		80.5%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.966			0.943			0.973			0.980	
Flt Protected		0.976			0.990			0.985			0.993	
Satd. Flow (prot)	0	1737	0	0	1720	0	0	1765	0	0	1793	0
Flt Permitted		0.976			0.990			0.985			0.993	
Satd. Flow (perm)	0	1737	0	0	1720	0	0	1765	0	0	1793	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



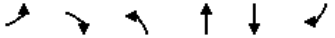
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	65	32	33	28	48	56	95	160	65	90	431	91
Future Volume (vph)	65	32	33	28	48	56	95	160	65	90	431	91
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	32	33	28	48	56	95	160	65	90	431	91

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	130	132	320	612
Volume Left (vph)	65	28	95	90
Volume Right (vph)	33	56	65	91
Hadj (s)	-0.02	-0.18	-0.03	-0.03
Departure Headway (s)	6.8	6.6	5.8	5.3
Degree Utilization, x	0.24	0.24	0.51	0.91
Capacity (veh/h)	492	502	599	612
Control Delay (s)	12.0	11.7	14.7	38.6
Approach Delay (s)	12.0	11.7	14.7	38.6
Approach LOS	B	B	B	E

Intersection Summary				
Delay		26.3		
Level of Service		D		
Intersection Capacity Utilization		57.8%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.974				0.983	
Flt Protected	0.961			0.988		
Satd. Flow (prot)	1724	0	0	1820	1811	0
Flt Permitted	0.961			0.988		
Satd. Flow (perm)	1724	0	0	1820	1811	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	126	30	77	240	564	82
Future Volume (vph)	126	30	77	240	564	82
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	126	30	77	240	564	82

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	156	317	646
Volume Left (vph)	126	77	0
Volume Right (vph)	30	0	82
Hadj (s)	0.08	0.08	-0.04
Departure Headway (s)	6.3	5.3	4.8
Degree Utilization, x	0.27	0.47	0.87
Capacity (veh/h)	540	651	737
Control Delay (s)	11.6	13.0	30.6
Approach Delay (s)	11.6	13.0	30.6
Approach LOS	B	B	D

Intersection Summary			
Delay	23.0		
Level of Service	C		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

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						0.974
Satd. Flow (prot)	1593	0	1842	0	0	1794
Flt Permitted						0.974
Satd. Flow (perm)	1593	0	1842	0	0	1794
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

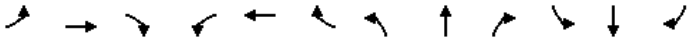
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	14	4	0	51	43
Future Volume (vph)	0	14	4	0	51	43
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	14	4	0	51	43

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	14	4	94
Volume Left (vph)	0	0	51
Volume Right (vph)	14	0	0
Hadj (s)	-0.57	0.03	0.14
Departure Headway (s)	3.5	4.0	4.1
Degree Utilization, x	0.01	0.00	0.11
Capacity (veh/h)	982	869	876
Control Delay (s)	6.6	7.1	7.6
Approach Delay (s)	6.6	7.1	7.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.913			0.886			0.971			0.997	
Flt Protected		0.983			0.992						0.994	
Satd. Flow (prot)	0	1653	0	0	1619	0	1842	1789	0	0	1826	0
Flt Permitted		0.983			0.992						0.994	
Satd. Flow (perm)	0	1653	0	0	1619	0	1842	1789	0	0	1826	0
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



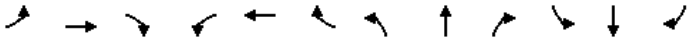
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	0	11	30	0	160	0	254	61	62	421	12
Future Volume (vph)	6	0	11	30	0	160	0	254	61	62	421	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	0	11	30	0	160	0	254	61	62	421	12

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	17	190	0	315	495
Volume Left (vph)	6	30	0	0	62
Volume Right (vph)	11	160	0	61	12
Hadj (s)	-0.28	-0.44	0.00	-0.10	0.04
Departure Headway (s)	6.2	5.6	5.7	5.6	5.1
Degree Utilization, x	0.03	0.29	0.00	0.49	0.71
Capacity (veh/h)	486	574	620	622	685
Control Delay (s)	9.4	10.9	7.5	12.5	19.5
Approach Delay (s)	9.4	10.9	12.5		19.5
Approach LOS	A	B	B		C

Intersection Summary				
Delay	15.6			
Level of Service	C			
Intersection Capacity Utilization	66.0%	ICU Level of Service		C
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.959			0.954			0.978			0.982	
Flt Protected		0.980			0.988			0.988			0.995	
Satd. Flow (prot)	0	1731	0	0	1736	0	0	1780	0	0	1800	0
Flt Permitted		0.980			0.988			0.988			0.995	
Satd. Flow (perm)	0	1731	0	0	1736	0	0	1780	0	0	1800	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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	44	32	33	28	48	39	95	237	65	54	373	65
Future Volume (vph)	44	32	33	28	48	39	95	237	65	54	373	65
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	32	33	28	48	39	95	237	65	54	373	65

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	109	115	397	492
Volume Left (vph)	44	28	95	54
Volume Right (vph)	33	39	65	65
Hadj (s)	-0.07	-0.12	-0.02	-0.02
Departure Headway (s)	6.4	6.4	5.4	5.2
Degree Utilization, x	0.19	0.20	0.59	0.71
Capacity (veh/h)	481	486	639	669
Control Delay (s)	11.0	11.0	15.8	20.1
Approach Delay (s)	11.0	11.0	15.8	20.1
Approach LOS	B	B	C	C

Intersection Summary				
Delay		16.7		
Level of Service		C		
Intersection Capacity Utilization		56.6%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.971				0.989	
Flt Protected	0.962			0.987		
Satd. Flow (prot)	1721	0	0	1818	1822	0
Flt Permitted	0.962			0.987		
Satd. Flow (perm)	1721	0	0	1818	1822	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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	109	30	77	208	544	50
Future Volume (vph)	109	30	77	208	544	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	109	30	77	208	544	50

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	139	285	594
Volume Left (vph)	109	77	0
Volume Right (vph)	30	0	50
Hadj (s)	0.06	0.09	-0.02
Departure Headway (s)	6.0	5.2	4.7
Degree Utilization, x	0.23	0.41	0.78
Capacity (veh/h)	547	671	751
Control Delay (s)	10.9	11.7	22.2
Approach Delay (s)	10.9	11.7	22.2
Approach LOS	B	B	C

Intersection Summary			
Delay	17.7		
Level of Service	C		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

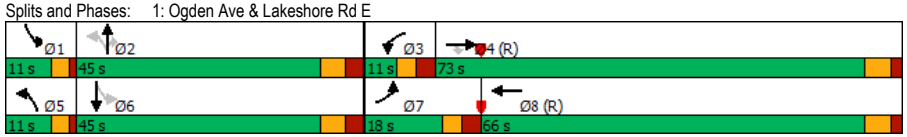
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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		0.93	1.00	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.986				0.850		0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3444	1566	1750	3295	0	1750	1883	1566	1750	1645	0
Flt Permitted	0.950			0.950			0.639			0.719		
Satd. Flow (perm)	1739	3444	1463	1741	3295	0	1170	1883	1532	1312	1645	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		9				156		78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	148	1613	117	24	1586	184	58	275	82	25
Future Volume (vph)	148	1613	117	24	1586	184	58	275	82	25
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	18.0	73.0	73.0	11.0	66.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	12.9%	52.1%	52.1%	7.9%	47.1%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	19.5	90.8	90.8	8.4	75.0	29.5	18.5	18.5	29.5	18.5
Actuated g/C Ratio	0.14	0.65	0.65	0.06	0.54	0.21	0.13	0.13	0.21	0.13
v/c Ratio	0.61	0.72	0.12	0.23	0.98	0.66	0.23	0.82	0.27	0.36
Control Delay	69.2	18.9	6.5	78.5	36.8	58.0	53.4	43.2	43.2	19.4
Queue Delay	0.0	0.6	0.0	0.0	38.2	0.0	0.0	0.1	0.0	0.0
Total Delay	69.2	19.5	6.5	78.5	75.0	58.0	53.4	43.3	43.2	19.4
LOS	E	B	A	E	E	E	D	D	D	B
Approach Delay		22.6			75.1		49.6			30.0
Approach LOS		C			E		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: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.98		
Intersection Signal Delay: 47.5	Intersection LOS: D	
Intersection Capacity Utilization 91.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	1613	117	24	1743	184	58	275	82	103
v/c Ratio	0.61	0.72	0.12	0.23	0.98	0.66	0.23	0.82	0.27	0.36
Control Delay	69.2	18.9	6.5	78.5	36.8	58.0	53.4	43.2	43.2	19.4
Queue Delay	0.0	0.6	0.0	0.0	38.2	0.0	0.0	0.1	0.0	0.0
Total Delay	69.2	19.5	6.5	78.5	75.0	58.0	53.4	43.3	43.2	19.4
Queue Length 50th (m)	45.2	86.3	2.7	7.1	127.7	46.4	15.4	34.7	19.4	6.5
Queue Length 95th (m)	m61.3	129.5	m9.6	m10.8	#366.5	63.5	27.2	63.5	31.1	22.4
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	243	2234	987	105	1770	279	524	539	301	514
Starvation Cap Reductn	0	22	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	269	0	0	180	0	0	11	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.82	0.12	0.23	1.10	0.66	0.11	0.52	0.27	0.20

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	1613	117	24	1586	157	184	58	275	82	25	78
Future Volume (vph)	148	1613	117	24	1586	157	184	58	275	82	25	78
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	0.93	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		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	3444	1463	1750	3296		1744	1883	1532	1739	1646	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.64	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1750	3444	1463	1750	3296		1173	1883	1532	1316	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)	148	1613	117	24	1586	157	184	58	275	82	25	78
RTOR Reduction (vph)	0	0	40	0	4	0	0	0	135	0	68	0
Lane Group Flow (vph)	148	1613	77	24	1739	0	184	58	140	82	35	0
Confl. Peds. (#/hr)	18		12	12		18	6		9	9		6
Heavy Vehicles (%)	2%	6%	2%	2%	9%	2%	2%	2%	2%	2%	2%	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)	18.5	87.4	87.4	5.1	74.0		24.5	17.5	17.5	24.5	17.5	
Effective Green, g (s)	19.5	88.4	88.4	6.1	75.0		26.5	18.5	18.5	26.5	18.5	
Actuated g/C Ratio	0.14	0.63	0.63	0.04	0.54		0.19	0.13	0.13	0.19	0.13	
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)	243	2174	923	76	1765		254	248	202	273	217	
v/s Ratio Prot	c0.08	c0.47		0.01	c0.53		c0.04	0.03		0.02	0.02	
v/s Ratio Perm			0.05				c0.10		0.09	0.04		
v/c Ratio	0.61	0.74	0.08	0.32	0.99		0.72	0.23	0.69	0.30	0.16	
Uniform Delay, d1	56.7	17.9	10.0	64.9	32.0		52.4	54.4	58.0	48.3	53.9	
Progression Factor	1.10	0.89	1.95	1.20	0.60		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	1.6	0.1	1.8	15.3		9.8	0.5	9.8	0.6	0.4	
Delay (s)	64.9	17.4	19.7	79.9	34.4		62.2	54.9	67.8	48.9	54.2	
Level of Service	E	B	B	E	C		E	D	E	D	D	
Approach Delay (s)		21.3			35.0			64.3			51.9	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	33.3	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)	19.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		0.91		0.99				0.97
Frt						0.850		0.955				0.850
Flt Protected	0.950			0.950				0.968			0.953	
Satd. Flow (prot)	1653	3476	0	1785	3476	1536	0	1776	0	0	1813	1465
Flt Permitted	0.950			0.950				0.863			0.729	
Satd. Flow (perm)	1620	3476	0	1777	3476	1400	0	1572	0	0	1387	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

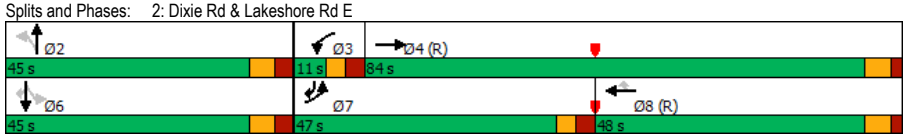
Area Type: Other

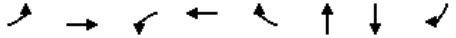
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	582	1341	2	908	199	2	0	155	3	528
Future Volume (vph)	582	1341	2	908	199	2	0	155	3	528
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	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	24.0	12.0	12.0	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
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)	60.4	104.2	6.8	41.3	41.3		22.3		22.3	83.7
Actuated g/C Ratio	0.43	0.74	0.05	0.30	0.30		0.16		0.16	0.60
v/c Ratio	0.82	0.52	0.02	0.89	0.40		0.01		0.71	0.60
Control Delay	43.4	20.0	64.0	58.4	16.9		0.0		72.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	43.4	20.0	64.0	58.4	16.9		0.0		72.8	18.7
LOS	D	C	E	E	B		A		E	B
Approach Delay		27.1		50.9					31.2	
Approach LOS		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: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 34.9 Intersection LOS: C
Intersection Capacity Utilization 89.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

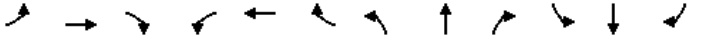




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	582	1344	2	908	199	3	158	528
v/c Ratio	0.82	0.52	0.02	0.89	0.40	0.01	0.71	0.60
Control Delay	43.4	20.0	64.0	58.4	16.9	0.0	72.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	20.0	64.0	58.4	16.9	0.0	72.8	18.7
Queue Length 50th (m)	179.2	144.2	0.6	130.7	15.8	0.0	44.3	82.1
Queue Length 95th (m)	m#241.0	215.4	3.7	158.6	38.6	0.0	65.7	116.6
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	713	2587	86	1067	516	522	386	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.52	0.02	0.85	0.39	0.01	0.41	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	582	1341	3	2	908	199	2	0	1	155	3	528
Future Volume (vph)	582	1341	3	2	908	199	2	0	1	155	3	528
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	0.91		1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			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		0.97			0.95	1.00
Satd. Flow (prot)	1653	3475		1785	3476	1400		1763			1813	1455
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.73	1.00
Satd. Flow (perm)	1653	3475		1785	3476	1400		1572			1386	1455
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)	582	1341	3	2	908	199	2	0	1	155	3	528
RTOR Reduction (vph)	0	0	0	0	0	88	0	3	0	0	0	9
Lane Group Flow (vph)	582	1344	0	2	908	111	0	0	0	0	158	519
Confl. Peds. (#/hr)	18		7	7		18	13					13
Heavy Vehicles (%)	8%	5%	2%	0%	5%	4%	0%	0%	0%	1%	0%	9%
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)	59.4	98.4		1.3	40.3	40.3		21.3			21.3	80.7
Effective Green, g (s)	60.4	99.4		2.3	41.3	41.3		22.3			22.3	82.7
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)	713	2467		29	1025	413		250			220	859
v/s Ratio Prot	c0.35	0.39		0.00	c0.26							0.26
v/s Ratio Perm						0.08		0.00			c0.11	0.10
v/c Ratio	0.82	0.54		0.07	0.89	0.27		0.00			0.72	0.60
Uniform Delay, d1	34.9	9.6		67.8	47.1	37.8		49.5			55.9	18.2
Progression Factor	1.00	2.18		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.3	0.5		1.0	11.2	1.6		0.0			10.7	1.2
Delay (s)	39.3	21.4		68.8	58.3	39.4		49.5			66.5	19.4
Level of Service	D	C		E	E	D		D			E	B
Approach Delay (s)		26.8			54.9			49.5			30.3	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	35.8	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)	16.0		
Intersection Capacity Utilization	89.5%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		1.00		0.98						0.97
Frt						0.850		0.865				0.850
Flt Protected	0.950			0.950						0.950	0.953	
Satd. Flow (prot)	3330	3544	0	1785	3476	1426	0	1662	0	1556	1597	1551
Flt Permitted	0.069			0.258						0.950	0.728	
Satd. Flow (perm)	242	3544	0	483	3476	1390	0	1662	0	1556	1220	1506
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						281		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

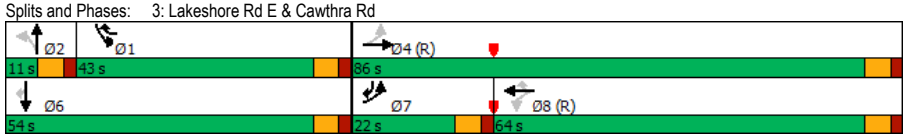
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	419	1053	2	1322	946	0	599	3	440
Future Volume (vph)	419	1053	2	1322	946	0	599	3	440
Turn Type	pm+pt	NA	Perm	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1	2	1	6	7
Permitted Phases	4		8		8				6
Detector Phase	7	4	8	8	1	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	22.0	86.0	64.0	64.0	43.0	11.0	43.0	54.0	22.0
Total Split (%)	15.7%	61.4%	45.7%	45.7%	30.7%	7.9%	30.7%	38.6%	15.7%
Yellow Time (s)	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
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	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	79.4	79.4	57.8	57.8	106.3	6.2	48.4	48.4	67.2
Actuated g/C Ratio	0.57	0.57	0.41	0.41	0.76	0.04	0.35	0.35	0.48
v/c Ratio	0.84	0.53	0.01	0.92	0.83	0.01	0.56	0.55	0.60
Control Delay	49.7	19.7	30.0	51.6	10.8	0.0	43.5	43.1	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	19.7	30.0	51.6	10.8	0.0	43.5	43.1	26.2
LOS	D	B	C	D	B	A	D	D	C
Approach Delay		28.2		34.6				36.1	
Approach LOS		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: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 88.2% ICU Level of Service E
Analysis Period (min) 15

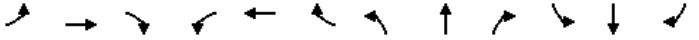
Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	419	1055	2	1322	946	1	299	303	440
v/c Ratio	0.84	0.53	0.01	0.92	0.83	0.01	0.56	0.55	0.60
Control Delay	49.7	19.7	30.0	51.6	10.8	0.0	43.5	43.1	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	19.7	30.0	51.6	10.8	0.0	43.5	43.1	26.2
Queue Length 50th (m)	43.9	93.2	0.4	194.6	5.5	0.0	73.5	74.4	81.1
Queue Length 95th (m)	#67.5	111.5	m0.5	202.9	#181.8	0.0	120.4	121.0	115.2
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)	511	2050	203	1464	1135	185	538	552	744
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	0.82	0.51	0.01	0.90	0.83	0.01	0.56	0.55	0.59

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	1053	2	2	1322	946	0	0	1	599	3	440
Future Volume (vph)	419	1053	2	2	1322	946	0	0	1	599	3	440
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
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3330	3543		1780	3476	1407		1662		1556	1597	1516
Flt Permitted	0.07	1.00		0.26	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	241	3543		483	3476	1407		1662		1556	1221	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)	419	1053	2	2	1322	946	0	0	1	599	3	440
RTOR Reduction (vph)	0	0	0	0	0	77	0	1	0	0	0	11
Lane Group Flow (vph)	419	1055	0	2	1322	869	0	0	0	299	303	429
Confl. Peds. (#/hr)	10		6	6		10	13					13
Heavy Vehicles (%)	4%	3%	0%	0%	5%	12%	0%	0%	0%	9%	0%	3%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	73.6	73.6		52.1	52.1	99.5		1.0		47.4	54.4	69.9
Effective Green, g (s)	74.6	74.6		53.1	53.1	101.5		2.0		48.4	55.4	71.9
Actuated g/C Ratio	0.53	0.53		0.38	0.38	0.72		0.01		0.35	0.40	0.51
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)	492	1887		183	1318	1020		23		537	613	832
v/s Ratio Prot	c0.10	0.30			c0.38	c0.29		0.00		0.19	0.17	c0.06
v/s Ratio Perm	0.35			0.00		0.32					0.02	0.22
v/c Ratio	0.85	0.56		0.01	1.00	0.85		0.00		0.56	0.49	0.52
Uniform Delay, d1	42.5	21.8		27.1	43.4	13.8		68.0		37.1	31.8	22.5
Progression Factor	1.00	1.00		1.25	1.13	0.91		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.3	1.2		0.1	20.6	4.6		0.0		1.3	0.6	0.5
Delay (s)	55.8	23.0		34.0	69.6	17.3		68.0		38.4	32.4	23.1
Level of Service	E	C		C	E	B		E		D	C	C
Approach Delay (s)		32.3			47.8			68.0			30.2	
Approach LOS		C			D			E			C	

Intersection Summary

HCM 2000 Control Delay	39.2	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)	20.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

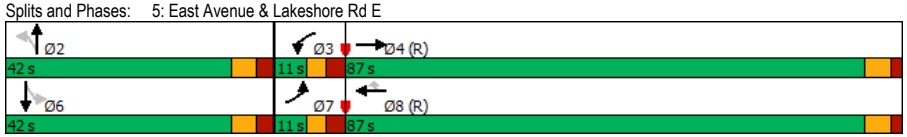
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00		0.96	1.00				0.98	
Frt		0.996				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3530	0	1785	3444	1413	1785	1633	0	1785	1608	0
Flt Permitted	0.950			0.950			0.754			0.548		
Satd. Flow (perm)	1783	3530	0	1784	3444	1358	1412	1633	0	1030	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				78		90			70	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	1585	10	2251	8	127	0	5	0
Future Volume (vph)	5	1585	10	2251	8	127	0	5	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.0	107.3	7.4	107.5	107.5	18.9	18.9	18.9	18.9
Actuated g/C Ratio	0.05	0.77	0.05	0.77	0.77	0.14	0.14	0.14	0.14
v/c Ratio	0.06	0.60	0.11	0.85	0.01	0.67	0.44	0.04	0.02
Control Delay	70.2	10.6	52.9	14.6	0.0	73.6	23.4	49.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	10.6	52.9	14.6	0.0	73.6	23.4	49.4	0.2
LOS	E	B	D	B	A	E	C	D	A
Approach Delay		10.8		14.7			48.1		24.8
Approach LOS		B		B			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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 15.3	Intersection LOS: B	
Intersection Capacity Utilization 85.1%	ICU Level of Service E	
Analysis Period (min) 15		

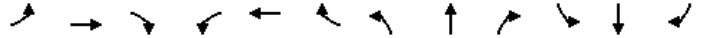
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1629	10	2251	8	127	131	5	5
v/c Ratio	0.06	0.60	0.11	0.85	0.01	0.67	0.44	0.04	0.02
Control Delay	70.2	10.6	52.9	14.6	0.0	73.6	23.4	49.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	10.6	52.9	14.6	0.0	73.6	23.4	49.4	0.2
Queue Length 50th (m)	1.3	92.8	2.8	128.3	0.0	35.7	10.8	1.3	0.0
Queue Length 95th (m)	m3.0	237.3	m3.9	#400.5	m0.0	55.5	29.6	5.4	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	89	2706	94	2643	1060	363	486	264	465
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	0.06	0.60	0.11	0.85	0.01	0.35	0.27	0.02	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1585	44	10	2251	8	127	0	131	5	0	5
Future Volume (vph)	5	1585	44	10	2251	8	127	0	131	5	0	5
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3530		1785	3444	1358	1779	1633		1785	1608	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.55	1.00	
Satd. Flow (perm)	1785	3530		1785	3444	1358	1413	1633		1030	1608	
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)	5	1585	44	10	2251	8	127	0	131	5	0	5
RTOR Reduction (vph)	0	1	0	0	0	2	0	78	0	0	4	0
Lane Group Flow (vph)	5	1628	0	10	2251	6	127	53	0	5	1	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	6%	13%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	1.4	101.5		1.6	101.7	101.7	17.9	17.9		17.9	17.9	
Effective Green, g (s)	2.4	102.5		2.6	102.7	102.7	18.9	18.9		18.9	18.9	
Actuated g/C Ratio	0.02	0.73		0.02	0.73	0.73	0.13	0.13		0.13	0.13	
Clearance Time (s)	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	
Lane Grp Cap (vph)	30	2584		33	2526	996	190	220		139	217	
v/s Ratio Prot	0.00	0.46		c0.01	c0.65			0.03			0.00	
v/s Ratio Perm						0.00	c0.09			0.00		
v/c Ratio	0.17	0.63		0.30	0.89	0.01	0.67	0.24		0.04	0.00	
Uniform Delay, d1	67.8	9.3		67.8	14.3	5.0	57.6	54.1		52.6	52.4	
Progression Factor	1.09	1.10		0.82	0.92	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.1		3.1	3.3	0.0	8.6	0.6		0.1	0.0	
Delay (s)	76.6	11.3		58.7	16.5	5.0	66.2	54.7		52.7	52.4	
Level of Service	E	B		E	B	A	E	D		D	D	
Approach Delay (s)		11.5			16.6			60.4			52.6	
Approach LOS		B			B			E			D	

Intersection Summary

HCM 2000 Control Delay	17.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.85				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	85.1%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

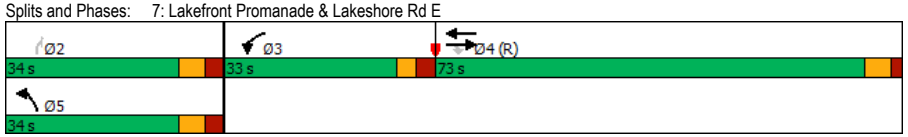
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.95	1.00		0.98	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3510	1551	1750	3476	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3510	1478	1745	3476	3337	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		31				309
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1575	123	32	1839	458	309
Future Volume (vph)	1575	123	32	1839	458	309
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	82.2	82.2	19.7	82.2	24.5	24.5
Actuated g/C Ratio	0.59	0.59	0.14	0.59	0.18	0.18
v/c Ratio	0.76	0.14	0.13	0.90	0.77	0.59
Control Delay	19.4	9.7	56.1	20.8	64.2	9.7
Queue Delay	0.1	0.0	0.0	0.2	0.0	0.0
Total Delay	19.5	9.7	56.1	21.1	64.2	9.8
LOS	B	A	E	C	E	A
Approach Delay	18.8			21.7	42.3	
Approach LOS	B			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 24.2	Intersection LOS: C	
Intersection Capacity Utilization 73.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1575	123	32	1839	458	309
v/c Ratio	0.76	0.14	0.13	0.90	0.77	0.59
Control Delay	19.4	9.7	56.1	20.8	64.2	9.7
Queue Delay	0.1	0.0	0.0	0.2	0.0	0.0
Total Delay	19.5	9.7	56.1	21.1	64.2	9.8
Queue Length 50th (m)	156.6	4.4	9.4	~300.2	66.1	0.0
Queue Length 95th (m)	#184.2	19.2	m10.9m	#323.5	83.7	26.6
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2059	880	350	2039	679	560
Starvation Cap Reductn	0	0	0	19	0	0
Spillback Cap Reductn	28	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.14	0.09	0.91	0.67	0.55

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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1575	123	32	1839	458	309
Future Volume (vph)	1575	123	32	1839	458	309
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	5.0	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	0.95	1.00	1.00	1.00	1.00
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)	3510	1478	1750	3476	3395	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3510	1478	1750	3476	3395	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1575	123	32	1839	458	309
RTOR Reduction (vph)	0	13	0	0	0	255
Lane Group Flow (vph)	1575	110	32	1839	458	54
Confl. Peds. (#/hr)		7	7		11	
Heavy Vehicles (%)	4%	3%	2%	5%	2%	2%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	79.9	79.9	17.6	79.9	23.5	23.5
Effective Green, g (s)	80.9	80.9	18.6	80.9	24.5	24.5
Actuated g/C Ratio	0.58	0.58	0.13	0.58	0.18	0.18
Clearance Time (s)	6.0	6.0	6.0	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)	2028	854	232	2008	594	274
v/s Ratio Prot	0.45		c0.02	c0.53	c0.13	
v/s Ratio Perm		0.07				0.03
v/c Ratio	0.78	0.13	0.14	0.92	0.77	0.20
Uniform Delay, d1	22.6	13.5	53.6	26.5	55.1	49.3
Progression Factor	0.65	0.72	1.16	0.54	1.00	1.00
Incremental Delay, d2	2.6	0.3	0.1	3.6	6.1	0.4
Delay (s)	17.3	10.0	62.4	17.9	61.2	49.7
Level of Service	B	A	E	B	E	D
Approach Delay (s)	16.7			18.7	56.6	
Approach LOS	B			B	E	

Intersection Summary

HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

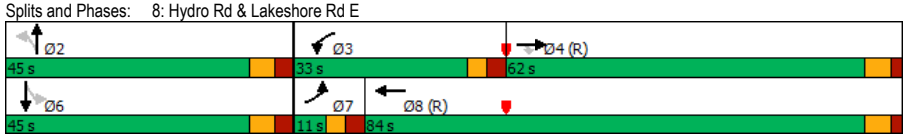
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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		0.95	1.00	1.00							
Frt			0.850					0.850			0.910	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1785	3476	1597	1750	3443	0	1750	1601	0	0	1687	0
Flt Permitted	0.950			0.950			0.754				0.909	
Satd. Flow (perm)	1771	3476	1516	1746	3443	0	1389	1601	0	0	1558	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125					299			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	1829	161	48	1517	270	0	2	0
Future Volume (vph)	2	1829	161	48	1517	270	0	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.5	83.6	83.6	10.2	94.3	32.5	32.5		32.5
Actuated g/C Ratio	0.05	0.60	0.60	0.07	0.67	0.23	0.23		0.23
v/c Ratio	0.02	0.88	0.17	0.38	0.65	0.84	0.58		0.01
Control Delay	67.0	26.2	5.7	75.7	14.1	72.8	11.8		0.0
Queue Delay	0.0	1.2	0.0	0.0	0.1	0.0	0.0		0.0
Total Delay	67.0	27.4	5.7	75.7	14.2	72.8	11.8		0.0
LOS	E	C	A	E	B	E	B		A
Approach Delay		25.7			16.0		38.4		
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: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 23.9	Intersection LOS: C	
Intersection Capacity Utilization 81.4%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	2	1829	161	48	1518	270	350	6
v/c Ratio	0.02	0.88	0.17	0.38	0.65	0.84	0.58	0.01
Control Delay	67.0	26.2	5.7	75.7	14.1	72.8	11.8	0.0
Queue Delay	0.0	1.2	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	67.0	27.4	5.7	75.7	14.2	72.8	11.8	0.0
Queue Length 50th (m)	0.5	203.8	5.3	14.8	80.4	75.0	11.8	0.0
Queue Length 95th (m)	m0.9	#341.0	m9.7	m20.7	79.5	105.0	40.5	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	82	2075	955	350	2318	386	661	518
Starvation Cap Reductn	0	32	0	0	70	0	0	0
Spillback Cap Reductn	0	97	0	0	27	0	8	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.92	0.17	0.14	0.68	0.70	0.54	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1829	161	48	1517	1	270	0	350	2	0	4
Future Volume (vph)	2	1829	161	48	1517	1	270	0	350	2	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		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	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1785	3476	1516	1750	3443		1750	1601			1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.91	
Satd. Flow (perm)	1785	3476	1516	1750	3443		1389	1601			1558	
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)	2	1829	161	48	1517	1	270	0	350	2	0	4
RTOR Reduction (vph)	0	0	51	0	0	0	0	230	0	0	5	0
Lane Group Flow (vph)	2	1829	110	48	1518	0	270	120	0	0	1	0
Confl. Peds. (#/hr)	16		8	8		16						
Heavy Vehicles (%)	0%	5%	0%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.0	81.4	81.4	8.1	88.5		31.5	31.5			31.5	
Effective Green, g (s)	2.0	82.4	82.4	9.1	89.5		32.5	32.5			32.5	
Actuated g/C Ratio	0.01	0.59	0.59	0.06	0.64		0.23	0.23			0.23	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	25	2045	892	113	2201		322	371			361	
v/s Ratio Prot	0.00	c0.53		c0.03	c0.44			0.08				
v/s Ratio Perm			0.07				c0.19				0.00	
v/c Ratio	0.08	0.89	0.12	0.42	0.69		0.84	0.32			0.00	
Uniform Delay, d1	68.1	25.0	12.8	62.9	16.3		51.2	44.6			41.3	
Progression Factor	1.03	0.80	1.14	1.14	0.85		1.00	1.00			1.00	
Incremental Delay, d2	1.0	5.0	0.2	1.8	1.3		17.1	0.5			0.0	
Delay (s)	71.4	24.9	14.7	73.8	15.2		68.4	45.1			41.3	
Level of Service	E	C	B	E	B		E	D			D	
Approach Delay (s)		24.1			17.0			55.3			41.3	
Approach LOS		C			B			E			D	

Intersection Summary

HCM 2000 Control Delay	26.1	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)	16.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

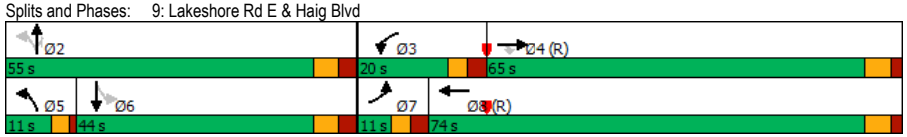
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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			1.00	0.98		0.99	
Frt			0.850		0.997				0.850		0.945	
Flt Protected	0.950			0.950				0.960			0.982	
Satd. Flow (prot)	1750	3476	1566	1750	3461	0	0	1808	1566	0	1735	0
Flt Permitted	0.950			0.950				0.664			0.736	
Satd. Flow (perm)	1732	3476	1566	1750	3461	0	0	1245	1537	0	1297	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		2				133		24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	113	1782	274	132	1432	120	25	180	36	23
Future Volume (vph)	113	1782	274	132	1432	120	25	180	36	23
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	21.8	84.0	84.0	17.1	79.3		22.9	22.9		22.9
Actuated g/C Ratio	0.16	0.60	0.60	0.12	0.57		0.16	0.16		0.16
v/c Ratio	0.42	0.85	0.27	0.62	0.75		0.71	0.50		0.43
Control Delay	69.2	14.8	3.2	56.8	34.5		73.6	19.5		43.5
Queue Delay	0.0	0.8	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	69.2	15.6	3.2	56.8	34.5		73.6	19.5		43.5
LOS	E	B	A	E	C		E	B		D
Approach Delay		16.8			36.3		43.6			43.5
Approach LOS		B			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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 27.0	Intersection LOS: C	
Intersection Capacity Utilization 89.7%	ICU Level of Service E	
Analysis Period (min) 15		

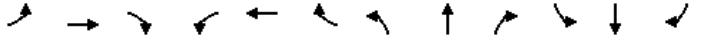
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	113	1782	274	132	1465	145	180	99
v/c Ratio	0.42	0.85	0.27	0.62	0.75	0.71	0.50	0.43
Control Delay	69.2	14.8	3.2	56.8	34.5	73.6	19.5	43.5
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	15.6	3.2	56.8	34.5	73.6	19.5	43.5
Queue Length 50th (m)	34.6	59.0	3.9	37.1	158.4	40.5	12.0	19.7
Queue Length 95th (m)	m42.0	#330.6	m6.9	m50.6	199.0	61.0	33.5	36.0
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	272	2086	1002	223	1962	435	624	369
Starvation Cap Reductn	0	101	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	0.42	0.90	0.27	0.59	0.75	0.33	0.29	0.27

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	1782	274	132	1432	33	120	25	180	36	23	40
Future Volume (vph)	113	1782	274	132	1432	33	120	25	180	36	23	40
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1750	3476	1566	1750	3459			1800	1537		1732	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.66	1.00		0.74	
Satd. Flow (perm)	1750	3476	1566	1750	3459			1245	1537		1298	
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	1782	274	132	1432	33	120	25	180	36	23	40
RTOR Reduction (vph)	0	0	62	0	1	0	0	0	111	0	20	0
Lane Group Flow (vph)	113	1782	212	132	1464	0	0	145	69	0	79	0
Confl. Peds. (#/hr)	20					20	6		6	6		6
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	20.8	83.0	83.0	16.1	78.3			21.9	21.9		21.9	
Effective Green, g (s)	21.8	84.0	84.0	17.1	79.3			22.9	22.9		22.9	
Actuated g/C Ratio	0.16	0.60	0.60	0.12	0.57			0.16	0.16		0.16	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	272	2085	939	213	1959			203	251		212	
v/s Ratio Prot	0.06	c0.51		c0.08	0.42							
v/s Ratio Perm			0.14					c0.12	0.04		0.06	
v/c Ratio	0.42	0.85	0.23	0.62	0.75			0.71	0.27		0.37	
Uniform Delay, d1	53.3	23.0	13.0	58.4	22.8			55.5	51.3		52.1	
Progression Factor	1.21	0.44	0.42	0.82	1.36			1.00	1.00		1.00	
Incremental Delay, d2	0.6	2.6	0.3	3.8	1.9			11.3	0.6		1.1	
Delay (s)	65.3	12.7	5.7	51.9	33.1			66.7	51.9		53.3	
Level of Service	E	B	A	D	C			E	D		D	
Approach Delay (s)		14.5			34.6			58.5			53.3	
Approach LOS		B			C			E			D	

Intersection Summary				
HCM 2000 Control Delay	26.5	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)	19.0	
Intersection Capacity Utilization	89.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

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	0.870					
Flt Protected	0.998					0.973
Satd. Flow (prot)	1599	0	1842	0	0	1792
Flt Permitted	0.998					0.973
Satd. Flow (perm)	1599	0	1842	0	0	1792
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

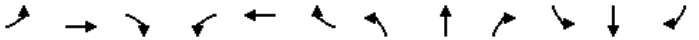
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	7	169	89	0	30	24
Future Volume (vph)	7	169	89	0	30	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	169	89	0	30	24

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	176	89	54
Volume Left (vph)	7	0	30
Volume Right (vph)	169	0	0
Hadj (s)	-0.53	0.03	0.15
Departure Headway (s)	3.7	4.3	4.5
Degree Utilization, x	0.18	0.11	0.07
Capacity (veh/h)	939	790	757
Control Delay (s)	7.5	7.9	7.8
Approach Delay (s)	7.5	7.9	7.8
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.873			0.977			0.980	
Flt Protected		0.950			0.999			0.999			0.986	
Satd. Flow (prot)	0	1750	0	0	1606	0	0	1798	0	0	1780	0
Flt Permitted		0.950			0.999			0.999			0.986	
Satd. Flow (perm)	0	1750	0	0	1606	0	0	1798	0	0	1780	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



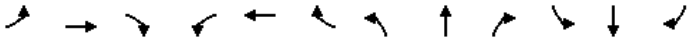
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	50	0	0	8	9	262	9	455	96	42	88	23
Future Volume (vph)	50	0	0	8	9	262	9	455	96	42	88	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	50	0	0	8	9	262	9	455	96	42	88	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	50	279	560	153
Volume Left (vph)	50	8	9	42
Volume Right (vph)	0	262	96	23
Hadj (s)	0.23	-0.52	-0.07	0.00
Departure Headway (s)	6.6	5.4	5.0	5.7
Degree Utilization, x	0.09	0.41	0.78	0.24
Capacity (veh/h)	478	611	697	574
Control Delay (s)	10.3	12.1	23.8	10.5
Approach Delay (s)	10.3	12.1	23.8	10.5
Approach LOS	B	B	C	B

Intersection Summary				
Delay		18.1		
Level of Service		C		
Intersection Capacity Utilization		63.8%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.995			0.915			0.972			0.988	
Flt Protected		0.966			0.997			0.988			0.991	
Satd. Flow (prot)	0	1771	0	0	1680	0	0	1769	0	0	1804	0
Flt Permitted		0.966			0.997			0.988			0.991	
Satd. Flow (perm)	0	1771	0	0	1680	0	0	1769	0	0	1804	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



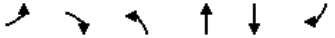
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	134	52	7	9	57	113	124	270	104	31	120	15
Future Volume (vph)	134	52	7	9	57	113	124	270	104	31	120	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	134	52	7	9	57	113	124	270	104	31	120	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	193	179	498	166
Volume Left (vph)	134	9	124	31
Volume Right (vph)	7	113	104	15
Hadj (s)	0.15	-0.33	-0.04	0.02
Departure Headway (s)	6.3	5.8	5.3	5.9
Degree Utilization, x	0.34	0.29	0.74	0.27
Capacity (veh/h)	511	526	653	534
Control Delay (s)	12.4	11.2	21.6	11.1
Approach Delay (s)	12.4	11.2	21.6	11.1
Approach LOS	B	B	C	B

Intersection Summary			
Delay	16.4		
Level of Service	C		
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

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	0.995				0.988	
Flt Protected	0.954			0.990		
Satd. Flow (prot)	1749	0	0	1824	1820	0
Flt Permitted	0.954			0.990		
Satd. Flow (perm)	1749	0	0	1824	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	226	8	101	394	190	18
Future Volume (vph)	226	8	101	394	190	18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	226	8	101	394	190	18

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	234	495	208
Volume Left (vph)	226	101	0
Volume Right (vph)	8	0	18
Hadj (s)	0.21	0.07	-0.02
Departure Headway (s)	5.9	5.0	5.3
Degree Utilization, x	0.38	0.69	0.31
Capacity (veh/h)	565	694	640
Control Delay (s)	12.5	18.5	10.7
Approach Delay (s)	12.5	18.5	10.7
Approach LOS	B	C	B

Intersection Summary			
Delay	15.3		
Level of Service	C		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

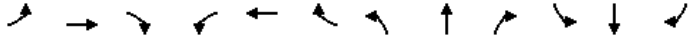
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1593	0	1842	0	0	1781
Flt Permitted						0.967
Satd. Flow (perm)	1593	0	1842	0	0	1781
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	77	12	0	21	10
Future Volume (vph)	0	77	12	0	21	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	77	12	0	21	10

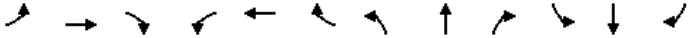
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	77	12	31
Volume Left (vph)	0	0	21
Volume Right (vph)	77	0	0
Hadj (s)	-0.57	0.03	0.17
Departure Headway (s)	3.4	4.1	4.2
Degree Utilization, x	0.07	0.01	0.04
Capacity (veh/h)	1030	848	832
Control Delay (s)	6.7	7.2	7.4
Approach Delay (s)	6.7	7.2	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	6.9		
Level of Service	A		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.940			0.875			0.967			0.993	
Flt Protected		0.973			0.998		0.950				0.990	
Satd. Flow (prot)	0	1685	0	0	1609	0	1750	1781	0	0	1811	0
Flt Permitted		0.973			0.998		0.950				0.990	
Satd. Flow (perm)	0	1685	0	0	1609	0	1750	1781	0	0	1811	0
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



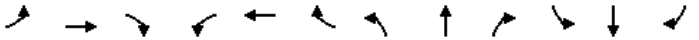
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	0	12	8	9	210	19	335	96	20	71	5
Future Volume (vph)	15	0	12	8	9	210	19	335	96	20	71	5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	0	12	8	9	210	19	335	96	20	71	5

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	27	227	19	431	96
Volume Left (vph)	15	8	19	0	20
Volume Right (vph)	12	210	0	96	5
Hadj (s)	-0.12	-0.51	0.53	-0.12	0.04
Departure Headway (s)	5.5	4.8	5.8	5.1	5.3
Degree Utilization, x	0.04	0.30	0.03	0.62	0.14
Capacity (veh/h)	564	684	600	682	629
Control Delay (s)	8.8	9.9	7.8	14.8	9.2
Approach Delay (s)	8.8	9.9	14.5		9.2
Approach LOS	A	A	B		A

Intersection Summary				
Delay	12.4			
Level of Service	B			
Intersection Capacity Utilization	44.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.993			0.930			0.976			0.987	
Flt Protected		0.972			0.997			0.989			0.994	
Satd. Flow (prot)	0	1778	0	0	1708	0	0	1778	0	0	1807	0
Flt Permitted		0.972			0.997			0.989			0.994	
Satd. Flow (perm)	0	1778	0	0	1708	0	0	1778	0	0	1807	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



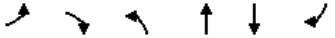
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	82	52	7	9	57	71	124	346	104	17	107	13
Future Volume (vph)	82	52	7	9	57	71	124	346	104	17	107	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	82	52	7	9	57	71	124	346	104	17	107	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	141	137	574	137
Volume Left (vph)	82	9	124	17
Volume Right (vph)	7	71	104	13
Hadj (s)	0.12	-0.26	-0.03	0.00
Departure Headway (s)	6.2	5.8	4.9	5.6
Degree Utilization, x	0.24	0.22	0.79	0.21
Capacity (veh/h)	529	558	711	583
Control Delay (s)	11.1	10.4	23.8	10.1
Approach Delay (s)	11.1	10.4	23.8	10.1
Approach LOS	B	B	C	B

Intersection Summary				
Delay		18.2		
Level of Service		C		
Intersection Capacity Utilization		63.6%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.994				0.991	
Flt Protected	0.954			0.988		
Satd. Flow (prot)	1747	0	0	1820	1825	0
Flt Permitted	0.954			0.988		
Satd. Flow (perm)	1747	0	0	1820	1825	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	184	8	101	311	185	13
Future Volume (vph)	184	8	101	311	185	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	184	8	101	311	185	13

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	192	412	198
Volume Left (vph)	184	101	0
Volume Right (vph)	8	0	13
Hadj (s)	0.20	0.08	-0.01
Departure Headway (s)	5.6	4.8	5.0
Degree Utilization, x	0.30	0.55	0.27
Capacity (veh/h)	591	725	681
Control Delay (s)	10.9	13.6	9.9
Approach Delay (s)	10.9	13.6	9.9
Approach LOS	B	B	A

Intersection Summary			
Delay	12.0		
Level of Service	B		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

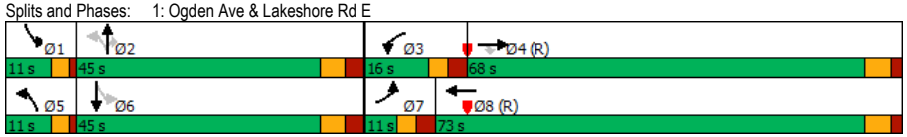
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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	1.00		0.89	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.989				0.850		0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3579	1597	1785	3540	0	1785	1921	1597	1668	1730	0
Flt Permitted	0.950			0.950			0.363			0.715		
Satd. Flow (perm)	1777	3579	1419	1763	3540	0	678	1921	1557	1240	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		8				116		52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	66	1473	309	255	1643	112	65	116	142	71
Future Volume (vph)	66	1473	309	255	1643	112	65	116	142	71
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	45.0	45.0	11.0	45.0
Total Split (s)	11.0	68.0	68.0	16.0	73.0	11.0	45.0	45.0	11.0	45.0
Total Split (%)	7.9%	48.6%	48.6%	11.4%	52.1%	7.9%	32.1%	32.1%	7.9%	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 Effct Green (s)	12.6	63.0	63.0	33.4	83.7	27.6	16.6	16.6	27.6	16.6
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60	0.20	0.12	0.12	0.20	0.12
v/c Ratio	0.41	0.91	0.44	0.60	0.84	0.57	0.29	0.40	0.53	0.70
Control Delay	59.2	30.6	15.4	59.6	18.2	56.6	57.5	13.0	54.0	55.3
Queue Delay	0.0	2.2	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	32.8	15.4	59.6	18.8	56.6	57.5	13.0	54.0	55.3
LOS	E	C	B	E	B	E	E	B	D	E
Approach Delay		30.8			23.9		39.5			54.7
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: 135		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.91		
Intersection Signal Delay: 29.9	Intersection LOS: C	
Intersection Capacity Utilization 92.7%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	66	1473	309	255	1771	112	65	116	142	175
v/c Ratio	0.41	0.91	0.44	0.60	0.84	0.57	0.29	0.40	0.53	0.70
Control Delay	59.2	30.6	15.4	59.6	18.2	56.6	57.5	13.0	54.0	55.3
Queue Delay	0.0	2.2	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	32.8	15.4	59.6	18.8	56.6	57.5	13.0	54.0	55.3
Queue Length 50th (m)	20.4	90.0	26.5	57.9	148.0	27.5	17.6	0.0	35.7	34.9
Queue Length 95th (m)	m23.0	m102.5	m30.4	#112.1	#77.4	42.8	31.1	17.7	53.3	58.2
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	161	1610	698	425	2120	196	535	517	269	519
Starvation Cap Reductn	0	3	0	0	93	0	0	0	0	0
Spillback Cap Reductn	0	62	0	0	16	0	0	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.95	0.44	0.60	0.87	0.57	0.12	0.23	0.53	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	1473	309	255	1643	128	112	65	116	142	71	104
Future Volume (vph)	66	1473	309	255	1643	128	112	65	116	142	71	104
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	0.89	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
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)	1785	3579	1419	1785	3541		1782	1921	1557	1654	1729	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.36	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	1785	3579	1419	1785	3541		680	1921	1557	1244	1729	
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)	66	1473	309	255	1643	128	112	65	116	142	71	104
RTOR Reduction (vph)	0	0	60	0	3	0	0	0	102	0	46	0
Lane Group Flow (vph)	66	1473	249	255	1768	0	112	65	14	142	129	0
Confl. Peds. (#/hr)	14		24	24		14	7		12	12		7
Heavy Vehicles (%)	0%	2%	0%	0%	1%	7%	0%	0%	0%	7%	0%	0%
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)	11.6	62.0	62.0	32.4	82.8		22.6	15.6	15.6	22.6	15.6	
Effective Green, g (s)	12.6	63.0	63.0	33.4	83.8		24.6	16.6	16.6	24.6	16.6	
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60		0.18	0.12	0.12	0.18	0.12	
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)	160	1610	638	425	2119		182	227	184	242	205	
v/s Ratio Prot	0.04	c0.41		c0.14	c0.50		c0.04	0.03		0.03	c0.07	
v/s Ratio Perm			0.18				0.07		0.01	0.07		
v/c Ratio	0.41	0.91	0.39	0.60	0.83		0.62	0.29	0.07	0.59	0.63	
Uniform Delay, d1	60.2	36.0	25.7	47.4	22.5		51.0	56.3	54.9	52.1	58.8	
Progression Factor	0.93	0.70	0.87	1.12	0.62		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	4.7	0.8	1.6	2.9		6.1	0.7	0.2	3.6	6.2	
Delay (s)	57.0	30.1	23.1	54.7	16.7		57.0	57.0	55.0	55.7	64.9	
Level of Service	E	C	C	D	B		E	E	E	E	E	
Approach Delay (s)		29.9			21.5			56.2			60.8	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.99		0.87		0.99			1.00	0.97
Frt						0.850		0.910				0.850
Flt Protected	0.950			0.950							0.953	
Satd. Flow (prot)	1750	3544	0	1785	3579	1566	0	1732	0	0	1813	1581
Flt Permitted	0.950			0.950							0.727	
Satd. Flow (perm)	1703	3544	0	1761	3579	1355	0	1732	0	0	1380	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		2				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

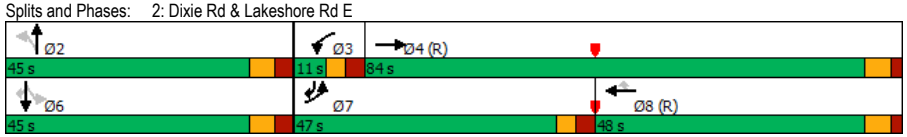
Area Type: Other

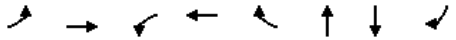
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	396	1059	1	1056	242	1	248	2	902
Future Volume (vph)	396	1059	1	1056	242	1	248	2	902
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8		2		6	7
Permitted Phases					8		6		6
Detector Phase	7	4	3	8	8	2	6	6	7
Switch Phase									
Minimum Initial (s)	5.0	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	24.0	12.0	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	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	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	3.0
All-Red Time (s)	3.0	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
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
Act Effct Green (s)	48.7	95.8	6.5	44.3	44.3	31.0		31.0	80.7
Actuated g/C Ratio	0.35	0.68	0.05	0.32	0.32	0.22		0.22	0.58
v/c Ratio	0.65	0.44	0.01	0.93	0.47	0.01		0.82	0.99
Control Delay	36.9	26.9	64.0	61.4	21.7	28.7		72.2	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	36.9	26.9	64.0	61.4	21.7	28.7		72.2	55.5
LOS	D	C	E	E	C	C		E	E
Approach Delay		29.6		54.0		28.7		59.1	
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: 46.4 Intersection LOS: D
Intersection Capacity Utilization 104.6% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

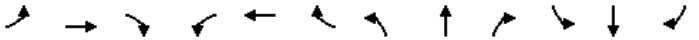




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	396	1059	1	1056	242	3	250	902
v/c Ratio	0.65	0.44	0.01	0.93	0.47	0.01	0.82	0.99
Control Delay	36.9	26.9	64.0	61.4	21.7	28.7	72.2	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	26.9	64.0	61.4	21.7	28.7	72.2	55.5
Queue Length 50th (m)	115.6	138.7	0.3	159.3	26.8	0.2	69.5	213.3
Queue Length 95th (m)	155.9	190.3	2.3	#205.0	54.2	2.8	96.8	#347.9
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	608	2424	82	1133	514	483	384	908
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	0.65	0.44	0.01	0.93	0.47	0.01	0.65	0.99

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	1059	0	1	1056	242	0	1	2	248	2	902
Future Volume (vph)	396	1059	0	1	1056	242	0	1	2	248	2	902
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	0.87		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1750	3544		1785	3579	1355		1731			1808	1560
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.73	1.00
Satd. Flow (perm)	1750	3544		1785	3579	1355		1731			1379	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)	396	1059	0	1	1056	242	0	1	2	248	2	902
RTOR Reduction (vph)	0	0	0	0	0	85	0	2	0	0	0	10
Lane Group Flow (vph)	396	1059	0	1	1056	157	0	1	0	0	250	892
Confl. Peds. (#/hr)	30		15	15		30	21		2	2		21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	0%	0%	0%	1%	0%	1%
Turn Type	Prot	NA		Prot	NA	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)	47.7	90.0		1.0	43.3	43.3		30.0			30.0	77.7
Effective Green, g (s)	48.7	91.0		2.0	44.3	44.3		31.0			31.0	79.7
Actuated g/C Ratio	0.35	0.65		0.01	0.32	0.32		0.22			0.22	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)	608	2303		25	1132	428		383			305	888
v/s Ratio Prot	0.23	0.30		0.00	c0.30			0.00				c0.35
v/s Ratio Perm						0.12					0.18	0.22
v/c Ratio	0.65	0.46		0.04	0.93	0.37		0.00			0.82	1.00
Uniform Delay, d1	38.5	12.2		68.1	46.4	37.0		42.5			51.8	30.1
Progression Factor	0.81	2.31		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.0	0.5		0.7	14.8	2.4		0.0			15.7	31.3
Delay (s)	33.1	28.8		68.7	61.2	39.4		42.5			67.5	61.5
Level of Service	C	C		E	E	D		D			E	E
Approach Delay (s)		30.0			57.2			42.5			62.8	
Approach LOS		C			E			D			E	

Intersection Summary

HCM 2000 Control Delay	48.7	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	104.6%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

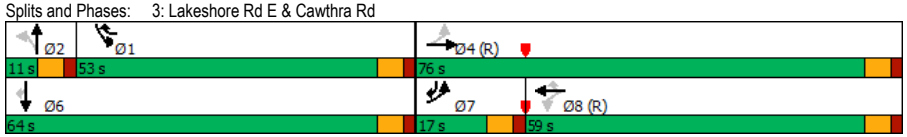
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	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		1.00				0.94						0.96
Frt						0.850		0.955				0.850
Flt Protected	0.950									0.950	0.952	
Satd. Flow (prot)	3429	3578	0	1879	3614	1581	0	1835	0	1679	1720	1566
Flt Permitted	0.078									0.950	0.725	
Satd. Flow (perm)	281	3578	0	1879	3614	1485	0	1835	0	1679	1310	1497
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						330		1				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	

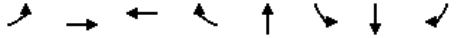
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	394	1177	1173	617	2	1067	1	565
Future Volume (vph)	394	1177	1173	617	2	1067	1	565
Turn Type	pm+pt	NA	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4	8	1	2	1	6	7
Permitted Phases	4			8				6
Detector Phase	7	4	8	1	2	1	6	7
Switch Phase								
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	17.0	76.0	59.0	53.0	11.0	53.0	64.0	17.0
Total Split (%)	12.1%	54.3%	42.1%	37.9%	7.9%	37.9%	45.7%	12.1%
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	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	68.3	68.3	51.3	110.8	6.3	59.5	59.5	73.7
Actuated g/C Ratio	0.49	0.49	0.37	0.79	0.04	0.42	0.42	0.53
v/c Ratio	0.97	0.68	0.89	0.48	0.04	0.75	0.73	0.70
Control Delay	70.9	29.4	52.1	2.0	57.3	42.9	42.0	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	29.4	52.1	2.0	57.3	42.9	42.0	26.9
LOS	E	C	D	A	E	D	D	C
Approach Delay		39.8	34.8		57.3		37.1	
Approach LOS		D	C		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.97		
Intersection Signal Delay: 37.1	Intersection LOS: D	
Intersection Capacity Utilization 92.4%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd

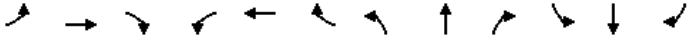




Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	394	1178	1173	617	3	533	535	565
v/c Ratio	0.97	0.68	0.89	0.48	0.04	0.75	0.73	0.70
Control Delay	70.9	29.4	52.1	2.0	57.3	42.9	42.0	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	29.4	52.1	2.0	57.3	42.9	42.0	26.9
Queue Length 50th (m)	41.0	131.1	178.4	5.9	0.6	135.5	134.8	107.3
Queue Length 95th (m)	#74.2	153.7	157.1	19.3	4.0	#232.4	#229.2	152.1
Internal Link Dist (m)		297.4	113.2		71.8		931.9	
Turn Bay Length (m)	35.0			70.0		115.0		
Base Capacity (vph)	406	1814	1393	1284	83	713	731	805
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	0.97	0.65	0.84	0.48	0.04	0.75	0.73	0.70

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	1177	1	0	1173	617	0	2	1	1067	1	565
Future Volume (vph)	394	1177	1	0	1173	617	0	2	1	1067	1	565
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
Lane Util. Factor	0.97	0.95			0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3429	3578			3614	1539		1835		1679	1721	1507
Flt Permitted	0.08	1.00			1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	280	3578			3614	1539		1835		1679	1311	1507
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)	394	1177	1	0	1173	617	0	2	1	1067	1	565
RTOR Reduction (vph)	0	0	0	0	0	80	0	1	0	0	0	10
Lane Group Flow (vph)	394	1178	0	0	1173	537	0	2	0	533	535	555
Confl. Peds. (#/hr)	38		20	20		38	25					25
Heavy Vehicles (%)	1%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	62.5	62.5			45.5	104.0		1.0		58.5	65.5	76.5
Effective Green, g (s)	63.5	63.5			46.5	106.0		2.0		59.5	66.5	78.5
Actuated g/C Ratio	0.45	0.45			0.33	0.76		0.01		0.42	0.48	0.56
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)	396	1622			1200	1165		26		713	796	898
v/s Ratio Prot	c0.09	0.33			0.32	0.20		0.00		c0.32	0.29	0.05
v/s Ratio Perm	c0.36					0.15					c0.03	0.32
v/c Ratio	0.99	0.73			0.98	0.46		0.08		0.75	0.67	0.62
Uniform Delay, d1	41.8	31.2			46.2	6.3		68.1		33.9	28.3	20.7
Progression Factor	1.00	1.00			1.07	0.70		1.00		1.00	1.00	1.00
Incremental Delay, d2	43.6	2.9			18.6	0.2		1.3		4.3	2.2	1.3
Delay (s)	85.5	34.0			68.1	4.7		69.4		38.2	30.6	21.9
Level of Service	F	C			E	A		E		D	C	C
Approach Delay (s)		46.9			46.3			69.4			30.1	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	41.2	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	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		0.90	0.99	0.98		1.00	0.98	
Frt		0.991				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3567	0	1785	3650	1597	1785	1576	0	1785	1594	0
Flt Permitted	0.950			0.950			0.751			0.747		
Satd. Flow (perm)	1774	3567	0	1782	3650	1443	1394	1576	0	1399	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				78		71			77	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

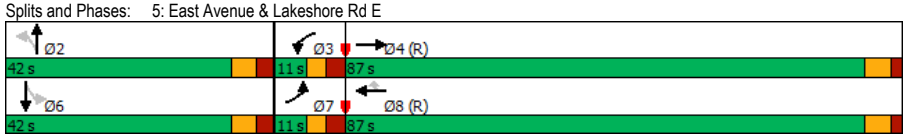
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	11	2076	56	1814	63	71	0	8	0
Future Volume (vph)	11	2076	56	1814	63	71	0	8	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.5	105.5	11.3	113.9	113.9	13.7	13.7	13.7	13.7
Actuated g/C Ratio	0.05	0.75	0.08	0.81	0.81	0.10	0.10	0.10	0.10
v/c Ratio	0.12	0.82	0.39	0.61	0.05	0.52	0.07	0.06	0.04
Control Delay	69.6	22.7	61.4	8.1	1.4	72.8	0.6	55.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	22.7	61.4	8.1	1.4	72.8	0.6	55.6	0.4
LOS	E	C	E	A	A	E	A	E	A
Approach Delay		23.0		9.4			59.5		24.9
Approach LOS		C		A			E		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: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 83.7% ICU Level of Service E
Analysis Period (min) 15

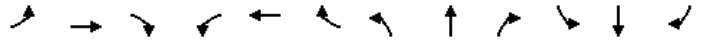
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2203	56	1814	63	71	16	8	10
v/c Ratio	0.12	0.82	0.39	0.61	0.05	0.52	0.07	0.06	0.04
Control Delay	69.6	22.7	61.4	8.1	1.4	72.8	0.6	55.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	22.7	61.4	8.1	1.4	72.8	0.6	55.6	0.4
Queue Length 50th (m)	2.9	328.2	15.3	87.1	0.1	20.0	0.0	2.2	0.0
Queue Length 95th (m)	m4.2	#384.1	m26.1	145.6	m2.4	35.7	0.0	7.6	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	95	2690	144	2969	1188	358	458	359	467
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	0.12	0.82	0.39	0.61	0.05	0.20	0.03	0.02	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	2076	127	56	1814	63	71	0	16	8	0	10
Future Volume (vph)	11	2076	127	56	1814	63	71	0	16	8	0	10
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.90	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3569		1785	3650	1443	1764	1576		1779	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)	1785	3569		1785	3650	1443	1394	1576		1399	1594	
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)	11	2076	127	56	1814	63	71	0	16	8	0	10
RTOR Reduction (vph)	0	2	0	0	0	14	0	15	0	0	9	0
Lane Group Flow (vph)	11	2201	0	56	1814	49	71	1	0	8	1	0
Confl. Peds. (#/hr)	20		10	10		20	10		3	3		10
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	3.0	100.9		9.0	106.9	106.9	11.1	11.1		11.1	11.1	
Effective Green, g (s)	4.0	101.9		10.0	107.9	107.9	12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.03	0.73		0.07	0.77	0.77	0.09	0.09		0.09	0.09	
Clearance Time (s)	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	
Lane Grp Cap (vph)	51	2597		127	2813	1112	120	136		120	137	
v/s Ratio Prot	0.01	c0.62		c0.03	c0.50			0.00			0.00	
v/s Ratio Perm						0.03	c0.05			0.01		
v/c Ratio	0.22	0.85		0.44	0.64	0.04	0.59	0.01		0.07	0.01	
Uniform Delay, d1	66.5	13.5		62.3	7.3	3.8	61.6	58.5		58.8	58.5	
Progression Factor	1.08	1.32		0.89	0.93	1.37	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.7		2.3	1.1	0.1	7.6	0.0		0.2	0.0	
Delay (s)	73.4	20.5		57.9	7.9	5.3	69.2	58.5		59.0	58.5	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		20.8			9.3			67.2			58.7	
Approach LOS		C			A			E			E	

Intersection Summary

HCM 2000 Control Delay	16.7	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)		16.0		
Intersection Capacity Utilization	83.7%	ICU Level of Service		E		
Analysis Period (min)	15					

c Critical Lane Group

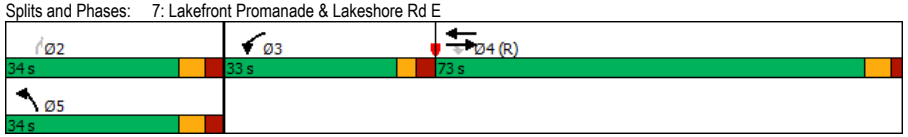
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.92	0.99		0.98	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1597	1750	3650	3463	1597
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	1468	1740	3650	3398	1571
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		85				142
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1706	372	308	1526	443	142
Future Volume (vph)	1706	372	308	1526	443	142
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	71.7	71.7	28.5	71.7	23.8	23.8
Actuated g/C Ratio	0.51	0.51	0.20	0.51	0.17	0.17
v/c Ratio	0.93	0.47	0.87	0.82	0.75	0.37
Control Delay	38.4	18.2	85.9	20.1	63.7	10.0
Queue Delay	1.3	0.0	0.0	0.2	0.0	0.0
Total Delay	39.7	18.2	85.9	20.4	63.7	10.0
LOS	D	B	F	C	E	A
Approach Delay	35.8			31.4	50.7	
Approach LOS	D			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 135		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 35.9	Intersection LOS: D	
Intersection Capacity Utilization 91.1%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1706	372	308	1526	443	142
v/c Ratio	0.93	0.47	0.87	0.82	0.75	0.37
Control Delay	38.4	18.2	85.9	20.1	63.7	10.0
Queue Delay	1.3	0.0	0.0	0.2	0.0	0.0
Total Delay	39.7	18.2	85.9	20.4	63.7	10.0
Queue Length 50th (m)	227.5	36.6	95.6	176.5	63.9	0.0
Queue Length 95th (m)	#308.7	m62.6	m#123.7	129.7	80.6	18.6
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1834	793	366	1870	692	427
Starvation Cap Reductn	0	0	0	44	0	0
Spillback Cap Reductn	40	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.47	0.84	0.84	0.64	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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1706	372	308	1526	443	142
Future Volume (vph)	1706	372	308	1526	443	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)	5.0	5.0	5.0	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	0.92	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1468	1750	3650	3463	1570
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	1468	1750	3650	3463	1570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1706	372	308	1526	443	142
RTOR Reduction (vph)	0	41	0	0	0	118
Lane Group Flow (vph)	1706	331	308	1526	443	24
Confl. Peds. (#/hr)		16	16		12	3
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	70.7	70.7	27.5	70.7	22.8	22.8
Effective Green, g (s)	71.7	71.7	28.5	71.7	23.8	23.8
Actuated g/C Ratio	0.51	0.51	0.20	0.51	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	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)	1832	751	356	1869	588	266
v/s Ratio Prot	c0.48		c0.18	0.42	c0.13	
v/s Ratio Perm		0.23				0.02
v/c Ratio	0.93	0.44	0.87	0.82	0.75	0.09
Uniform Delay, d1	31.9	21.5	53.9	28.6	55.3	49.0
Progression Factor	0.88	0.94	1.33	0.59	1.00	1.00
Incremental Delay, d2	9.4	1.7	12.3	2.4	5.4	0.1
Delay (s)	37.4	21.8	83.9	19.4	60.7	49.1
Level of Service	D	C	F	B	E	D
Approach Delay (s)	34.6			30.2	57.9	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

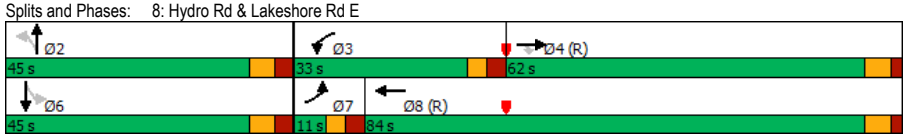
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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	1.00		0.84	0.98	1.00			0.99			1.00	
Frt			0.850					0.850			0.892	
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1750	3579	1597	1750	3578	0	1750	1578	0	0	1696	0
Flt Permitted	0.950			0.950			0.754				0.962	
Satd. Flow (perm)	1743	3579	1334	1710	3578	0	1389	1578	0	0	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178					304			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	3	1343	400	288	1796	229	0	1	0
Future Volume (vph)	3	1343	400	288	1796	229	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.6	66.8	66.8	27.9	97.4	29.3	29.3		29.3
Actuated g/C Ratio	0.05	0.48	0.48	0.20	0.70	0.21	0.21		0.21
v/c Ratio	0.04	0.79	0.55	0.83	0.72	0.79	0.28		0.01
Control Delay	57.0	28.9	15.7	77.1	13.7	70.7	1.2		0.0
Queue Delay	0.0	0.3	0.0	0.0	0.4	0.0	0.0		0.0
Total Delay	57.0	29.2	15.7	77.1	14.0	70.7	1.2		0.0
LOS	E	C	B	E	B	E	A		A
Approach Delay		26.2			22.7		42.1		
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: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 25.9	Intersection LOS: C	
Intersection Capacity Utilization 87.4%	ICU Level of Service E	
Analysis Period (min) 15		

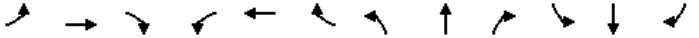
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	3	1343	400	288	1798	229	161	5
v/c Ratio	0.04	0.79	0.55	0.83	0.72	0.79	0.28	0.01
Control Delay	57.0	28.9	15.7	77.1	13.7	70.7	1.2	0.0
Queue Delay	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	57.0	29.2	15.7	77.1	14.0	70.7	1.2	0.0
Queue Length 50th (m)	0.8	87.3	29.5	89.0	95.3	63.8	0.0	0.0
Queue Length 95th (m)	m1.2m	#169.0	m38.5	m99.2	m112.2	88.1	0.0	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	82	1708	729	368	2490	386	658	543
Starvation Cap Reductn	0	73	0	0	231	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.82	0.55	0.78	0.80	0.59	0.24	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1343	400	288	1796	2	229	0	161	1	0	4
Future Volume (vph)	3	1343	400	288	1796	2	229	0	161	1	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		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	
Frpb, ped/bikes	1.00	1.00	0.84	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			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1750	3579	1334	1750	3578		1750	1578			1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.96	
Satd. Flow (perm)	1750	3579	1334	1750	3578		1390	1578			1648	
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)	3	1343	400	288	1796	2	229	0	161	1	0	4
RTOR Reduction (vph)	0	0	93	0	0	0	0	127	0	0	4	0
Lane Group Flow (vph)	3	1343	307	288	1798	0	229	34	0	0	1	0
Confl. Peds. (#/hr)	13		38	38		13			2	2		
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	2%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.1	65.8	65.8	26.9	91.6		28.3	28.3			28.3	
Effective Green, g (s)	2.1	66.8	66.8	27.9	92.6		29.3	29.3			29.3	
Actuated g/C Ratio	0.02	0.48	0.48	0.20	0.66		0.21	0.21			0.21	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	26	1707	636	348	2366		290	330			344	
v/s Ratio Prot	0.00	0.38		c0.16	c0.50			0.02				
v/s Ratio Perm			0.23				c0.16				0.00	
v/c Ratio	0.12	0.79	0.48	0.83	0.76		0.79	0.10			0.00	
Uniform Delay, d1	68.0	30.6	24.9	53.7	16.1		52.4	44.7			43.8	
Progression Factor	0.88	0.81	0.91	1.26	0.82		1.00	1.00			1.00	
Incremental Delay, d2	1.0	2.0	1.4	7.5	1.1		13.3	0.1			0.0	
Delay (s)	61.1	26.9	23.9	75.2	14.4		65.7	44.9			43.8	
Level of Service	E	C	C	E	B		E	D			D	
Approach Delay (s)		26.3			22.8			57.1			43.8	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

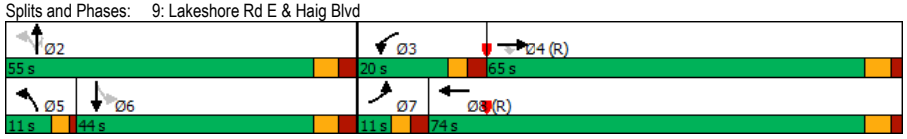
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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	1.00				1.00			1.00	0.97		0.99	
Frt			0.850		0.994				0.850		0.900	
Flt Protected	0.950			0.950				0.960			0.993	
Satd. Flow (prot)	1684	3579	1597	1785	3585	0	0	1844	1597	0	1695	0
Flt Permitted	0.950			0.950				0.544			0.929	
Satd. Flow (perm)	1678	3579	1597	1785	3585	0	0	1042	1557	0	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		4				149		101	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	64	1237	193	128	1756	184	39	203	27	23
Future Volume (vph)	64	1237	193	128	1756	184	39	203	27	23
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	10.4	71.2	71.2	15.1	75.9		37.8	37.8		37.8
Actuated g/C Ratio	0.07	0.51	0.51	0.11	0.54		0.27	0.27		0.27
v/c Ratio	0.52	0.68	0.22	0.67	0.94		0.79	0.38		0.39
Control Delay	83.3	14.2	2.4	64.1	38.1		66.6	12.8		19.7
Queue Delay	0.0	0.1	0.0	0.0	0.5		0.0	0.0		0.0
Total Delay	83.3	14.4	2.4	64.1	38.7		66.6	12.8		19.7
LOS	F	B	A	E	D		E	B		B
Approach Delay		15.8			40.3		41.0			19.7
Approach LOS		B			D		D			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: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 30.4	Intersection LOS: C	
Intersection Capacity Utilization 106.5%	ICU Level of Service G	
Analysis Period (min) 15		

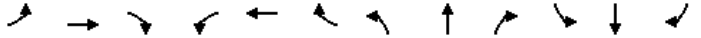
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	64	1237	193	128	1827	223	203	193
v/c Ratio	0.52	0.68	0.22	0.67	0.94	0.79	0.38	0.39
Control Delay	83.3	14.2	2.4	64.1	38.1	66.6	12.8	19.7
Queue Delay	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.0
Total Delay	83.3	14.4	2.4	64.1	38.7	66.6	12.8	19.7
Queue Length 50th (m)	19.7	37.6	2.4	37.0	237.6	60.2	11.9	20.8
Queue Length 95th (m)	m#30.9	54.2	m6.5	m39.4	m#318.4	84.6	30.3	38.9
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	124	1819	888	204	1944	364	641	540
Starvation Cap Reductn	0	85	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	17	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.71	0.22	0.63	0.95	0.61	0.32	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	1237	193	128	1756	71	184	39	203	27	23	143
Future Volume (vph)	64	1237	193	128	1756	71	184	39	203	27	23	143
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1684	3579	1597	1785	3586			1839	1557		1693	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.54	1.00		0.93	
Satd. Flow (perm)	1684	3579	1597	1785	3586			1041	1557		1583	
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)	64	1237	193	128	1756	71	184	39	203	27	23	143
RTOR Reduction (vph)	0	0	77	0	2	0	0	0	109	0	74	0
Lane Group Flow (vph)	64	1237	116	128	1825	0	0	223	94	0	119	0
Confl. Peds. (#/hr)	11					11	5		12	12		5
Heavy Vehicles (%)	6%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.4	70.1	70.1	14.1	74.8			36.8	36.8		36.8	
Effective Green, g (s)	10.4	71.1	71.1	15.1	75.8			37.8	37.8		37.8	
Actuated g/C Ratio	0.07	0.51	0.51	0.11	0.54			0.27	0.27		0.27	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	125	1817	811	192	1941			281	420		427	
v/s Ratio Prot	0.04	0.35		c0.07	c0.51							
v/s Ratio Perm			0.07					c0.21	0.06		0.08	
v/c Ratio	0.51	0.68	0.14	0.67	0.94			0.79	0.22		0.28	
Uniform Delay, d1	62.4	25.9	18.3	60.0	30.0			47.5	39.7		40.3	
Progression Factor	1.21	0.45	0.34	0.98	1.12			1.00	1.00		1.00	
Incremental Delay, d2	2.4	1.4	0.2	2.7	3.9			14.2	0.3		0.4	
Delay (s)	77.7	13.2	6.5	61.3	37.3			61.7	40.0		40.7	
Level of Service	E	B	A	E	D			E	D		D	
Approach Delay (s)		15.1			38.9			51.4			40.7	
Approach LOS		B			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	106.5%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

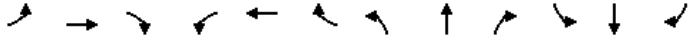
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.917					
Flt Protected	0.981					0.968
Satd. Flow (prot)	1657	0	1842	0	0	1783
Flt Permitted	0.981					0.968
Satd. Flow (perm)	1657	0	1842	0	0	1783
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	34	54	20	0	122	60
Future Volume (vph)	34	54	20	0	122	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	54	20	0	122	60

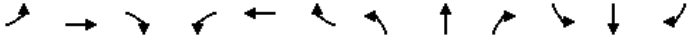
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	88	20	182
Volume Left (vph)	34	0	122
Volume Right (vph)	54	0	0
Hadj (s)	-0.26	0.03	0.17
Departure Headway (s)	4.1	4.3	4.3
Degree Utilization, x	0.10	0.02	0.22
Capacity (veh/h)	836	801	822
Control Delay (s)	7.6	7.4	8.5
Approach Delay (s)	7.6	7.4	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.1		
Level of Service	A		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.884			0.980			0.987	
Flt Protected		0.950			0.993						0.991	
Satd. Flow (prot)	0	1750	0	0	1617	0	0	1805	0	0	1802	0
Flt Permitted		0.950			0.993						0.991	
Satd. Flow (perm)	0	1750	0	0	1617	0	0	1805	0	0	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	

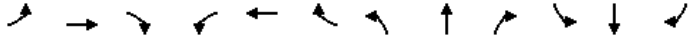
Intersection Summary	
Area Type:	Other



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	31	0	187	0	379	66	117	497	66
Future Volume (vph)	18	0	0	31	0	187	0	379	66	117	497	66
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	31	0	187	0	379	66	117	497	66

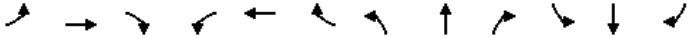
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	18	218	445	680
Volume Left (vph)	18	31	0	117
Volume Right (vph)	0	187	66	66
Hadj (s)	0.23	-0.45	-0.05	0.01
Departure Headway (s)	7.7	6.2	5.6	5.4
Degree Utilization, x	0.04	0.38	0.69	1.02
Capacity (veh/h)	405	547	627	658
Control Delay (s)	11.0	13.0	20.2	64.3
Approach Delay (s)	11.0	13.0	20.2	64.3
Approach LOS	B	B	C	F

Intersection Summary				
Delay		41.0		
Level of Service		E		
Intersection Capacity Utilization		83.1%	ICU Level of Service	E
Analysis Period (min)		15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.966			0.944			0.972			0.981	
Flt Protected		0.976			0.989			0.985			0.993	
Satd. Flow (prot)	0	1737	0	0	1720	0	0	1764	0	0	1794	0
Flt Permitted		0.976			0.989			0.985			0.993	
Satd. Flow (perm)	0	1737	0	0	1720	0	0	1764	0	0	1794	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



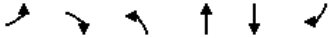
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	65	35	34	30	51	57	101	171	70	87	460	88
Future Volume (vph)	65	35	34	30	51	57	101	171	70	87	460	88
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	35	34	30	51	57	101	171	70	87	460	88

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	134	138	342	635
Volume Left (vph)	65	30	101	87
Volume Right (vph)	34	57	70	88
Hadj (s)	-0.02	-0.17	-0.03	-0.02
Departure Headway (s)	7.0	6.8	5.9	5.5
Degree Utilization, x	0.26	0.26	0.56	0.96
Capacity (veh/h)	486	494	587	647
Control Delay (s)	12.4	12.2	16.2	49.7
Approach Delay (s)	12.4	12.2	16.2	49.7
Approach LOS	B	B	C	E

Intersection Summary				
Delay		32.4		
Level of Service		D		
Intersection Capacity Utilization		59.0%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.974				0.984	
Flt Protected	0.961			0.988		
Satd. Flow (prot)	1724	0	0	1820	1813	0
Flt Permitted	0.961			0.988		
Satd. Flow (perm)	1724	0	0	1820	1813	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	132	31	82	258	605	81
Future Volume (vph)	132	31	82	258	605	81
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	132	31	82	258	605	81

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	163	340	686
Volume Left (vph)	132	82	0
Volume Right (vph)	31	0	81
Hadj (s)	0.08	0.08	-0.04
Departure Headway (s)	6.5	5.4	4.9
Degree Utilization, x	0.29	0.51	0.94
Capacity (veh/h)	536	648	717
Control Delay (s)	12.1	14.1	41.6
Approach Delay (s)	12.1	14.1	41.6
Approach LOS	B	B	E

Intersection Summary			
Delay	29.7		
Level of Service	D		
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

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						0.974
Satd. Flow (prot)	1593	0	1842	0	0	1794
Flt Permitted						0.974
Satd. Flow (perm)	1593	0	1842	0	0	1794
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

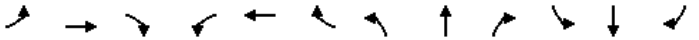
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	15	4	0	51	43
Future Volume (vph)	0	15	4	0	51	43
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	15	4	0	51	43

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	15	4	94
Volume Left (vph)	0	0	51
Volume Right (vph)	15	0	0
Hadj (s)	-0.57	0.03	0.14
Departure Headway (s)	3.5	4.1	4.1
Degree Utilization, x	0.01	0.00	0.11
Capacity (veh/h)	982	869	876
Control Delay (s)	6.6	7.1	7.6
Approach Delay (s)	6.6	7.1	7.6
Approach LOS	A	A	A

Intersection Summary				
Delay		7.4		
Level of Service		A		
Intersection Capacity Utilization		21.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.905			0.886			0.971			0.997	
Flt Protected		0.986			0.992						0.994	
Satd. Flow (prot)	0	1644	0	0	1619	0	1842	1789	0	0	1826	0
Flt Permitted		0.986			0.992						0.994	
Satd. Flow (perm)	0	1644	0	0	1619	0	1842	1789	0	0	1826	0
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



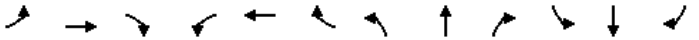
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	0	12	31	0	168	0	271	66	61	458	10
Future Volume (vph)	5	0	12	31	0	168	0	271	66	61	458	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	12	31	0	168	0	271	66	61	458	10

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	17	199	0	337	529
Volume Left (vph)	5	31	0	0	61
Volume Right (vph)	12	168	0	66	10
Hadj (s)	-0.33	-0.44	0.00	-0.10	0.05
Departure Headway (s)	6.4	5.7	5.8	5.7	5.2
Degree Utilization, x	0.03	0.32	0.00	0.53	0.77
Capacity (veh/h)	479	566	609	611	674
Control Delay (s)	9.6	11.4	7.6	13.7	23.4
Approach Delay (s)	9.6	11.4	13.7		23.4
Approach LOS	A	B	B		C

Intersection Summary				
Delay	17.9			
Level of Service	C			
Intersection Capacity Utilization	70.1%	ICU Level of Service		C
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.960			0.955			0.978			0.984	
Flt Protected		0.981			0.988			0.988			0.995	
Satd. Flow (prot)	0	1735	0	0	1738	0	0	1780	0	0	1804	0
Flt Permitted		0.981			0.988			0.988			0.995	
Satd. Flow (perm)	0	1735	0	0	1738	0	0	1780	0	0	1804	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



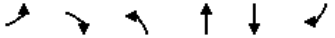
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	45	35	34	30	51	41	101	256	70	53	407	63
Future Volume (vph)	45	35	34	30	51	41	101	256	70	53	407	63
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	45	35	34	30	51	41	101	256	70	53	407	63

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	114	122	427	523
Volume Left (vph)	45	30	101	53
Volume Right (vph)	34	41	70	63
Hadj (s)	-0.07	-0.12	-0.02	-0.02
Departure Headway (s)	6.7	6.6	5.5	5.4
Degree Utilization, x	0.21	0.22	0.66	0.78
Capacity (veh/h)	462	476	625	644
Control Delay (s)	11.5	11.6	18.4	25.0
Approach Delay (s)	11.5	11.6	18.4	25.0
Approach LOS	B	B	C	D

Intersection Summary					
Delay		20.0			
Level of Service		C			
Intersection Capacity Utilization		61.0%	ICU Level of Service		B
Analysis Period (min)		15			

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	0.972				0.989	
Flt Protected	0.962			0.987		
Satd. Flow (prot)	1722	0	0	1818	1822	0
Flt Permitted	0.962			0.987		
Satd. Flow (perm)	1722	0	0	1818	1822	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	116	31	82	224	586	51
Future Volume (vph)	116	31	82	224	586	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	116	31	82	224	586	51

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	147	306	637
Volume Left (vph)	116	82	0
Volume Right (vph)	31	0	51
Hadj (s)	0.07	0.09	-0.01
Departure Headway (s)	6.2	5.3	4.8
Degree Utilization, x	0.25	0.45	0.85
Capacity (veh/h)	544	657	741
Control Delay (s)	11.3	12.5	28.5
Approach Delay (s)	11.3	12.5	28.5
Approach LOS	B	B	D

Intersection Summary			
Delay	21.7		
Level of Service	C		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

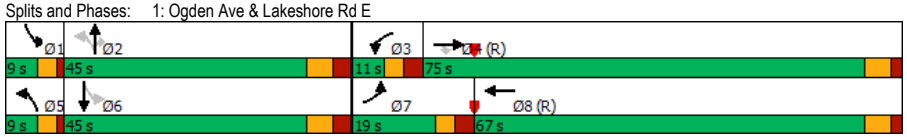
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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		0.93	1.00	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.986				0.850		0.890	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3444	1566	1750	3294	0	1750	1883	1566	1750	1653	0
Flt Permitted	0.950			0.950			0.644			0.715		
Satd. Flow (perm)	1740	3444	1463	1742	3294	0	1180	1883	1532	1305	1653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		10				148		78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	153	1688	129	25	1624	200	64	300	83	28
Future Volume (vph)	153	1688	129	25	1624	200	64	300	83	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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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 Effct Green (s)	18.8	89.5	89.5	8.5	74.5	30.7	21.7	21.7	30.7	21.7
Actuated g/C Ratio	0.13	0.64	0.64	0.06	0.53	0.22	0.16	0.16	0.22	0.16
v/c Ratio	0.65	0.77	0.13	0.24	1.02	0.71	0.22	0.83	0.27	0.33
Control Delay	71.0	20.9	7.4	77.6	48.5	60.7	50.3	46.6	42.5	18.3
Queue Delay	0.0	3.8	0.0	0.0	31.3	0.0	0.0	0.1	0.0	0.0
Total Delay	71.0	24.7	7.4	77.6	79.8	60.7	50.3	46.8	42.5	18.3
LOS	E	C	A	E	E	E	D	D	D	B
Approach Delay		27.2			79.8		52.1			28.9
Approach LOS		C			E		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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.02		
Intersection Signal Delay: 51.4	Intersection LOS: D	
Intersection Capacity Utilization 93.6%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	153	1688	129	25	1793	200	64	300	83	106
v/c Ratio	0.65	0.77	0.13	0.24	1.02	0.71	0.22	0.83	0.27	0.33
Control Delay	71.0	20.9	7.4	77.6	48.5	60.7	50.3	46.6	42.5	18.3
Queue Delay	0.0	3.8	0.0	0.0	31.3	0.0	0.0	0.1	0.0	0.0
Total Delay	71.0	24.7	7.4	77.6	79.8	60.7	50.3	46.8	42.5	18.3
Queue Length 50th (m)	46.9	102.5	4.9	7.5	~151.0	50.3	16.5	44.7	19.4	7.1
Queue Length 95th (m)	m60.6	#297.6	m9.9	m10.9	#378.3	67.7	28.3	73.9	30.8	22.6
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	235	2202	974	106	1757	283	524	533	305	516
Starvation Cap Reductn	0	20	0	0	1	0	0	0	0	0
Spillback Cap Reductn	0	421	0	0	253	0	0	17	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.95	0.13	0.24	1.19	0.71	0.12	0.58	0.27	0.21

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	1688	129	25	1624	169	200	64	300	83	28	78
Future Volume (vph)	153	1688	129	25	1624	169	200	64	300	83	28	78
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	0.93	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		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	3444	1463	1750	3294		1744	1883	1532	1739	1653	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.64	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1750	3444	1463	1750	3294		1182	1883	1532	1309	1653	
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)	153	1688	129	25	1624	169	200	64	300	83	28	78
RTOR Reduction (vph)	0	0	41	0	5	0	0	0	125	0	66	0
Lane Group Flow (vph)	153	1688	88	25	1788	0	200	64	175	83	40	0
Confl. Peds. (#/hr)	18		12	12		18	6		9	9		6
Heavy Vehicles (%)	2%	6%	2%	2%	9%	2%	2%	2%	2%	2%	2%	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)	17.8	86.1	86.1	5.2	73.5		25.7	20.7	20.7	25.7	20.7	
Effective Green, g (s)	18.8	87.1	87.1	6.2	74.5		27.7	21.7	21.7	27.7	21.7	
Actuated g/C Ratio	0.13	0.62	0.62	0.04	0.53		0.20	0.15	0.15	0.20	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)	235	2142	910	77	1752		257	291	237	277	256	
v/s Ratio Prot	c0.09	c0.49		0.01	c0.54		c0.03	0.03		0.01	0.02	
v/s Ratio Perm			0.06				c0.12		0.11	0.05		
v/c Ratio	0.65	0.79	0.10	0.32	1.02		0.78	0.22	0.74	0.30	0.16	
Uniform Delay, d1	57.5	19.6	10.6	64.9	32.8		52.6	51.7	56.4	47.3	51.2	
Progression Factor	1.09	0.90	1.78	1.19	0.70		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.9	1.9	0.1	1.7	23.5		13.8	0.4	11.4	0.6	0.3	
Delay (s)	66.6	19.4	19.1	79.0	46.6		66.4	52.1	67.8	47.9	51.5	
Level of Service	E	B	B	E	D		E	D	E	D	D	
Approach Delay (s)		23.1			47.0			65.5			49.9	
Approach LOS		C			D			E			D	

Intersection Summary

HCM 2000 Control Delay	39.0	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)	19.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		0.91		0.99				0.97
Frt						0.850		0.955				0.850
Flt Protected	0.950			0.950				0.968			0.953	
Satd. Flow (prot)	1653	3476	0	1785	3476	1536	0	1776	0	0	1813	1465
Flt Permitted	0.950			0.950				0.863			0.729	
Satd. Flow (perm)	1620	3476	0	1778	3476	1400	0	1572	0	0	1387	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		117				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

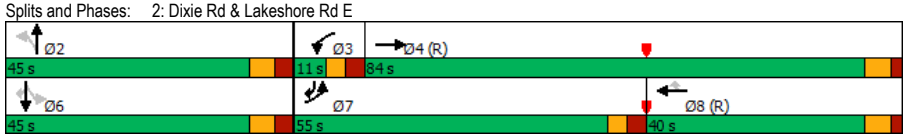
Area Type: Other

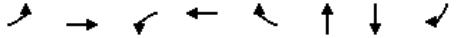
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	614	1416	2	913	199	2	0	155	3	546
Future Volume (vph)	614	1416	2	913	199	2	0	155	3	546
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8			2		6	7
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	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	24.0	12.0	12.0	45.0	45.0	12.0
Total Split (s)	55.0	84.0	11.0	40.0	40.0	45.0	45.0	45.0	45.0	55.0
Total Split (%)	39.3%	60.0%	7.9%	28.6%	28.6%	32.1%	32.1%	32.1%	32.1%	39.3%
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)	62.5	104.2	6.8	39.2	39.2		22.3		22.3	85.8
Actuated g/C Ratio	0.45	0.74	0.05	0.28	0.28		0.16		0.16	0.61
v/c Ratio	0.83	0.55	0.02	0.94	0.41		0.01		0.71	0.61
Control Delay	35.6	23.0	64.0	66.8	19.3		0.0		72.8	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	35.6	23.0	64.0	66.8	19.3		0.0		72.8	16.8
LOS	D	C	E	E	B		A		E	B
Approach Delay		26.8		58.3					29.4	
Approach LOS		C		E					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: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 36.4 Intersection LOS: D
Intersection Capacity Utilization 91.4% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

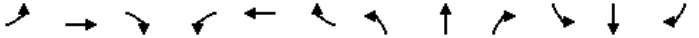




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	614	1419	2	913	199	3	158	546
v/c Ratio	0.83	0.55	0.02	0.94	0.41	0.01	0.71	0.61
Control Delay	35.6	23.0	64.0	66.8	19.3	0.0	72.8	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	23.0	64.0	66.8	19.3	0.0	72.8	16.8
Queue Length 50th (m)	183.1	185.2	0.6	140.6	16.9	0.0	44.3	75.3
Queue Length 95th (m)	m206.8	m247.3	3.7	#195.5	42.1	0.0	65.7	102.1
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	738	2587	86	973	481	522	386	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	0.83	0.55	0.02	0.94	0.41	0.01	0.41	0.61

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	614	1416	3	2	913	199	2	0	1	155	3	546
Future Volume (vph)	614	1416	3	2	913	199	2	0	1	155	3	546
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	0.91		1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			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		0.97			0.95	1.00
Satd. Flow (prot)	1653	3475		1785	3476	1400		1763			1813	1455
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.73	1.00
Satd. Flow (perm)	1653	3475		1785	3476	1400		1572			1386	1455
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)	614	1416	3	2	913	199	2	0	1	155	3	546
RTOR Reduction (vph)	0	0	0	0	0	90	0	3	0	0	0	9
Lane Group Flow (vph)	614	1419	0	2	913	109	0	0	0	0	158	537
Confl. Peds. (#/hr)	18		7	7		18	13					13
Heavy Vehicles (%)	8%	5%	2%	0%	5%	4%	0%	0%	0%	1%	0%	9%
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)	61.5	98.4		1.3	38.2	38.2		21.3			21.3	82.8
Effective Green, g (s)	62.5	99.4		2.3	39.2	39.2		22.3			22.3	84.8
Actuated g/C Ratio	0.45	0.71		0.02	0.28	0.28		0.16			0.16	0.61
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)	737	2467		29	973	392		250			220	881
v/s Ratio Prot	c0.37	0.41		0.00	c0.26							0.27
v/s Ratio Perm						0.08		0.00			c0.11	0.10
v/c Ratio	0.83	0.58		0.07	0.94	0.28		0.00			0.72	0.61
Uniform Delay, d1	34.2	10.0		67.8	49.2	39.4		49.5			55.9	17.3
Progression Factor	0.85	2.42		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.0	0.5		1.0	17.3	1.8		0.0			10.7	1.2
Delay (s)	33.1	24.6		68.8	66.5	41.1		49.5			66.5	18.5
Level of Service	C	C		E	E	D		D			E	B
Approach Delay (s)		27.1			62.0			49.5			29.2	
Approach LOS		C			E			D			C	

Intersection Summary

HCM 2000 Control Delay	37.6	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	91.4%	ICU Level of Service	F			
Analysis Period (min)	15					

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		1.00		1.00		0.98						0.97
Frt						0.850		0.865				0.850
Flt Protected	0.950			0.950						0.950	0.953	
Satd. Flow (prot)	3330	3544	0	1785	3476	1426	0	1662	0	1556	1597	1551
Flt Permitted	0.066			0.230						0.950	0.728	
Satd. Flow (perm)	231	3544	0	431	3476	1390	0	1662	0	1556	1220	1506
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						314		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

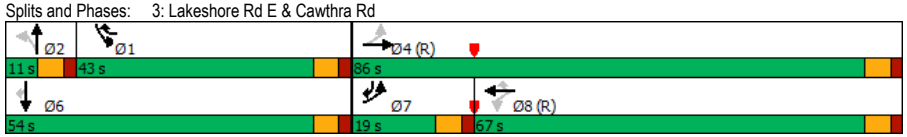
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	419	1088	2	1354	1021	0	641	3	440
Future Volume (vph)	419	1088	2	1354	1021	0	641	3	440
Turn Type	pm+pt	NA	Perm	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4		8	1	2	1	6	7
Permitted Phases	4		8		8				6
Detector Phase	7	4	8	8	1	2	1	6	7
Switch Phase									
Minimum Initial (s)	5.0	7.0	8.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	19.0	86.0	67.0	67.0	43.0	11.0	43.0	54.0	19.0
Total Split (%)	13.6%	61.4%	47.9%	47.9%	30.7%	7.9%	30.7%	38.6%	13.6%
Yellow Time (s)	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
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	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	79.0	79.0	60.0	60.0	108.8	6.2	48.8	48.8	65.0
Actuated g/C Ratio	0.56	0.56	0.43	0.43	0.78	0.04	0.35	0.35	0.46
v/c Ratio	0.95	0.55	0.01	0.91	0.88	0.01	0.59	0.58	0.62
Control Delay	69.1	20.2	29.0	46.2	12.3	0.0	44.4	44.0	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.1	20.2	29.0	46.2	12.3	0.0	44.4	44.0	28.3
LOS	E	C	C	D	B	A	D	D	C
Approach Delay		33.8		31.7				37.8	
Approach LOS		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: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 92.9% ICU Level of Service F
Analysis Period (min) 15

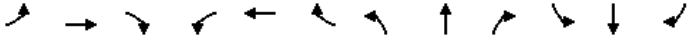
Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	419	1090	2	1354	1021	1	320	324	440
v/c Ratio	0.95	0.55	0.01	0.91	0.88	0.01	0.59	0.58	0.62
Control Delay	69.1	20.2	29.0	46.2	12.3	0.0	44.4	44.0	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.1	20.2	29.0	46.2	12.3	0.0	44.4	44.0	28.3
Queue Length 50th (m)	45.6	97.5	0.3	198.1	3.3	0.0	80.1	80.8	85.0
Queue Length 95th (m)	#79.0	116.6	m0.5	191.1m	#198.1	0.0	130.1	130.9	120.7
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)	440	2050	190	1539	1162	185	542	556	715
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	0.95	0.53	0.01	0.88	0.88	0.01	0.59	0.58	0.62

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	1088	2	2	1354	1021	0	0	1	641	3	440
Future Volume (vph)	419	1088	2	2	1354	1021	0	0	1	641	3	440
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
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3330	3543		1780	3476	1407		1662		1556	1597	1515
Flt Permitted	0.07	1.00		0.23	1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	233	3543		431	3476	1407		1662		1556	1220	1515
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)	419	1088	2	2	1354	1021	0	0	1	641	3	440
RTOR Reduction (vph)	0	0	0	0	0	81	0	1	0	0	0	12
Lane Group Flow (vph)	419	1090	0	2	1354	940	0	0	0	320	324	428
Confl. Peds. (#/hr)	10		6	6		10	13					13
Heavy Vehicles (%)	4%	3%	0%	0%	5%	12%	0%	0%	0%	9%	0%	3%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	73.2	73.2		54.2	54.2	102.0		1.0		47.8	54.8	67.8
Effective Green, g (s)	74.2	74.2		55.2	55.2	104.0		2.0		48.8	55.8	69.8
Actuated g/C Ratio	0.53	0.53		0.39	0.39	0.74		0.01		0.35	0.40	0.50
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)	433	1877		169	1370	1045		23		542	617	809
v/s Ratio Prot	c0.10	0.31			0.39	c0.31		0.00		0.21	0.18	c0.05
v/s Ratio Perm	c0.42			0.00		0.35					0.03	0.23
v/c Ratio	0.97	0.58		0.01	0.99	0.90		0.00		0.59	0.53	0.53
Uniform Delay, d1	44.8	22.3		25.8	42.1	14.0		68.0		37.4	32.0	23.9
Progression Factor	1.00	1.00		1.30	1.08	1.09		1.00		1.00	1.00	1.00
Incremental Delay, d2	34.5	1.3		0.1	15.4	6.1		0.0		1.7	0.8	0.6
Delay (s)	79.3	23.7		33.6	60.9	21.3		68.0		39.1	32.8	24.5
Level of Service	E	C		C	E	C		E		D	C	C
Approach Delay (s)		39.1			43.9			68.0			31.3	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00		0.96	1.00				0.98	
Frt		0.996				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3530	0	1785	3444	1413	1785	1633	0	1785	1608	0
Flt Permitted	0.950			0.950			0.754			0.550		
Satd. Flow (perm)	1784	3530	0	1784	3444	1358	1412	1633	0	1033	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				78		85			70	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

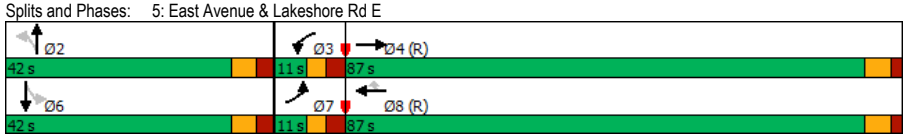
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	1660	10	2348	8	136	0	5	0
Future Volume (vph)	5	1660	10	2348	8	136	0	5	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.0	106.4	7.4	106.6	106.6	19.8	19.8	19.8	19.8
Actuated g/C Ratio	0.05	0.76	0.05	0.76	0.76	0.14	0.14	0.14	0.14
v/c Ratio	0.06	0.64	0.11	0.90	0.01	0.68	0.44	0.03	0.02
Control Delay	71.0	11.1	51.1	18.1	0.0	73.4	25.0	48.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	11.1	51.1	18.1	0.0	73.4	25.0	48.4	0.2
LOS	E	B	D	B	A	E	C	D	A
Approach Delay		11.3		18.2			49.5		24.3
Approach LOS		B		B			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: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 88.3% ICU Level of Service E
Analysis Period (min) 15

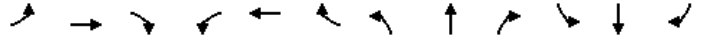
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1706	10	2348	8	136	133	5	5
v/c Ratio	0.06	0.64	0.11	0.90	0.01	0.68	0.44	0.03	0.02
Control Delay	71.0	11.1	51.1	18.1	0.0	73.4	25.0	48.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	11.1	51.1	18.1	0.0	73.4	25.0	48.4	0.2
Queue Length 50th (m)	1.3	103.5	2.6	154.4	0.0	38.2	12.6	1.3	0.0
Queue Length 95th (m)	m2.8	258.1	m3.6	#435.9	m0.0	58.5	31.5	5.3	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	89	2684	94	2622	1052	363	483	265	465
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	0.06	0.64	0.11	0.90	0.01	0.37	0.28	0.02	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1660	46	10	2348	8	136	0	133	5	0	5
Future Volume (vph)	5	1660	46	10	2348	8	136	0	133	5	0	5
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3530		1785	3444	1358	1779	1633		1785	1608	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.55	1.00	
Satd. Flow (perm)	1785	3530		1785	3444	1358	1413	1633		1034	1608	
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)	5	1660	46	10	2348	8	136	0	133	5	0	5
RTOR Reduction (vph)	0	1	0	0	0	2	0	73	0	0	4	0
Lane Group Flow (vph)	5	1705	0	10	2348	6	136	60	0	5	1	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	6%	13%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	1.4	100.6		1.6	100.8	100.8	18.8	18.8		18.8	18.8	
Effective Green, g (s)	2.4	101.6		2.6	101.8	101.8	19.8	19.8		19.8	19.8	
Actuated g/C Ratio	0.02	0.73		0.02	0.73	0.73	0.14	0.14		0.14	0.14	
Clearance Time (s)	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	
Lane Grp Cap (vph)	30	2561		33	2504	987	199	230		146	227	
v/s Ratio Prot	0.00	0.48		c0.01	c0.68			0.04			0.00	
v/s Ratio Perm						0.00	c0.10			0.00		
v/c Ratio	0.17	0.67		0.30	0.94	0.01	0.68	0.26		0.03	0.00	
Uniform Delay, d1	67.8	10.2		67.8	16.4	5.2	57.1	53.6		51.9	51.6	
Progression Factor	1.11	1.05		0.80	1.06	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.2		2.5	4.5	0.0	9.3	0.6		0.1	0.0	
Delay (s)	77.4	11.9		56.5	21.8	5.2	66.4	54.2		51.9	51.6	
Level of Service	E	B		E	C	A	E	D		D	D	
Approach Delay (s)		12.0			21.9			60.4			51.8	
Approach LOS		B			C			E			D	

Intersection Summary

HCM 2000 Control Delay	20.5	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	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

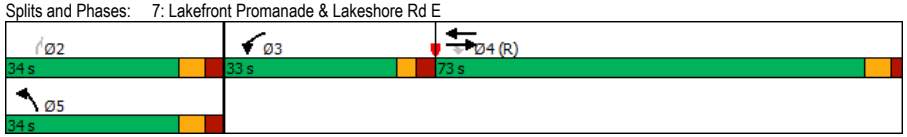
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.5	3.5	3.7	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		25.0	35.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.95	1.00		0.98	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3510	1551	1750	3476	3395	1566
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3510	1478	1745	3476	3337	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32				321
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary	
Area Type:	Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1640	135	34	1892	503	336
Future Volume (vph)	1640	135	34	1892	503	336
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	33.0	25.0	34.0	12.0
Total Split (s)	73.0	73.0	33.0	73.0	34.0	34.0
Total Split (%)	52.1%	52.1%	23.6%	52.1%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	81.0	81.0	19.7	81.0	25.6	25.6
Actuated g/C Ratio	0.58	0.58	0.14	0.58	0.18	0.18
v/c Ratio	0.81	0.16	0.14	0.94	0.81	0.61
Control Delay	20.9	10.3	55.3	23.9	65.6	11.3
Queue Delay	0.3	0.0	0.0	0.5	0.0	0.1
Total Delay	21.2	10.3	55.3	24.4	65.6	11.3
LOS	C	B	E	C	E	B
Approach Delay	20.3			24.9	43.9	
Approach LOS	C			C	D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green		
Natural Cycle: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 26.6	Intersection LOS: C	
Intersection Capacity Utilization 75.8%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1640	135	34	1892	503	336
v/c Ratio	0.81	0.16	0.14	0.94	0.81	0.61
Control Delay	20.9	10.3	55.3	23.9	65.6	11.3
Queue Delay	0.3	0.0	0.0	0.5	0.0	0.1
Total Delay	21.2	10.3	55.3	24.4	65.6	11.3
Queue Length 50th (m)	165.4	4.7	10.0	~324.2	72.5	3.6
Queue Length 95th (m)	#289.8	23.4	m10.7m	#323.4	92.3	33.1
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	2030	868	350	2010	679	570
Starvation Cap Reductn	0	0	0	16	0	0
Spillback Cap Reductn	66	0	0	0	0	6
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.16	0.10	0.95	0.74	0.60

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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1640	135	34	1892	503	336
Future Volume (vph)	1640	135	34	1892	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	5.0	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	0.95	1.00	1.00	1.00	1.00
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)	3510	1478	1750	3476	3395	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3510	1478	1750	3476	3395	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1640	135	34	1892	503	336
RTOR Reduction (vph)	0	14	0	0	0	262
Lane Group Flow (vph)	1640	121	34	1892	503	74
Confl. Peds. (#/hr)		7	7		11	
Heavy Vehicles (%)	4%	3%	2%	5%	2%	2%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	78.8	78.8	17.6	78.8	24.6	24.6
Effective Green, g (s)	79.8	79.8	18.6	79.8	25.6	25.6
Actuated g/C Ratio	0.57	0.57	0.13	0.57	0.18	0.18
Clearance Time (s)	6.0	6.0	6.0	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)	2000	842	232	1981	620	286
v/s Ratio Prot	0.47		c0.02	c0.54	c0.15	
v/s Ratio Perm		0.08				0.05
v/c Ratio	0.82	0.14	0.15	0.96	0.81	0.26
Uniform Delay, d1	24.3	14.1	53.7	28.4	54.9	49.1
Progression Factor	0.64	0.73	1.14	0.57	1.00	1.00
Incremental Delay, d2	3.2	0.3	0.1	5.2	7.9	0.5
Delay (s)	18.7	10.6	61.4	21.4	62.8	49.5
Level of Service	B	B	E	C	E	D
Approach Delay (s)	18.1			22.1	57.5	
Approach LOS	B			C	E	

Intersection Summary

HCM 2000 Control Delay	27.1	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	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

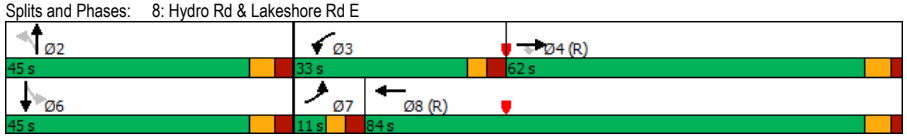
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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		0.95	1.00	1.00							
Frt			0.850					0.850			0.910	
Flt Protected	0.950			0.950			0.950				0.984	
Satd. Flow (prot)	1785	3476	1597	1750	3443	0	1750	1601	0	0	1687	0
Flt Permitted	0.950			0.950			0.754				0.892	
Satd. Flow (perm)	1772	3476	1516	1746	3443	0	1389	1601	0	0	1529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125					299			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	1910	182	54	1536	303	0	2	0
Future Volume (vph)	2	1910	182	54	1536	303	0	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.3	80.6	80.6	10.7	91.8	35.0	35.0		35.0
Actuated g/C Ratio	0.04	0.58	0.58	0.08	0.66	0.25	0.25		0.25
v/c Ratio	0.03	0.95	0.20	0.41	0.68	0.87	0.63		0.01
Control Delay	69.5	33.3	6.8	74.3	16.5	74.8	15.6		0.0
Queue Delay	0.0	15.7	0.0	0.0	0.1	0.0	0.1		0.0
Total Delay	69.5	48.9	6.8	74.3	16.6	74.8	15.7		0.0
LOS	E	D	A	E	B	E	B		A
Approach Delay		45.3			18.6		41.4		
Approach LOS		D			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: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.95		
Intersection Signal Delay: 34.9	Intersection LOS: C	
Intersection Capacity Utilization 86.3%	ICU Level of Service E	
Analysis Period (min) 15		

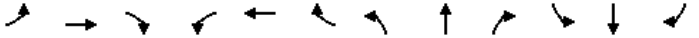
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	2	1910	182	54	1537	303	393	6
v/c Ratio	0.03	0.95	0.20	0.41	0.68	0.87	0.63	0.01
Control Delay	69.5	33.3	6.8	74.3	16.5	74.8	15.6	0.0
Queue Delay	0.0	15.7	0.0	0.0	0.1	0.0	0.1	0.0
Total Delay	69.5	48.9	6.8	74.3	16.6	74.8	15.7	0.0
Queue Length 50th (m)	0.5	~236.2	7.0	16.7	88.7	82.7	21.4	0.0
Queue Length 95th (m)	m0.9	#368.8	m12.6	m22.5	90.0	#126.7	56.7	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	80	2002	926	350	2256	386	661	510
Starvation Cap Reductn	0	33	0	0	69	0	0	0
Spillback Cap Reductn	0	148	0	0	37	0	12	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	1.03	0.20	0.15	0.70	0.78	0.61	0.01

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1910	182	54	1536	1	303	0	393	2	0	4
Future Volume (vph)	2	1910	182	54	1536	1	303	0	393	2	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		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	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1785	3476	1516	1750	3443		1750	1601			1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.89	
Satd. Flow (perm)	1785	3476	1516	1750	3443		1389	1601			1529	
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)	2	1910	182	54	1536	1	303	0	393	2	0	4
RTOR Reduction (vph)	0	0	54	0	0	0	0	224	0	0	5	0
Lane Group Flow (vph)	2	1910	128	54	1537	0	303	169	0	0	2	0
Confl. Peds. (#/hr)	16		8	8		16						
Heavy Vehicles (%)	0%	5%	0%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.0	78.5	78.5	8.5	86.0		34.0	34.0			34.0	
Effective Green, g (s)	2.0	79.5	79.5	9.5	87.0		35.0	35.0			35.0	
Actuated g/C Ratio	0.01	0.57	0.57	0.07	0.62		0.25	0.25			0.25	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	25	1973	860	118	2139		347	400			382	
v/s Ratio Prot	0.00	c0.55		c0.03	c0.45			0.11				
v/s Ratio Perm			0.08				c0.22				0.00	
v/c Ratio	0.08	0.97	0.15	0.46	0.72		0.87	0.42			0.00	
Uniform Delay, d1	68.1	29.0	14.3	62.8	18.1		50.4	44.0			39.4	
Progression Factor	1.07	0.78	1.07	1.13	0.92		1.00	1.00			1.00	
Incremental Delay, d2	0.9	10.9	0.3	1.8	1.4		20.7	0.7			0.0	
Delay (s)	74.1	33.6	15.5	72.5	18.1		71.1	44.7			39.4	
Level of Service	E	C	B	E	B		E	D			D	
Approach Delay (s)		32.1			20.0			56.2			39.4	
Approach LOS		C			B			E			D	

Intersection Summary

HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

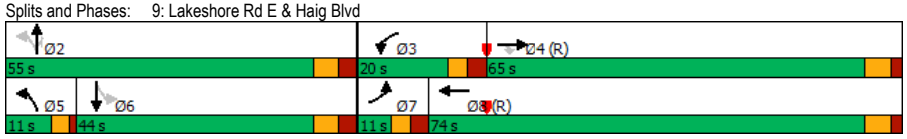
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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			1.00	0.98		0.99	
Frt			0.850		0.997				0.850		0.947	
Flt Protected	0.950			0.950				0.960			0.983	
Satd. Flow (prot)	1750	3476	1566	1750	3461	0	0	1808	1566	0	1740	0
Flt Permitted	0.950			0.950				0.664			0.733	
Satd. Flow (perm)	1732	3476	1566	1750	3461	0	0	1245	1537	0	1295	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		2				132		23	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	123	1865	306	146	1442	135	28	204	36	26
Future Volume (vph)	123	1865	306	146	1442	135	28	204	36	26
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	11.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	11.0	55.0	55.0	44.0	44.0
Total Split (%)	7.9%	46.4%	46.4%	14.3%	52.9%	7.9%	39.3%	39.3%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	23.5	80.5	80.5	18.4	75.5		25.1	25.1		25.1
Actuated g/C Ratio	0.17	0.58	0.58	0.13	0.54		0.18	0.18		0.18
v/c Ratio	0.42	0.93	0.32	0.63	0.79		0.73	0.53		0.41
Control Delay	68.5	20.4	4.2	57.6	34.3		72.2	22.9		42.1
Queue Delay	0.0	4.2	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	68.5	24.6	4.2	57.6	34.3		72.2	22.9		42.1
LOS	E	C	A	E	C		E	C		D
Approach Delay		24.3			36.4		44.8			42.1
Approach LOS		C			D		D			D

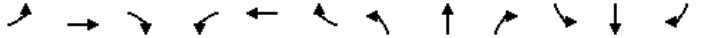
Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 30.9	Intersection LOS: C	
Intersection Capacity Utilization 93.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	123	1865	306	146	1475	163	204	102
v/c Ratio	0.42	0.93	0.32	0.63	0.79	0.73	0.53	0.41
Control Delay	68.5	20.4	4.2	57.6	34.3	72.2	22.9	42.1
Queue Delay	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	24.6	4.2	57.6	34.3	72.2	22.9	42.1
Queue Length 50th (m)	37.6	70.1	5.3	42.6	156.5	45.4	18.3	20.4
Queue Length 95th (m)	m43.0	m#361.6	m8.4	m53.5	m191.7	66.4	41.1	36.1
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	293	1998	966	236	1866	435	623	368
Starvation Cap Reductn	0	96	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	0.42	0.98	0.32	0.62	0.79	0.37	0.33	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	1865	306	146	1442	33	135	28	204	36	26	40
Future Volume (vph)	123	1865	306	146	1442	33	135	28	204	36	26	40
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1750	3476	1566	1750	3459			1800	1537		1737	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.66	1.00		0.73	
Satd. Flow (perm)	1750	3476	1566	1750	3459			1244	1537		1295	
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)	123	1865	306	146	1442	33	135	28	204	36	26	40
RTOR Reduction (vph)	0	0	66	0	1	0	0	0	108	0	19	0
Lane Group Flow (vph)	123	1865	240	146	1474	0	0	163	96	0	83	0
Confl. Peds. (#/hr)	20					20	6		6	6		6
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	22.5	79.5	79.5	17.4	74.4			24.1	24.1		24.1	
Effective Green, g (s)	23.5	80.5	80.5	18.4	75.4			25.1	25.1		25.1	
Actuated g/C Ratio	0.17	0.58	0.58	0.13	0.54			0.18	0.18		0.18	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	293	1998	900	230	1862			223	275		232	
v/s Ratio Prot	0.07	c0.54		c0.08	0.43							
v/s Ratio Perm			0.15					c0.13	0.06		0.06	
v/c Ratio	0.42	0.93	0.27	0.63	0.79			0.73	0.35		0.36	
Uniform Delay, d1	52.1	27.3	14.9	57.6	26.0			54.3	50.3		50.4	
Progression Factor	1.23	0.47	0.44	0.86	1.19			1.00	1.00		1.00	
Incremental Delay, d2	0.4	4.7	0.3	3.8	2.4			11.6	0.8		0.9	
Delay (s)	64.5	17.4	6.9	53.4	33.2			65.9	51.1		51.3	
Level of Service	E	B	A	D	C			E	D		D	
Approach Delay (s)		18.5			35.0			57.6			51.3	
Approach LOS		B			D			E			D	

Intersection Summary					
HCM 2000 Control Delay	28.7	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)	19.0		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

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	0.871					
Flt Protected	0.998					0.974
Satd. Flow (prot)	1601	0	1842	0	0	1794
Flt Permitted	0.998					0.974
Satd. Flow (perm)	1601	0	1842	0	0	1794
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

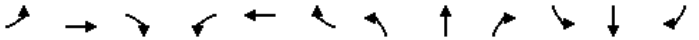
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	8	174	95	0	30	26
Future Volume (vph)	8	174	95	0	30	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	174	95	0	30	26

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	182	95	56
Volume Left (vph)	8	0	30
Volume Right (vph)	174	0	0
Hadj (s)	-0.53	0.03	0.14
Departure Headway (s)	3.7	4.4	4.5
Degree Utilization, x	0.19	0.11	0.07
Capacity (veh/h)	932	786	753
Control Delay (s)	7.6	7.9	7.8
Approach Delay (s)	7.6	7.9	7.8
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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					0.874			0.976			0.981	
Flt Protected		0.950			0.999			0.999			0.987	
Satd. Flow (prot)	0	1750	0	0	1608	0	0	1796	0	0	1784	0
Flt Permitted		0.950			0.999			0.999			0.987	
Satd. Flow (perm)	0	1750	0	0	1608	0	0	1796	0	0	1784	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



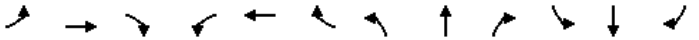
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	50	0	0	9	11	284	11	505	111	43	101	24
Future Volume (vph)	50	0	0	9	11	284	11	505	111	43	101	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	50	0	0	9	11	284	11	505	111	43	101	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	50	304	627	168
Volume Left (vph)	50	9	11	43
Volume Right (vph)	0	284	111	24
Hadj (s)	0.23	-0.52	-0.07	0.00
Departure Headway (s)	7.0	5.7	5.2	6.0
Degree Utilization, x	0.10	0.48	0.91	0.28
Capacity (veh/h)	469	605	674	567
Control Delay (s)	10.8	13.7	38.5	11.3
Approach Delay (s)	10.8	13.7	38.5	11.3
Approach LOS	B	B	E	B

Intersection Summary				
Delay		26.7		
Level of Service		D		
Intersection Capacity Utilization		66.4%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.995			0.916			0.971			0.989	
Flt Protected		0.967			0.997			0.988			0.992	
Satd. Flow (prot)	0	1772	0	0	1682	0	0	1767	0	0	1807	0
Flt Permitted		0.967			0.997			0.988			0.992	
Satd. Flow (perm)	0	1772	0	0	1682	0	0	1767	0	0	1807	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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	141	60	8	10	64	120	140	303	120	31	135	15
Future Volume (vph)	141	60	8	10	64	120	140	303	120	31	135	15
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	135	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	209	194	563	181
Volume Left (vph)	141	10	140	31
Volume Right (vph)	8	120	120	15
Hadj (s)	0.15	-0.33	-0.04	0.02
Departure Headway (s)	6.7	6.3	5.6	6.3
Degree Utilization, x	0.39	0.34	0.87	0.32
Capacity (veh/h)	499	526	625	525
Control Delay (s)	13.9	12.5	34.7	12.3
Approach Delay (s)	13.9	12.5	34.7	12.3
Approach LOS	B	B	D	B

Intersection Summary			
Delay	23.6		
Level of Service	C		
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

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	0.995				0.989	
Flt Protected	0.954			0.990		
Satd. Flow (prot)	1749	0	0	1824	1822	0
Flt Permitted	0.954			0.990		
Satd. Flow (perm)	1749	0	0	1824	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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	249	9	115	447	215	20
Future Volume (vph)	249	9	115	447	215	20
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

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	258	562	235
Volume Left (vph)	249	115	0
Volume Right (vph)	9	0	20
Hadj (s)	0.21	0.07	-0.02
Departure Headway (s)	6.2	5.2	5.6
Degree Utilization, x	0.44	0.81	0.36
Capacity (veh/h)	540	678	609
Control Delay (s)	14.0	26.7	11.7
Approach Delay (s)	14.0	26.7	11.7
Approach LOS	B	D	B

Intersection Summary			
Delay	20.3		
Level of Service	C		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

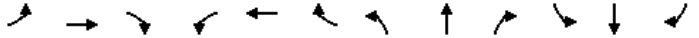
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1593	0	1842	0	0	1781
Flt Permitted						0.967
Satd. Flow (perm)	1593	0	1842	0	0	1781
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	83	12	0	23	11
Future Volume (vph)	0	83	12	0	23	11
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

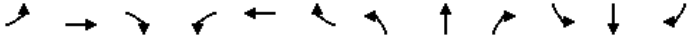
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	83	12	34
Volume Left (vph)	0	0	23
Volume Right (vph)	83	0	0
Hadj (s)	-0.57	0.03	0.17
Departure Headway (s)	3.4	4.1	4.2
Degree Utilization, x	0.08	0.01	0.04
Capacity (veh/h)	1028	843	829
Control Delay (s)	6.7	7.2	7.4
Approach Delay (s)	6.7	7.2	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.935			0.876			0.966			0.994	
Flt Protected		0.975			0.998		0.950				0.991	
Satd. Flow (prot)	0	1679	0	0	1610	0	1750	1779	0	0	1815	0
Flt Permitted		0.975			0.998		0.950				0.991	
Satd. Flow (perm)	0	1679	0	0	1610	0	1750	1779	0	0	1815	0
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



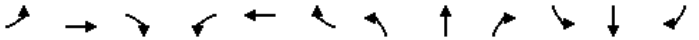
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	0	14	9	11	231	23	381	111	21	84	5
Future Volume (vph)	15	0	14	9	11	231	23	381	111	21	84	5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	0	14	9	11	231	23	381	111	21	84	5

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	29	251	23	492	110
Volume Left (vph)	15	9	23	0	21
Volume Right (vph)	14	231	0	111	5
Hadj (s)	-0.15	-0.51	0.53	-0.12	0.04
Departure Headway (s)	5.8	5.1	5.9	5.3	5.5
Degree Utilization, x	0.05	0.35	0.04	0.72	0.17
Capacity (veh/h)	527	652	589	662	601
Control Delay (s)	9.1	10.8	8.0	19.5	9.7
Approach Delay (s)	9.1	10.8	19.0		9.7
Approach LOS	A	B	C		A

Intersection Summary				
Delay	15.3			
Level of Service	C			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.993			0.931			0.975			0.989	
Flt Protected		0.972			0.996			0.989			0.994	
Satd. Flow (prot)	0	1778	0	0	1708	0	0	1776	0	0	1811	0
Flt Permitted		0.972			0.996			0.989			0.994	
Satd. Flow (perm)	0	1778	0	0	1708	0	0	1776	0	0	1811	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



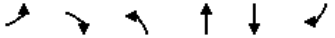
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	89	60	8	11	64	78	140	397	120	18	123	13
Future Volume (vph)	89	60	8	11	64	78	140	397	120	18	123	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	60	8	11	64	78	140	397	120	18	123	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	157	153	657	154
Volume Left (vph)	89	11	140	18
Volume Right (vph)	8	78	120	13
Hadj (s)	0.12	-0.26	-0.03	0.01
Departure Headway (s)	6.6	6.2	5.2	6.0
Degree Utilization, x	0.29	0.26	0.94	0.26
Capacity (veh/h)	520	547	688	571
Control Delay (s)	12.2	11.5	43.6	11.0
Approach Delay (s)	12.2	11.5	43.6	11.0
Approach LOS	B	B	E	B

Intersection Summary				
Delay	30.3			
Level of Service	D			
Intersection Capacity Utilization	74.8%	ICU Level of Service		D
Analysis Period (min)	15			

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	0.994				0.992	
Flt Protected	0.954			0.988		
Satd. Flow (prot)	1747	0	0	1820	1827	0
Flt Permitted	0.954			0.988		
Satd. Flow (perm)	1747	0	0	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	207	9	115	355	210	14
Future Volume (vph)	207	9	115	355	210	14
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

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	216	470	224
Volume Left (vph)	207	115	0
Volume Right (vph)	9	0	14
Hadj (s)	0.20	0.08	0.00
Departure Headway (s)	5.8	5.0	5.2
Degree Utilization, x	0.35	0.65	0.32
Capacity (veh/h)	567	698	654
Control Delay (s)	12.0	16.8	10.7
Approach Delay (s)	12.0	16.8	10.7
Approach LOS	B	C	B

Intersection Summary			
Delay	14.1		
Level of Service	B		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

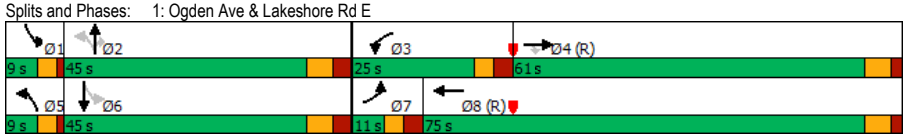
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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	1.00		0.89	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.989				0.850		0.913	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3579	1597	1785	3540	0	1785	1921	1597	1668	1734	0
Flt Permitted	0.950			0.950			0.345			0.709		
Satd. Flow (perm)	1777	3579	1419	1766	3540	0	645	1921	1557	1230	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		8				148		49	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	68	1548	340	281	1703	123	73	128	153	79
Future Volume (vph)	68	1548	340	281	1703	123	73	128	153	79
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)	11.0	61.0	61.0	25.0	75.0	9.0	45.0	45.0	9.0	45.0
Total Split (%)	7.9%	43.6%	43.6%	17.9%	53.6%	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 Effct Green (s)	13.0	63.2	63.2	33.9	84.1	26.9	17.9	17.9	26.9	17.9
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60	0.19	0.13	0.13	0.19	0.13
v/c Ratio	0.41	0.96	0.47	0.65	0.86	0.72	0.30	0.39	0.60	0.71
Control Delay	48.9	43.0	20.6	63.4	21.5	70.1	56.6	8.4	58.7	57.2
Queue Delay	0.0	5.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	48.8	20.6	63.4	22.4	70.1	56.6	8.4	58.7	57.2
LOS	D	D	C	E	C	E	E	A	E	E
Approach Delay		43.9			27.8		42.7			57.8
Approach LOS		D			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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.96		
Intersection Signal Delay: 37.6	Intersection LOS: D	
Intersection Capacity Utilization 97.4%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	1548	340	281	1836	123	73	128	153	188
v/c Ratio	0.41	0.96	0.47	0.65	0.86	0.72	0.30	0.39	0.60	0.71
Control Delay	48.9	43.0	20.6	63.4	21.5	70.1	56.6	8.4	58.7	57.2
Queue Delay	0.0	5.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	48.8	20.6	63.4	22.4	70.1	56.6	8.4	58.7	57.2
Queue Length 50th (m)	20.9	127.3	37.6	76.4	188.6	30.6	19.6	0.0	39.0	39.5
Queue Length 95th (m)	m22.5	m#265.8	m39.0	m113.6	#261.6	46.8	33.7	13.0	57.4	63.1
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	165	1615	726	432	2130	172	535	540	255	518
Starvation Cap Reductn	0	0	0	0	100	0	0	0	0	0
Spillback Cap Reductn	0	61	0	0	8	0	0	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.00	0.47	0.65	0.90	0.72	0.14	0.24	0.60	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1548	340	281	1703	133	123	73	128	153	79	109
Future Volume (vph)	68	1548	340	281	1703	133	123	73	128	153	79	109
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	0.89	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
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)	1785	3579	1419	1785	3540		1782	1921	1557	1654	1734	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.34	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	1785	3579	1419	1785	3540		647	1921	1557	1235	1734	
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)	68	1548	340	281	1703	133	123	73	128	153	79	109
RTOR Reduction (vph)	0	0	86	0	3	0	0	0	112	0	43	0
Lane Group Flow (vph)	68	1548	254	281	1833	0	123	73	16	153	145	0
Confl. Peds. (#/hr)	14		24	24		14	7		12	12		7
Heavy Vehicles (%)	0%	2%	0%	0%	1%	7%	0%	0%	0%	7%	0%	0%
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)	12.0	62.2	62.2	32.9	83.1		21.9	16.9	16.9	21.9	16.9	
Effective Green, g (s)	13.0	63.2	63.2	33.9	84.1		23.9	17.9	17.9	23.9	17.9	
Actuated g/C Ratio	0.09	0.45	0.45	0.24	0.60		0.17	0.13	0.13	0.17	0.13	
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)	165	1615	640	432	2126		159	245	199	228	221	
v/s Ratio Prot	0.04	c0.43		c0.16	c0.52		c0.03	0.04		0.03	0.08	
v/s Ratio Perm			0.18				c0.10		0.01	0.09		
v/c Ratio	0.41	0.96	0.40	0.65	0.86		0.77	0.30	0.08	0.67	0.66	
Uniform Delay, d1	59.9	37.1	25.7	47.7	23.1		54.5	55.4	53.8	53.5	58.1	
Progression Factor	0.78	0.98	1.35	1.20	0.73		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	6.4	0.6	2.2	3.2		20.5	0.7	0.2	7.5	6.9	
Delay (s)	47.2	42.8	35.2	59.7	20.0		75.0	56.0	54.0	61.0	65.0	
Level of Service	D	D	D	E	C		E	E	D	E	E	
Approach Delay (s)		41.6			25.3			62.4			63.2	
Approach LOS		D			C			E			E	

Intersection Summary

HCM 2000 Control Delay	37.3	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)	19.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.99		0.87		0.99			1.00	0.97
Frt						0.850		0.910				0.850
Flt Protected	0.950			0.950							0.953	
Satd. Flow (prot)	1750	3544	0	1785	3579	1566	0	1732	0	0	1813	1581
Flt Permitted	0.950			0.950							0.727	
Satd. Flow (perm)	1704	3544	0	1763	3579	1355	0	1732	0	0	1380	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		2				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

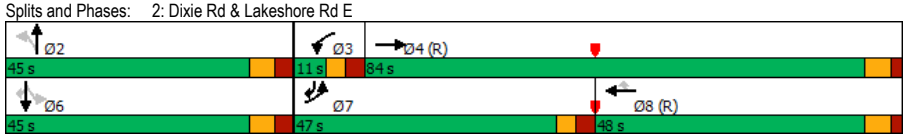
Area Type: Other

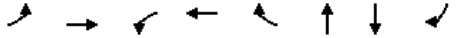
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	411	1108	1	1080	242	1	248	2	965
Future Volume (vph)	411	1108	1	1080	242	1	248	2	965
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8		2		6	7
Permitted Phases					8		6		6
Detector Phase	7	4	3	8	8	2	6	6	7
Switch Phase									
Minimum Initial (s)	5.0	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	24.0	12.0	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	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	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	3.0
All-Red Time (s)	3.0	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
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
Act Effct Green (s)	50.0	95.8	6.5	43.0	43.0	31.0		31.0	82.0
Actuated g/C Ratio	0.36	0.68	0.05	0.31	0.31	0.22		0.22	0.59
v/c Ratio	0.66	0.46	0.01	0.98	0.48	0.01		0.82	1.05
Control Delay	34.1	28.4	64.0	71.2	22.0	28.7		72.2	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	34.1	28.4	64.0	71.2	22.0	28.7		72.2	69.5
LOS	C	C	E	E	C	C		E	E
Approach Delay		30.0		62.2		28.7		70.0	
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: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 52.5 Intersection LOS: D
Intersection Capacity Utilization 109.1% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E



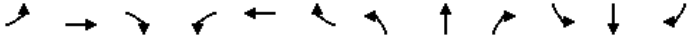


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	411	1108	1	1080	242	3	250	965
v/c Ratio	0.66	0.46	0.01	0.98	0.48	0.01	0.82	1.05
Control Delay	34.1	28.4	64.0	71.2	22.0	28.7	72.2	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	28.4	64.0	71.2	22.0	28.7	72.2	69.5
Queue Length 50th (m)	118.2	170.2	0.3	164.6	26.8	0.2	69.5	~285.7
Queue Length 95th (m)	161.2	198.6	2.3	#213.0	54.2	2.8	96.8	#387.1
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	624	2424	82	1099	502	483	384	922
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	0.46	0.01	0.98	0.48	0.01	0.65	1.05

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	411	1108	0	1	1080	242	0	1	2	248	2	965
Future Volume (vph)	411	1108	0	1	1080	242	0	1	2	248	2	965
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	0.87		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1750	3544		1785	3579	1355		1731			1808	1560
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.73	1.00
Satd. Flow (perm)	1750	3544		1785	3579	1355		1731			1379	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)	411	1108	0	1	1080	242	0	1	2	248	2	965
RTOR Reduction (vph)	0	0	0	0	0	87	0	2	0	0	0	10
Lane Group Flow (vph)	411	1108	0	1	1080	155	0	1	0	0	250	955
Confl. Peds. (#/hr)	30		15	15		30	21		2	2		21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	0%	0%	0%	1%	0%	1%
Turn Type	Prot	NA		Prot	NA	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)	49.0	90.0		1.0	42.0	42.0		30.0			30.0	79.0
Effective Green, g (s)	50.0	91.0		2.0	43.0	43.0		31.0			31.0	81.0
Actuated g/C Ratio	0.36	0.65		0.01	0.31	0.31		0.22			0.22	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)	625	2303		25	1099	416		383			305	902
v/s Ratio Prot	0.23	0.31		0.00	c0.30			0.00				c0.38
v/s Ratio Perm						0.11					0.18	0.23
v/c Ratio	0.66	0.48		0.04	0.98	0.37		0.00			0.82	1.06
Uniform Delay, d1	37.8	12.5		68.1	48.1	38.0		42.5			51.8	29.5
Progression Factor	0.75	2.40		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.9	0.5		0.7	23.3	2.6		0.0			15.7	46.9
Delay (s)	30.1	30.5		68.7	71.4	40.5		42.5			67.5	76.4
Level of Service	C	C		E	E	D		D			E	E
Approach Delay (s)		30.4			65.8			42.5			74.6	
Approach LOS		C			E			D			E	

Intersection Summary

HCM 2000 Control Delay	55.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

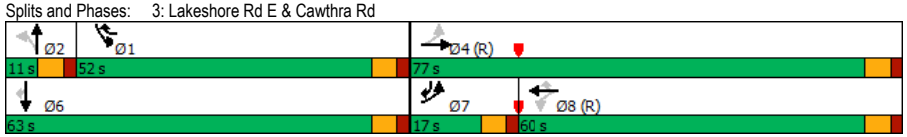
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	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		1.00				0.94						0.96
Frt						0.850		0.955				0.850
Flt Protected	0.950									0.950	0.952	
Satd. Flow (prot)	3429	3578	0	1879	3614	1581	0	1835	0	1679	1720	1566
Flt Permitted	0.075									0.950	0.725	
Satd. Flow (perm)	271	3578	0	1879	3614	1485	0	1835	0	1679	1310	1497
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						329		1				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

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	394	1221	1220	666	2	1158	1	565
Future Volume (vph)	394	1221	1220	666	2	1158	1	565
Turn Type	pm+pt	NA	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4	8	1	2	1	6	7
Permitted Phases	4			8				6
Detector Phase	7	4	8	1	2	1	6	7
Switch Phase								
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	17.0	77.0	60.0	52.0	11.0	52.0	63.0	17.0
Total Split (%)	12.1%	55.0%	42.9%	37.1%	7.9%	37.1%	45.0%	12.1%
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	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	69.8	69.8	52.8	110.8	6.2	58.0	58.0	72.2
Actuated g/C Ratio	0.50	0.50	0.38	0.79	0.04	0.41	0.41	0.52
v/c Ratio	0.97	0.69	0.90	0.52	0.04	0.83	0.81	0.72
Control Delay	71.8	28.9	53.0	2.4	57.7	49.3	47.6	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	28.9	53.0	2.4	57.7	49.3	47.6	28.4
LOS	E	C	D	A	E	D	D	C
Approach Delay		39.4	35.1		57.7		41.9	
Approach LOS		D	D		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: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.97		
Intersection Signal Delay: 38.7	Intersection LOS: D	
Intersection Capacity Utilization 96.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd



Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	394	1222	1220	666	3	579	580	565
v/c Ratio	0.97	0.69	0.90	0.52	0.04	0.83	0.81	0.72
Control Delay	71.8	28.9	53.0	2.4	57.7	49.3	47.6	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	28.9	53.0	2.4	57.7	49.3	47.6	28.4
Queue Length 50th (m)	41.1	134.5	184.7	3.9	0.6	157.1	155.6	110.8
Queue Length 95th (m)	#75.0	159.8	172.5	33.8	4.0	#267.4	#263.6	154.8
Internal Link Dist (m)		297.4	113.2		71.8		931.9	
Turn Bay Length (m)	35.0			70.0		115.0		
Base Capacity (vph)	405	1840	1419	1283	82	696	713	789
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	0.97	0.66	0.86	0.52	0.04	0.83	0.81	0.72

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	1221	1	0	1220	666	0	2	1	1158	1	565
Future Volume (vph)	394	1221	1	0	1220	666	0	2	1	1158	1	565
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
Lane Util. Factor	0.97	0.95			0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3429	3578			3614	1538		1835		1679	1721	1507
Flt Permitted	0.08	1.00			1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	272	3578			3614	1538		1835		1679	1311	1507
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)	394	1221	1	0	1220	666	0	2	1	1158	1	565
RTOR Reduction (vph)	0	0	0	0	0	80	0	1	0	0	0	10
Lane Group Flow (vph)	394	1222	0	0	1220	586	0	2	0	579	580	555
Confl. Peds. (#/hr)	38		20	20		38	25					25
Heavy Vehicles (%)	1%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	64.0	64.0			47.0	104.0		1.0		57.0	64.0	75.0
Effective Green, g (s)	65.0	65.0			48.0	106.0		2.0		58.0	65.0	77.0
Actuated g/C Ratio	0.46	0.46			0.34	0.76		0.01		0.41	0.46	0.55
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)	396	1661			1239	1164		26		695	778	882
v/s Ratio Prot	c0.09	0.34			0.34	0.21		0.00		c0.34	0.31	0.05
v/s Ratio Perm	c0.38					0.17					c0.04	0.31
v/c Ratio	0.99	0.74			0.98	0.50		0.08		0.83	0.75	0.63
Uniform Delay, d1	42.2	30.5			45.6	6.7		68.1		36.7	30.7	21.7
Progression Factor	1.00	1.00			1.10	0.77		1.00		1.00	1.00	1.00
Incremental Delay, d2	43.6	2.9			19.4	0.3		1.3		8.5	3.9	1.4
Delay (s)	85.9	33.5			69.7	5.4		69.4		45.1	34.6	23.1
Level of Service	F	C			E	A		E		D	C	C
Approach Delay (s)		46.2			47.0			69.4			34.4	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

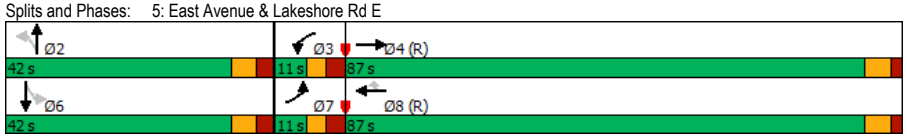
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	72.0		45.0	50.0		20.0	20.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		0.90	0.99	0.98		1.00	0.98	
Frt		0.991				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3567	0	1785	3650	1597	1785	1576	0	1785	1594	0
Flt Permitted	0.950			0.950			0.751			0.747		
Satd. Flow (perm)	1775	3567	0	1782	3650	1443	1394	1576	0	1399	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				78		70			74	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	11	2202	56	1906	63	75	0	8	0
Future Volume (vph)	11	2202	56	1906	63	75	0	8	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.5	101.2	11.3	109.6	109.6	14.0	14.0	14.0	14.0
Actuated g/C Ratio	0.05	0.72	0.08	0.78	0.78	0.10	0.10	0.10	0.10
v/c Ratio	0.12	0.91	0.39	0.67	0.05	0.54	0.07	0.06	0.04
Control Delay	69.6	27.6	60.4	9.4	1.4	73.1	0.6	55.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	27.6	60.4	9.4	1.4	73.1	0.6	55.1	0.4
LOS	E	C	E	A	A	E	A	E	A
Approach Delay		27.8		10.6			60.3		24.7
Approach LOS		C		B			E		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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.91		
Intersection Signal Delay: 20.7	Intersection LOS: C	
Intersection Capacity Utilization 87.5%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2339	56	1906	63	75	16	8	10
v/c Ratio	0.12	0.91	0.39	0.67	0.05	0.54	0.07	0.06	0.04
Control Delay	69.6	27.6	60.4	9.4	1.4	73.1	0.6	55.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	27.6	60.4	9.4	1.4	73.1	0.6	55.1	0.4
Queue Length 50th (m)	2.9	354.3	15.1	100.8	0.1	21.2	0.0	2.2	0.0
Queue Length 95th (m)	m4.4	#427.4	m24.0	157.0	m2.3	37.1	0.0	7.5	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	95	2580	144	2856	1146	358	457	359	464
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	0.12	0.91	0.39	0.67	0.05	0.21	0.04	0.02	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	2202	137	56	1906	63	75	0	16	8	0	10
Future Volume (vph)	11	2202	137	56	1906	63	75	0	16	8	0	10
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.90	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3568		1785	3650	1443	1764	1576		1779	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)	1785	3568		1785	3650	1443	1394	1576		1399	1594	
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)	11	2202	137	56	1906	63	75	0	16	8	0	10
RTOR Reduction (vph)	0	2	0	0	0	15	0	14	0	0	9	0
Lane Group Flow (vph)	11	2337	0	56	1906	48	75	2	0	8	1	0
Confl. Peds. (#/hr)	20		10	10		20	10		3	3		10
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	3.0	99.0		9.0	105.0	105.0	13.0	13.0		13.0	13.0	
Effective Green, g (s)	4.0	100.0		10.0	106.0	106.0	14.0	14.0		14.0	14.0	
Actuated g/C Ratio	0.03	0.71		0.07	0.76	0.76	0.10	0.10		0.10	0.10	
Clearance Time (s)	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	
Lane Grp Cap (vph)	51	2548		127	2763	1092	139	157		139	159	
v/s Ratio Prot	0.01	c0.65		c0.03	c0.52			0.00			0.00	
v/s Ratio Perm						0.03	c0.05			0.01		
v/c Ratio	0.22	0.92		0.44	0.69	0.04	0.54	0.01		0.06	0.01	
Uniform Delay, d1	66.5	16.6		62.3	8.6	4.3	59.9	56.8		57.0	56.7	
Progression Factor	1.08	1.31		0.88	0.94	1.37	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	5.0		2.3	1.3	0.1	4.0	0.0		0.2	0.0	
Delay (s)	73.4	26.7		57.0	9.4	5.9	63.9	56.8		57.2	56.8	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		26.9			10.6			62.7			57.0	
Approach LOS		C			B			E			E	

Intersection Summary

HCM 2000 Control Delay	20.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	87.5%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

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		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.92	0.99		0.98	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1597	1750	3650	3463	1597
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	1468	1741	3650	3390	1571
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		91				154
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary

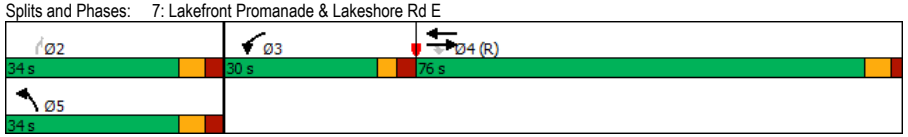
Area Type: Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1803	402	335	1575	486	154
Future Volume (vph)	1803	402	335	1575	486	154
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	30.0	25.0	34.0	12.0
Total Split (s)	76.0	76.0	30.0	76.0	34.0	34.0
Total Split (%)	54.3%	54.3%	21.4%	54.3%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	71.0	71.0	28.0	71.0	25.0	25.0
Actuated g/C Ratio	0.51	0.51	0.20	0.51	0.18	0.18
v/c Ratio	0.99	0.51	0.96	0.85	0.79	0.38
Control Delay	46.9	17.6	98.2	18.0	64.4	9.6
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	46.9	17.6	98.2	18.5	64.4	9.6
LOS	D	B	F	B	E	A
Approach Delay	41.6			32.5	51.2	
Approach LOS	D			C	D	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 39.2 Intersection LOS: D
Intersection Capacity Utilization 96.2% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1803	402	335	1575	486	154
v/c Ratio	0.99	0.51	0.96	0.85	0.79	0.38
Control Delay	46.9	17.6	98.2	18.0	64.4	9.6
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	46.9	17.6	98.2	18.5	64.4	9.6
Queue Length 50th (m)	241.2	37.4	100.0	182.8	70.1	0.0
Queue Length 95th (m)	#326.5	m55.8	m#148.5	106.1	88.6	19.3
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1815	789	349	1851	692	437
Starvation Cap Reductn	0	0	0	66	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.51	0.96	0.88	0.70	0.35

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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1803	402	335	1575	486	154
Future Volume (vph)	1803	402	335	1575	486	154
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	5.0	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	0.92	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1468	1750	3650	3463	1570
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	1468	1750	3650	3463	1570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1803	402	335	1575	486	154
RTOR Reduction (vph)	0	45	0	0	0	127
Lane Group Flow (vph)	1803	357	335	1575	486	28
Confl. Peds. (#/hr)		16	16		12	3
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	70.0	70.0	27.0	70.0	24.0	24.0
Effective Green, g (s)	71.0	71.0	28.0	71.0	25.0	25.0
Actuated g/C Ratio	0.51	0.51	0.20	0.51	0.18	0.18
Clearance Time (s)	6.0	6.0	6.0	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)	1815	744	350	1851	618	280
v/s Ratio Prot	c0.50		c0.19	0.43	c0.14	
v/s Ratio Perm		0.24				0.02
v/c Ratio	0.99	0.48	0.96	0.85	0.79	0.10
Uniform Delay, d1	34.3	22.5	55.4	29.9	54.9	48.1
Progression Factor	0.84	0.89	1.34	0.50	1.00	1.00
Incremental Delay, d2	17.8	1.8	24.8	2.9	6.5	0.2
Delay (s)	46.6	21.9	99.3	17.7	61.5	48.2
Level of Service	D	C	F	B	E	D
Approach Delay (s)	42.1			32.0	58.3	
Approach LOS	D			C	E	

Intersection Summary

HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

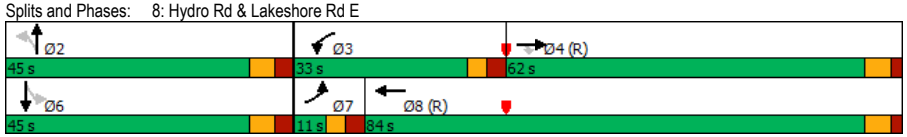
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	25.0		50.0	25.0		0.0	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	1.00		0.84	0.98	1.00			0.99			1.00	
Frt			0.850					0.850			0.892	
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1750	3579	1597	1750	3578	0	1750	1578	0	0	1696	0
Flt Permitted	0.950			0.950			0.754				0.962	
Satd. Flow (perm)	1743	3579	1334	1713	3578	0	1389	1578	0	0	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			193					303			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	3	1392	450	322	1858	259	0	1	0
Future Volume (vph)	3	1392	450	322	1858	259	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	62.0	62.0	33.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	23.6%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.6	62.5	62.5	29.9	95.2	31.6	31.6		31.6
Actuated g/C Ratio	0.05	0.45	0.45	0.21	0.68	0.23	0.23		0.23
v/c Ratio	0.04	0.87	0.64	0.86	0.76	0.83	0.30		0.01
Control Delay	65.7	28.8	13.4	76.3	15.5	72.6	1.3		0.0
Queue Delay	0.0	0.7	0.0	0.0	0.6	0.0	0.0		0.0
Total Delay	65.7	29.5	13.4	76.3	16.1	72.6	1.3		0.0
LOS	E	C	B	E	B	E	A		A
Approach Delay		25.6			25.0		43.5		
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: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 27.0	Intersection LOS: C	
Intersection Capacity Utilization 91.4%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	3	1392	450	322	1860	259	179	5
v/c Ratio	0.04	0.87	0.64	0.86	0.76	0.83	0.30	0.01
Control Delay	65.7	28.8	13.4	76.3	15.5	72.6	1.3	0.0
Queue Delay	0.0	0.7	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay	65.7	29.5	13.4	76.3	16.1	72.6	1.3	0.0
Queue Length 50th (m)	0.9	107.9	22.0	99.5	112.0	71.9	0.0	0.0
Queue Length 95th (m)	m1.1	m#89.8	m32.3	m105.5	m117.5	100.3	0.0	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	82	1598	702	379	2433	386	658	543
Starvation Cap Reductn	0	49	0	0	236	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	0.04	0.90	0.64	0.85	0.85	0.67	0.27	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1392	450	322	1858	2	259	0	179	1	0	4
Future Volume (vph)	3	1392	450	322	1858	2	259	0	179	1	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		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	
Frpb, ped/bikes	1.00	1.00	0.84	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			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1750	3579	1334	1750	3578		1750	1578			1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.96	
Satd. Flow (perm)	1750	3579	1334	1750	3578		1390	1578			1648	
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)	3	1392	450	322	1858	2	259	0	179	1	0	4
RTOR Reduction (vph)	0	0	107	0	0	0	0	139	0	0	4	0
Lane Group Flow (vph)	3	1392	343	322	1860	0	259	40	0	0	1	0
Confl. Peds. (#/hr)	13		38	38		13			2	2		
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	2%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.0	61.5	61.5	28.9	89.4		30.6	30.6			30.6	
Effective Green, g (s)	2.0	62.5	62.5	29.9	90.4		31.6	31.6			31.6	
Actuated g/C Ratio	0.01	0.45	0.45	0.21	0.65		0.23	0.23			0.23	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	25	1597	595	373	2310		313	356			371	
v/s Ratio Prot	0.00	c0.39		c0.18	0.52			0.03				
v/s Ratio Perm			0.26				c0.19				0.00	
v/c Ratio	0.12	0.87	0.58	0.86	0.81		0.83	0.11			0.00	
Uniform Delay, d1	68.1	35.1	28.9	53.1	18.3		51.6	43.1			42.0	
Progression Factor	1.02	0.68	0.63	1.27	0.84		1.00	1.00			1.00	
Incremental Delay, d2	1.0	3.4	1.9	7.9	1.2		16.2	0.1			0.0	
Delay (s)	70.5	27.2	20.1	75.4	16.6		67.8	43.2			42.0	
Level of Service	E	C	C	E	B		E	D			D	
Approach Delay (s)		25.5			25.3			57.8			42.0	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	28.6	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)	16.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

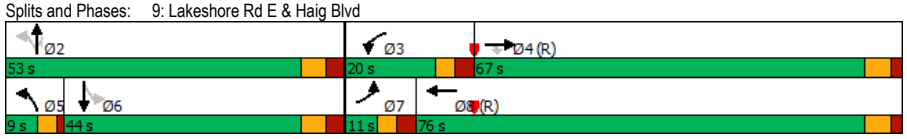
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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	1.00				1.00			1.00	0.97		0.99	
Frt			0.850		0.994				0.850		0.900	
Flt Protected	0.950			0.950				0.961			0.994	
Satd. Flow (prot)	1684	3579	1597	1785	3585	0	0	1846	1597	0	1696	0
Flt Permitted	0.950			0.950				0.532			0.933	
Satd. Flow (perm)	1679	3579	1597	1785	3585	0	0	1019	1557	0	1590	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		4				146		100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	69	1272	220	144	1826	197	43	231	27	27
Future Volume (vph)	69	1272	220	144	1826	197	43	231	27	27
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	67.0	67.0	20.0	76.0	9.0	53.0	53.0	44.0	44.0
Total Split (%)	7.9%	47.9%	47.9%	14.3%	54.3%	6.4%	37.9%	37.9%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	9.4	68.8	68.8	15.2	74.5		40.1	40.1		40.1
Actuated g/C Ratio	0.07	0.49	0.49	0.11	0.53		0.29	0.29		0.29
v/c Ratio	0.61	0.72	0.25	0.75	0.99		0.82	0.42		0.40
Control Delay	87.1	12.9	2.1	63.4	40.1		68.6	15.9		21.3
Queue Delay	0.0	0.2	0.0	0.0	5.4		0.0	0.0		0.0
Total Delay	87.1	13.1	2.1	63.4	45.5		68.6	15.9		21.3
LOS	F	B	A	E	D		E	B		C
Approach Delay		14.8			46.7		42.7			21.3
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: 140		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.99		
Intersection Signal Delay: 33.4	Intersection LOS: C	
Intersection Capacity Utilization 109.9%	ICU Level of Service H	
Analysis Period (min) 15		

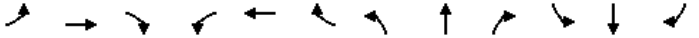
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	69	1272	220	144	1897	240	231	210
v/c Ratio	0.61	0.72	0.25	0.75	0.99	0.82	0.42	0.40
Control Delay	87.1	12.9	2.1	63.4	40.1	68.6	15.9	21.3
Queue Delay	0.0	0.2	0.0	0.0	5.4	0.0	0.0	0.0
Total Delay	87.1	13.1	2.1	63.4	45.5	68.6	15.9	21.3
Queue Length 50th (m)	21.3	35.0	2.1	42.8	~307.8	64.0	18.3	24.3
Queue Length 95th (m)	m#30.0	48.5	m4.3	m42.2	m#301.0	95.2	40.5	45.5
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	113	1757	863	201	1910	342	619	552
Starvation Cap Reductn	0	81	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	40	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.76	0.25	0.72	1.01	0.70	0.37	0.38

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	1272	220	144	1826	71	197	43	231	27	27	156
Future Volume (vph)	69	1272	220	144	1826	71	197	43	231	27	27	156
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1684	3579	1597	1785	3587			1840	1557		1693	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.53	1.00		0.93	
Satd. Flow (perm)	1684	3579	1597	1785	3587			1020	1557		1589	
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)	69	1272	220	144	1826	71	197	43	231	27	27	156
RTOR Reduction (vph)	0	0	79	0	2	0	0	0	104	0	71	0
Lane Group Flow (vph)	69	1272	141	144	1895	0	0	240	127	0	139	0
Confl. Peds. (#/hr)	11					11	5		12	12		5
Heavy Vehicles (%)	6%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	8.4	67.7	67.7	14.2	73.5			39.1	39.1		39.1	
Effective Green, g (s)	9.4	68.7	68.7	15.2	74.5			40.1	40.1		40.1	
Actuated g/C Ratio	0.07	0.49	0.49	0.11	0.53			0.29	0.29		0.29	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	113	1756	783	193	1908			292	445		455	
v/s Ratio Prot	0.04	0.36		c0.08	c0.53							
v/s Ratio Perm			0.09					c0.24	0.08		0.09	
v/c Ratio	0.61	0.72	0.18	0.75	0.99			0.82	0.28		0.30	
Uniform Delay, d1	63.5	28.2	19.9	60.5	32.5			46.6	38.8		39.1	
Progression Factor	1.20	0.38	0.23	1.01	1.09			1.00	1.00		1.00	
Incremental Delay, d2	5.5	1.5	0.3	1.5	4.8			16.8	0.4		0.4	
Delay (s)	82.0	12.2	4.8	62.5	40.2			63.4	39.2		39.4	
Level of Service	F	B	A	E	D			E	D		D	
Approach Delay (s)		14.2			41.7			51.5			39.4	
Approach LOS		B			D			D			D	

Intersection Summary

HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

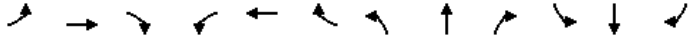
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.918					
Flt Protected	0.981					0.968
Satd. Flow (prot)	1659	0	1842	0	0	1783
Flt Permitted	0.981					0.968
Satd. Flow (perm)	1659	0	1842	0	0	1783
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	36	56	23	0	128	64
Future Volume (vph)	36	56	23	0	128	64
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	56	23	0	128	64

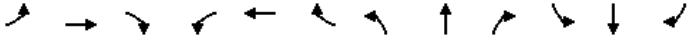
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	92	23	192
Volume Left (vph)	36	0	128
Volume Right (vph)	56	0	0
Hadj (s)	-0.25	0.03	0.17
Departure Headway (s)	4.1	4.3	4.3
Degree Utilization, x	0.11	0.03	0.23
Capacity (veh/h)	827	796	820
Control Delay (s)	7.6	7.5	8.6
Approach Delay (s)	7.6	7.5	8.6
Approach LOS	A	A	A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.885			0.979			0.988	
Flt Protected		0.950			0.993						0.992	
Satd. Flow (prot)	0	1750	0	0	1619	0	0	1803	0	0	1805	0
Flt Permitted		0.950			0.993						0.992	
Satd. Flow (perm)	0	1750	0	0	1619	0	0	1803	0	0	1805	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



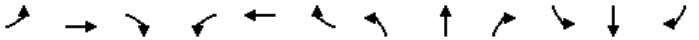
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	35	0	204	0	417	76	119	555	63
Future Volume (vph)	18	0	0	35	0	204	0	417	76	119	555	63
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	0	0	35	0	204	0	417	76	119	555	63

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	18	239	493	737
Volume Left (vph)	18	35	0	119
Volume Right (vph)	0	204	76	63
Hadj (s)	0.23	-0.45	-0.06	0.02
Departure Headway (s)	7.9	6.4	5.7	5.6
Degree Utilization, x	0.04	0.42	0.78	1.15
Capacity (veh/h)	408	537	620	643
Control Delay (s)	11.2	13.9	25.9	105.6
Approach Delay (s)	11.2	13.9	25.9	105.6
Approach LOS	B	B	D	F

Intersection Summary			
Delay	63.3		
Level of Service	F		
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.967			0.945			0.972			0.982	
Flt Protected		0.977			0.989			0.986			0.994	
Satd. Flow (prot)	0	1740	0	0	1722	0	0	1765	0	0	1798	0
Flt Permitted		0.977			0.989			0.986			0.994	
Satd. Flow (perm)	0	1740	0	0	1722	0	0	1765	0	0	1798	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



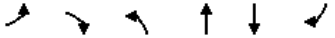
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	70	40	36	34	56	62	113	193	80	89	518	92
Future Volume (vph)	70	40	36	34	56	62	113	193	80	89	518	92
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	70	40	36	34	56	62	113	193	80	89	518	92

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	146	152	386	699
Volume Left (vph)	70	34	113	89
Volume Right (vph)	36	62	80	92
Hadj (s)	-0.02	-0.17	-0.03	-0.02
Departure Headway (s)	7.1	7.0	6.0	5.7
Degree Utilization, x	0.29	0.29	0.65	1.11
Capacity (veh/h)	459	475	578	625
Control Delay (s)	13.0	12.9	19.3	90.9
Approach Delay (s)	13.0	12.9	19.3	90.9
Approach LOS	B	B	C	F

Intersection Summary				
Delay		54.1		
Level of Service		F		
Intersection Capacity Utilization		63.2%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.974				0.985	
Flt Protected	0.961			0.988		
Satd. Flow (prot)	1724	0	0	1820	1814	0
Flt Permitted	0.961			0.988		
Satd. Flow (perm)	1724	0	0	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	146	35	93	292	685	86
Future Volume (vph)	146	35	93	292	685	86
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	146	35	93	292	685	86

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	181	385	771
Volume Left (vph)	146	93	0
Volume Right (vph)	35	0	86
Hadj (s)	0.08	0.08	-0.03
Departure Headway (s)	6.6	5.5	5.1
Degree Utilization, x	0.33	0.59	1.09
Capacity (veh/h)	528	640	701
Control Delay (s)	12.8	16.2	82.4
Approach Delay (s)	12.8	16.2	82.4
Approach LOS	B	C	F

Intersection Summary			
Delay	53.9		
Level of Service	F		
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

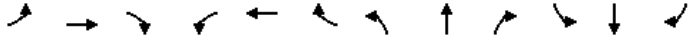
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.973
Satd. Flow (prot)	1593	0	1842	0	0	1792
Flt Permitted						0.973
Satd. Flow (perm)	1593	0	1842	0	0	1792
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	18	4	0	55	46
Future Volume (vph)	0	18	4	0	55	46
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	18	4	0	55	46

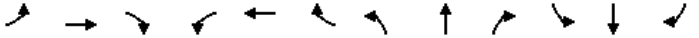
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	18	4	101
Volume Left (vph)	0	0	55
Volume Right (vph)	18	0	0
Hadj (s)	-0.57	0.03	0.14
Departure Headway (s)	3.6	4.1	4.1
Degree Utilization, x	0.02	0.00	0.11
Capacity (veh/h)	977	865	874
Control Delay (s)	6.6	7.1	7.6
Approach Delay (s)	6.6	7.1	7.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	22.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.901			0.887			0.970			0.998	
Flt Protected		0.987			0.992						0.995	
Satd. Flow (prot)	0	1638	0	0	1621	0	1842	1787	0	0	1829	0
Flt Permitted		0.987			0.992						0.995	
Satd. Flow (perm)	0	1638	0	0	1621	0	1842	1787	0	0	1829	0
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



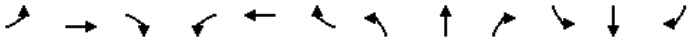
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	0	14	35	0	184	0	303	76	63	518	8
Future Volume (vph)	5	0	14	35	0	184	0	303	76	63	518	8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	14	35	0	184	0	303	76	63	518	8

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	19	219	0	379	589
Volume Left (vph)	5	35	0	0	63
Volume Right (vph)	14	184	0	76	8
Hadj (s)	-0.36	-0.44	0.00	-0.11	0.05
Departure Headway (s)	6.9	6.1	6.0	5.9	5.5
Degree Utilization, x	0.04	0.37	0.00	0.62	0.89
Capacity (veh/h)	449	554	587	581	645
Control Delay (s)	10.1	12.6	7.8	17.0	37.1
Approach Delay (s)	10.1	12.6	17.0		37.1
Approach LOS	B	B	C		E

Intersection Summary				
Delay	25.9			
Level of Service	D			
Intersection Capacity Utilization	77.3%	ICU Level of Service		D
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.961			0.954			0.978			0.985	
Flt Protected		0.981			0.988			0.988			0.995	
Satd. Flow (prot)	0	1737	0	0	1736	0	0	1780	0	0	1805	0
Flt Permitted		0.981			0.988			0.988			0.995	
Satd. Flow (perm)	0	1737	0	0	1736	0	0	1780	0	0	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



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	40	36	34	56	46	113	290	80	56	465	67
Future Volume (vph)	50	40	36	34	56	46	113	290	80	56	465	67
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	40	36	34	56	46	113	290	80	56	465	67

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	126	136	483	588
Volume Left (vph)	50	34	113	56
Volume Right (vph)	36	46	80	67
Hadj (s)	-0.06	-0.12	-0.02	-0.02
Departure Headway (s)	7.3	7.2	5.9	5.7
Degree Utilization, x	0.26	0.27	0.79	0.94
Capacity (veh/h)	455	460	594	588
Control Delay (s)	12.8	12.9	27.6	45.8
Approach Delay (s)	12.8	12.9	27.6	45.8
Approach LOS	B	B	D	E

Intersection Summary					
Delay		32.7			
Level of Service		D			
Intersection Capacity Utilization	68.8%	ICU Level of Service		C	
Analysis Period (min)		15			

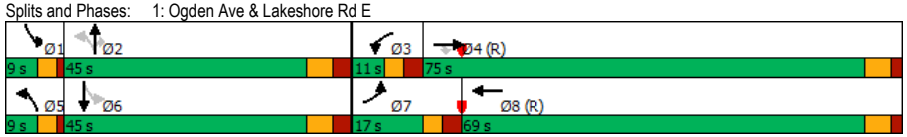
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	28.0		25.0	25.0		0.0	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		0.93	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.986				0.850		0.887	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	3444	1566	1750	3295	0	1750	1883	1566	1750	1647	0
Flt Permitted	0.950			0.950			0.644			0.720		
Satd. Flow (perm)	1739	3444	1463	1741	3295	0	1179	1883	1532	1314	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		10				137		77	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	142	1575	112	22	1577	175	56	262	82	25
Future Volume (vph)	142	1575	112	22	1577	175	56	262	82	25
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)	17.0	75.0	75.0	11.0	69.0	9.0	45.0	45.0	9.0	45.0
Total Split (%)	12.1%	53.6%	53.6%	7.9%	49.3%	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 Effct Green (s)	19.3	92.5	92.5	8.3	76.8	27.9	18.9	18.9	27.9	18.9
Actuated g/C Ratio	0.14	0.66	0.66	0.06	0.55	0.20	0.14	0.14	0.20	0.14
v/c Ratio	0.59	0.69	0.11	0.21	0.96	0.68	0.22	0.81	0.29	0.35
Control Delay	70.2	15.8	4.9	66.0	43.6	61.3	52.8	45.4	45.3	19.4
Queue Delay	0.0	0.1	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	15.8	4.9	66.0	65.8	61.3	52.8	45.4	45.3	19.4
LOS	E	B	A	E	E	E	D	D	D	B
Approach Delay		19.4			65.8		51.9			30.9
Approach LOS		B			E		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: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.96		
Intersection Signal Delay: 42.8	Intersection LOS: D	
Intersection Capacity Utilization 90.2%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



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	1.00		0.89	0.99	0.99		0.99		0.98	0.99	0.99	
Frt			0.850		0.989				0.850		0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3579	1597	1785	3540	0	1785	1921	1597	1668	1730	0
Flt Permitted	0.950			0.950			0.374			0.715		
Satd. Flow (perm)	1776	3579	1419	1763	3540	0	699	1921	1557	1240	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		8				148		52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		272.7			222.5			142.3			246.5	
Travel Time (s)		19.6			16.0			10.2			17.7	

Intersection Summary

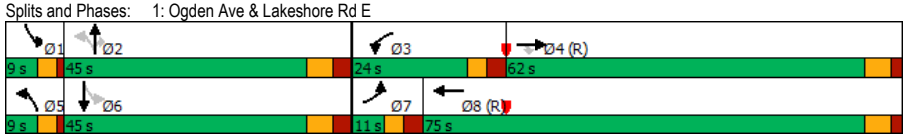
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	64	1455	298	246	1617	108	64	112	141	69
Future Volume (vph)	64	1455	298	246	1617	108	64	112	141	69
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)	11.0	62.0	62.0	24.0	75.0	9.0	45.0	45.0	9.0	45.0
Total Split (%)	7.9%	44.3%	44.3%	17.1%	53.6%	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 Effct Green (s)	12.3	69.6	69.6	29.3	86.5	25.1	16.1	16.1	25.1	16.1
Actuated g/C Ratio	0.09	0.50	0.50	0.21	0.62	0.18	0.12	0.12	0.18	0.12
v/c Ratio	0.41	0.82	0.38	0.66	0.80	0.63	0.29	0.36	0.59	0.69
Control Delay	50.1	31.8	16.1	68.0	17.5	64.4	58.1	6.2	59.7	54.7
Queue Delay	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	32.0	16.1	68.0	17.8	64.4	58.1	6.2	59.7	54.7
LOS	D	C	B	E	B	E	E	A	E	D
Approach Delay		30.1			24.0		40.0			57.0
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: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 29.9 Intersection LOS: C
Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Ogden Ave & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	1455	298	246	1743	108	64	112	141	169
v/c Ratio	0.41	0.82	0.38	0.66	0.80	0.63	0.29	0.36	0.59	0.69
Control Delay	50.1	31.8	16.1	68.0	17.5	64.4	58.1	6.2	59.7	54.7
Queue Delay	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	32.0	16.1	68.0	17.8	64.4	58.1	6.2	59.7	54.7
Queue Length 50th (m)	19.8	106.4	27.1	68.3	157.4	27.1	17.3	0.0	36.3	33.2
Queue Length 95th (m)	m23.1	#259.9	m35.6	105.9	93.6	42.9	31.0	8.1	54.5	55.9
Internal Link Dist (m)		248.7			198.5		118.3			222.5
Turn Bay Length (m)	28.0		25.0	25.0		30.0		30.0		
Base Capacity (vph)	157	1779	783	373	2191	171	535	540	240	519
Starvation Cap Reductn	0	0	0	0	100	0	0	0	0	0
Spillback Cap Reductn	0	40	0	0	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.84	0.38	0.66	0.83	0.63	0.12	0.21	0.59	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	1455	298	246	1617	126	108	64	112	141	69	100
Future Volume (vph)	64	1455	298	246	1617	126	108	64	112	141	69	100
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	0.89	1.00	0.99		1.00	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	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
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)	1785	3579	1419	1785	3541		1782	1921	1557	1654	1730	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.37	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	1785	3579	1419	1785	3541		702	1921	1557	1245	1730	
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)	64	1455	298	246	1617	126	108	64	112	141	69	100
RTOR Reduction (vph)	0	0	78	0	3	0	0	0	99	0	46	0
Lane Group Flow (vph)	64	1455	220	246	1740	0	108	64	13	141	123	0
Confl. Peds. (#/hr)	14		24	24		14	7		12	12		7
Heavy Vehicles (%)	0%	2%	0%	0%	1%	7%	0%	0%	0%	7%	0%	0%
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)	11.3	68.6	68.6	28.3	85.6		20.1	15.1	15.1	20.1	15.1	
Effective Green, g (s)	12.3	69.6	69.6	29.3	86.6		22.1	16.1	16.1	22.1	16.1	
Actuated g/C Ratio	0.09	0.50	0.50	0.21	0.62		0.16	0.12	0.12	0.16	0.12	
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)	156	1779	705	373	2190		157	220	179	214	198	
v/s Ratio Prot	0.04	0.41		c0.14	c0.49		c0.03	0.03		0.03	0.07	
v/s Ratio Perm			0.15				c0.08		0.01	0.08		
v/c Ratio	0.41	0.82	0.31	0.66	0.79		0.69	0.29	0.07	0.66	0.62	
Uniform Delay, d1	60.4	29.8	20.9	50.8	20.0		54.4	56.7	55.3	54.6	59.0	
Progression Factor	0.77	0.95	1.39	1.21	0.69		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	2.2	0.6	3.0	2.2		11.8	0.7	0.2	7.1	5.9	
Delay (s)	47.5	30.4	29.7	64.4	16.1		66.3	57.5	55.5	61.8	65.0	
Level of Service	D	C	C	E	B		E	E	E	E	E	
Approach Delay (s)		30.9			22.1			60.0			63.5	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	31.1	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)	19.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.99		0.87		0.99			1.00	0.97
Frt						0.850		0.910				0.850
Flt Protected	0.950			0.950							0.953	
Satd. Flow (prot)	1750	3544	0	1785	3579	1566	0	1732	0	0	1813	1581
Flt Permitted	0.950			0.950							0.727	
Satd. Flow (perm)	1702	3544	0	1761	3579	1355	0	1732	0	0	1380	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		2				23
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		622.7			399.1			93.6			292.8	
Travel Time (s)		44.8			28.7			6.7			21.1	

Intersection Summary

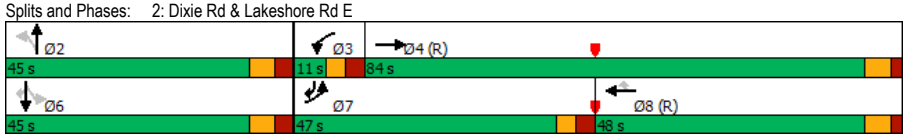
Area Type: Other

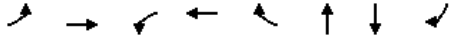
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	392	1044	1	1049	242	1	248	2	883
Future Volume (vph)	392	1044	1	1049	242	1	248	2	883
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	7	4	3	8		2		6	7
Permitted Phases					8		6		6
Detector Phase	7	4	3	8	8	2	6	6	7
Switch Phase									
Minimum Initial (s)	5.0	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	24.0	12.0	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	47.0
Total Split (%)	33.6%	60.0%	7.9%	34.3%	34.3%	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	3.0
All-Red Time (s)	3.0	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
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
Act Effct Green (s)	47.9	95.8	6.5	45.1	45.1	31.0		31.0	79.9
Actuated g/C Ratio	0.34	0.68	0.05	0.32	0.32	0.22		0.22	0.57
v/c Ratio	0.66	0.43	0.01	0.91	0.47	0.01		0.82	0.98
Control Delay	39.2	26.9	64.0	58.3	21.5	28.7		72.2	52.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	39.2	26.9	64.0	58.3	21.5	28.7		72.2	52.8
LOS	D	C	E	E	C	C		E	D
Approach Delay		30.3		51.4		28.7		57.1	
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: 0.98
Intersection Signal Delay: 45.2 Intersection LOS: D
Intersection Capacity Utilization 103.2% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 2: Dixie Rd & Lakeshore Rd E

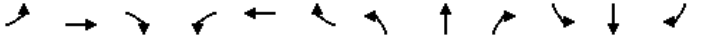




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	392	1044	1	1049	242	3	250	883
v/c Ratio	0.66	0.43	0.01	0.91	0.47	0.01	0.82	0.98
Control Delay	39.2	26.9	64.0	58.3	21.5	28.7	72.2	52.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	26.9	64.0	58.3	21.5	28.7	72.2	52.8
Queue Length 50th (m)	115.3	127.6	0.3	157.9	26.8	0.2	69.5	203.0
Queue Length 95th (m)	154.5	187.7	2.3	#202.8	54.2	2.8	96.8	#335.6
Internal Link Dist (m)		598.7		375.1		69.6	268.8	
Turn Bay Length (m)	44.0		25.0		30.0			
Base Capacity (vph)	598	2424	82	1152	520	483	384	899
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	0.43	0.01	0.91	0.47	0.01	0.65	0.98

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	392	1044	0	1	1049	242	0	1	2	248	2	883
Future Volume (vph)	392	1044	0	1	1049	242	0	1	2	248	2	883
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	0.87		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1750	3544		1785	3579	1355		1731			1808	1560
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.73	1.00
Satd. Flow (perm)	1750	3544		1785	3579	1355		1731			1379	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)	392	1044	0	1	1049	242	0	1	2	248	2	883
RTOR Reduction (vph)	0	0	0	0	0	85	0	2	0	0	0	10
Lane Group Flow (vph)	392	1044	0	1	1049	157	0	1	0	0	250	873
Confl. Peds. (#/hr)	30		15	15		30	21		2	2		21
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	0%	0%	0%	1%	0%	1%
Turn Type	Prot	NA		Prot	NA	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	90.0		1.0	44.1	44.1		30.0			30.0	76.9
Effective Green, g (s)	47.9	91.0		2.0	45.1	45.1		31.0			31.0	78.9
Actuated g/C Ratio	0.34	0.65		0.01	0.32	0.32		0.22			0.22	0.56
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	2303		25	1152	436		383			305	879
v/s Ratio Prot	0.22	0.29		0.00	c0.29			0.00				c0.34
v/s Ratio Perm						0.12					0.18	0.22
v/c Ratio	0.66	0.45		0.04	0.91	0.36		0.00			0.82	0.99
Uniform Delay, d1	39.1	12.2		68.1	45.5	36.4		42.5			51.8	30.3
Progression Factor	0.86	2.33		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.5		0.7	12.2	2.3		0.0			15.7	28.5
Delay (s)	35.5	28.9		68.7	57.7	38.7		42.5			67.5	58.8
Level of Service	D	C		E	E	D		D			E	E
Approach Delay (s)		30.7			54.2			42.5			60.7	
Approach LOS		C			D			D			E	

Intersection Summary					
HCM 2000 Control Delay	47.4	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)	16.0		
Intersection Capacity Utilization	103.2%	ICU Level of Service	G		
Analysis Period (min)	15				
c Critical Lane Group					

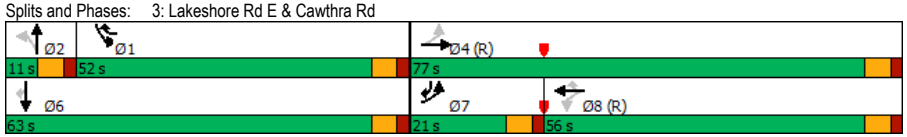
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	60.0		70.0	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		1.00				0.94						0.96
Frt						0.850		0.955				0.850
Flt Protected	0.950									0.950	0.952	
Satd. Flow (prot)	3429	3578	0	1879	3614	1581	0	1835	0	1679	1720	1566
Flt Permitted	0.080									0.950	0.725	
Satd. Flow (perm)	289	3578	0	1879	3614	1485	0	1835	0	1679	1310	1497
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						279		1				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	

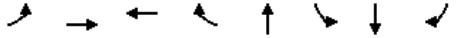
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	394	1163	1160	603	2	1040	1	565
Future Volume (vph)	394	1163	1160	603	2	1040	1	565
Turn Type	pm+pt	NA	NA	pm+ov	NA	Prot	NA	pm+ov
Protected Phases	7	4	8	1	2	1	6	7
Permitted Phases	4			8				6
Detector Phase	7	4	8	1	2	1	6	7
Switch Phase								
Minimum Initial (s)	5.0	7.0	8.0	8.0	5.0	8.0	5.0	5.0
Minimum Split (s)	11.0	38.0	38.0	14.0	11.0	14.0	38.0	11.0
Total Split (s)	21.0	77.0	56.0	52.0	11.0	52.0	63.0	21.0
Total Split (%)	15.0%	55.0%	40.0%	37.1%	7.9%	37.1%	45.0%	15.0%
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	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	70.2	70.2	49.8	107.4	6.2	57.6	57.6	75.2
Actuated g/C Ratio	0.50	0.50	0.36	0.77	0.04	0.41	0.41	0.54
v/c Ratio	0.80	0.65	0.90	0.49	0.04	0.75	0.74	0.69
Control Delay	44.4	27.6	56.8	2.1	57.7	44.4	43.4	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	27.6	56.8	2.1	57.7	44.4	43.4	25.2
LOS	D	C	E	A	E	D	D	C
Approach Delay		31.9	38.1		57.7		37.3	
Approach LOS		C	D		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 35.9	Intersection LOS: D	
Intersection Capacity Utilization 91.3%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 3: Lakeshore Rd E & Cawthra Rd

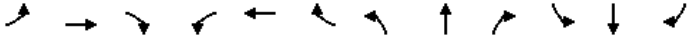




Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	394	1164	1160	603	3	520	521	565
v/c Ratio	0.80	0.65	0.90	0.49	0.04	0.75	0.74	0.69
Control Delay	44.4	27.6	56.8	2.1	57.7	44.4	43.4	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	27.6	56.8	2.1	57.7	44.4	43.4	25.2
Queue Length 50th (m)	39.2	125.2	179.1	7.6	0.6	134.0	132.9	103.2
Queue Length 95th (m)	58.1	148.7	177.4	18.8	4.0	#227.3	#223.5	144.1
Internal Link Dist (m)		297.4	113.2		71.8		931.9	
Turn Bay Length (m)	35.0			70.0		115.0		
Base Capacity (vph)	503	1840	1316	1243	82	690	707	828
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	0.63	0.88	0.49	0.04	0.75	0.74	0.68

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	1163	1	0	1160	603	0	2	1	1040	1	565
Future Volume (vph)	394	1163	1	0	1160	603	0	2	1	1040	1	565
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
Lane Util. Factor	0.97	0.95			0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	3429	3578			3614	1539		1835		1679	1721	1510
Flt Permitted	0.08	1.00			1.00	1.00		1.00		0.95	0.73	1.00
Satd. Flow (perm)	289	3578			3614	1539		1835		1679	1311	1510
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)	394	1163	1	0	1160	603	0	2	1	1040	1	565
RTOR Reduction (vph)	0	0	0	0	0	75	0	1	0	0	0	10
Lane Group Flow (vph)	394	1164	0	0	1160	528	0	2	0	520	521	555
Confl. Peds. (#/hr)	38		20	20		38	25					25
Heavy Vehicles (%)	1%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	pm+ov		NA		Prot	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	64.4	64.4			44.0	100.6		1.0		56.6	63.6	78.0
Effective Green, g (s)	65.4	65.4			45.0	102.6		2.0		57.6	64.6	80.0
Actuated g/C Ratio	0.47	0.47			0.32	0.73		0.01		0.41	0.46	0.57
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)	480	1671			1161	1127		26		690	773	916
v/s Ratio Prot	c0.09	0.33			c0.32	0.19		0.00		c0.31	0.28	0.07
v/s Ratio Perm	0.29					0.15					c0.03	0.30
v/c Ratio	0.82	0.70			1.00	0.47		0.08		0.75	0.67	0.61
Uniform Delay, d1	39.0	29.5			47.5	7.6		68.1		35.1	29.5	19.7
Progression Factor	1.00	1.00			1.11	0.46		1.00		1.00	1.00	1.00
Incremental Delay, d2	10.8	2.4			24.1	0.3		1.3		4.7	2.3	1.1
Delay (s)	49.8	31.9			76.9	3.8		69.4		39.8	31.8	20.8
Level of Service	D	C			E	A		E		D	C	C
Approach Delay (s)		36.4			51.9			69.4			30.5	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	40.1	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	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		0.90	0.99	0.98		1.00	0.98	
Frt		0.992				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3572	0	1785	3650	1597	1785	1576	0	1785	1594	0
Flt Permitted	0.950			0.950			0.751			0.750		
Satd. Flow (perm)	1773	3572	0	1782	3650	1443	1394	1576	0	1404	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				78		71			78	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		226.1			305.9			132.2			178.2	
Travel Time (s)		16.3			22.0			9.5			12.8	

Intersection Summary

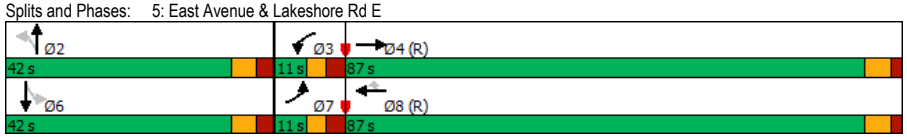
Area Type: Other

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	11	2043	49	1790	63	67	0	8	0
Future Volume (vph)	11	2043	49	1790	63	67	0	8	0
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (s)	11.0	87.0	11.0	87.0	87.0	42.0	42.0	42.0	42.0
Total Split (%)	7.9%	62.1%	7.9%	62.1%	62.1%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.5	106.6	10.5	114.3	114.3	13.3	13.3	13.3	13.3
Actuated g/C Ratio	0.05	0.76	0.08	0.82	0.82	0.10	0.10	0.10	0.10
v/c Ratio	0.12	0.79	0.37	0.60	0.05	0.51	0.06	0.06	0.05
Control Delay	68.2	22.8	61.2	7.8	1.2	72.5	0.5	56.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	22.8	61.2	7.8	1.2	72.5	0.5	56.0	0.4
LOS	E	C	E	A	A	E	A	E	A
Approach Delay		23.0		8.9			61.6		25.1
Approach LOS		C		A			E		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: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 82.6% ICU Level of Service E
Analysis Period (min) 15

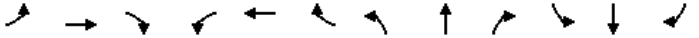
Splits and Phases: 5: East Avenue & Lakeshore Rd E



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2163	49	1790	63	67	12	8	10
v/c Ratio	0.12	0.79	0.37	0.60	0.05	0.51	0.06	0.06	0.05
Control Delay	68.2	22.8	61.2	7.8	1.2	72.5	0.5	56.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	22.8	61.2	7.8	1.2	72.5	0.5	56.0	0.4
Queue Length 50th (m)	2.9	315.8	13.2	89.3	0.1	18.9	0.0	2.2	0.0
Queue Length 95th (m)	m4.4	366.5	m22.2	137.7	m2.2	34.4	0.0	7.6	0.0
Internal Link Dist (m)		202.1		281.9			108.2		154.2
Turn Bay Length (m)	72.0		50.0		20.0	20.0		45.0	
Base Capacity (vph)	95	2721	134	2979	1192	358	458	361	467
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	0.12	0.79	0.37	0.60	0.05	0.19	0.03	0.02	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	2043	120	49	1790	63	67	0	12	8	0	10
Future Volume (vph)	11	2043	120	49	1790	63	67	0	12	8	0	10
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.90	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3570		1785	3650	1443	1764	1576		1779	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)	1785	3570		1785	3650	1443	1394	1576		1404	1594	
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)	11	2043	120	49	1790	63	67	0	12	8	0	10
RTOR Reduction (vph)	0	2	0	0	0	14	0	11	0	0	9	0
Lane Group Flow (vph)	11	2161	0	49	1790	49	67	1	0	8	1	0
Confl. Peds. (#/hr)	20		10	10		20	10		3	3		10
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	3.0	102.0		8.3	107.3	107.3	10.7	10.7		10.7	10.7	
Effective Green, g (s)	4.0	103.0		9.3	108.3	108.3	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.74		0.07	0.77	0.77	0.08	0.08		0.08	0.08	
Clearance Time (s)	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	
Lane Grp Cap (vph)	51	2626		118	2823	1116	116	131		117	133	
v/s Ratio Prot	0.01	c0.61		c0.03	c0.49			0.00			0.00	
v/s Ratio Perm						0.03	c0.05			0.01		
v/c Ratio	0.22	0.82		0.42	0.63	0.04	0.58	0.01		0.07	0.01	
Uniform Delay, d1	66.5	12.4		62.7	7.0	3.7	61.8	58.8		59.1	58.8	
Progression Factor	1.06	1.44		0.89	0.93	1.23	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	2.4		2.3	1.0	0.1	6.8	0.0		0.2	0.0	
Delay (s)	71.8	20.3		57.9	7.6	4.6	68.6	58.8		59.4	58.8	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		20.6			8.8			67.1			59.1	
Approach LOS		C			A			E			E	

Intersection Summary					
HCM 2000 Control Delay	16.2	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)	16.0		
Intersection Capacity Utilization	82.6%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

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		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Ped Bike Factor		0.92	0.99		0.98	0.98
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3579	1597	1750	3650	3463	1597
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3579	1468	1739	3650	3398	1571
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		88				137
Link Speed (k/h)	50			50	50	
Link Distance (m)	65.1			272.7	130.4	
Travel Time (s)	4.7			19.6	9.4	

Intersection Summary

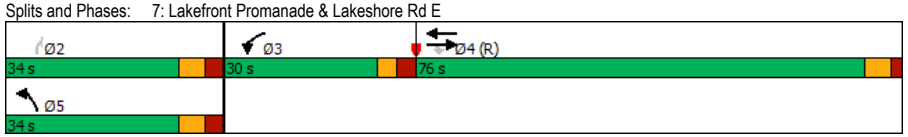
Area Type: Other

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1681	361	297	1504	434	137
Future Volume (vph)	1681	361	297	1504	434	137
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Detector Phase	4	4	3	4	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	30.0	25.0	34.0	12.0
Total Split (s)	76.0	76.0	30.0	76.0	34.0	34.0
Total Split (%)	54.3%	54.3%	21.4%	54.3%	24.3%	24.3%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	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	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effct Green (s)	73.0	73.0	27.5	73.0	23.5	23.5
Actuated g/C Ratio	0.52	0.52	0.20	0.52	0.17	0.17
v/c Ratio	0.90	0.45	0.87	0.79	0.75	0.36
Control Delay	32.2	15.4	89.9	16.9	63.5	10.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	32.2	15.4	89.9	17.1	63.5	10.1
LOS	C	B	F	B	E	B
Approach Delay	29.3			29.1	50.7	
Approach LOS	C			C	D	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBWB and 8:, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 89.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Lakefront Promanade & Lakeshore Rd E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1681	361	297	1504	434	137
v/c Ratio	0.90	0.45	0.87	0.79	0.75	0.36
Control Delay	32.2	15.4	89.9	16.9	63.5	10.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	32.2	15.4	89.9	17.1	63.5	10.1
Queue Length 50th (m)	187.6	27.2	86.7	161.6	62.7	0.0
Queue Length 95th (m)	#254.0	m54.6	m#137.1	105.8	78.9	18.6
Internal Link Dist (m)	41.1			248.7	106.4	
Turn Bay Length (m)		25.0	35.0		50.0	
Base Capacity (vph)	1866	807	343	1903	692	423
Starvation Cap Reductn	0	0	0	63	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.45	0.87	0.82	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.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1681	361	297	1504	434	137
Future Volume (vph)	1681	361	297	1504	434	137
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	5.0	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	0.92	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1468	1750	3650	3463	1569
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3579	1468	1750	3650	3463	1569
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1681	361	297	1504	434	137
RTOR Reduction (vph)	0	42	0	0	0	114
Lane Group Flow (vph)	1681	319	297	1504	434	23
Confl. Peds. (#/hr)		16	16		12	3
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	4	5	
Permitted Phases		4				2
Actuated Green, G (s)	72.0	72.0	26.5	72.0	22.5	22.5
Effective Green, g (s)	73.0	73.0	27.5	73.0	23.5	23.5
Actuated g/C Ratio	0.52	0.52	0.20	0.52	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	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)	1866	765	343	1903	581	263
v/s Ratio Prot	c0.47		c0.17	0.41	c0.13	
v/s Ratio Perm		0.22				0.01
v/c Ratio	0.90	0.42	0.87	0.79	0.75	0.09
Uniform Delay, d1	30.2	20.5	54.5	27.3	55.4	49.2
Progression Factor	0.81	0.86	1.37	0.52	1.00	1.00
Incremental Delay, d2	6.8	1.5	13.5	2.2	5.2	0.1
Delay (s)	31.3	19.1	88.2	16.4	60.6	49.3
Level of Service	C	B	F	B	E	D
Approach Delay (s)	29.2			28.2	57.9	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay	32.5	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)	17.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1.00		0.84	0.98	1.00			0.99			1.00	
Frt			0.850					0.850			0.892	
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1750	3579	1597	1750	3578	0	1750	1578	0	0	1696	0
Flt Permitted	0.950			0.950			0.754				0.962	
Satd. Flow (perm)	1742	3579	1334	1709	3578	0	1389	1578	0	0	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180					291			117	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			195.3			135.3			191.6	
Travel Time (s)		16.0			14.1			9.7			13.8	

Intersection Summary

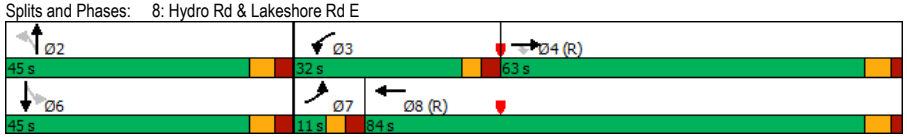
Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	3	1327	394	284	1760	227	0	1	0
Future Volume (vph)	3	1327	394	284	1760	227	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	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
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	45.0	45.0	45.0	45.0
Total Split (s)	11.0	63.0	63.0	32.0	84.0	45.0	45.0	45.0	45.0
Total Split (%)	7.9%	45.0%	45.0%	22.9%	60.0%	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
All-Red Time (s)	3.0	2.0	2.0	3.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	6.6	67.3	67.3	27.6	97.6	29.1	29.1		29.1
Actuated g/C Ratio	0.05	0.48	0.48	0.20	0.70	0.21	0.21		0.21
v/c Ratio	0.04	0.77	0.54	0.82	0.71	0.79	0.28		0.01
Control Delay	64.0	24.0	11.0	80.1	12.7	70.7	1.3		0.0
Queue Delay	0.0	0.3	0.0	0.0	0.3	0.0	0.0		0.0
Total Delay	64.0	24.3	11.0	80.1	13.0	70.7	1.3		0.0
LOS	E	C	B	F	B	E	A		A
Approach Delay		21.3			22.3		42.1		
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: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 86.3% ICU Level of Service E
Analysis Period (min) 15

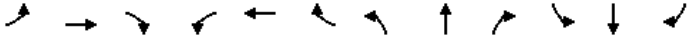
Splits and Phases: 8: Hydro Rd & Lakeshore Rd E



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	3	1327	394	284	1762	227	159	5
v/c Ratio	0.04	0.77	0.54	0.82	0.71	0.79	0.28	0.01
Control Delay	64.0	24.0	11.0	80.1	12.7	70.7	1.3	0.0
Queue Delay	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	64.0	24.3	11.0	80.1	13.0	70.7	1.3	0.0
Queue Length 50th (m)	0.8	71.6	20.2	87.9	90.3	63.2	0.0	0.0
Queue Length 95th (m)	m1.2	97.8	m31.6	m101.0	108.3	87.5	0.0	0.0
Internal Link Dist (m)		198.5			171.3		111.3	167.6
Turn Bay Length (m)	25.0		50.0	25.0		60.0		
Base Capacity (vph)	83	1719	734	360	2494	386	649	543
Starvation Cap Reductn	0	75	0	0	203	0	0	0
Spillback Cap Reductn	0	0	0	0	32	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.81	0.54	0.79	0.77	0.59	0.24	0.01

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1327	394	284	1760	2	227	0	159	1	0	4
Future Volume (vph)	3	1327	394	284	1760	2	227	0	159	1	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		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	
Frpb, ped/bikes	1.00	1.00	0.84	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			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1750	3579	1334	1750	3578		1750	1578			1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	1.00			0.96	
Satd. Flow (perm)	1750	3579	1334	1750	3578		1390	1578			1648	
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)	3	1327	394	284	1760	2	227	0	159	1	0	4
RTOR Reduction (vph)	0	0	93	0	0	0	0	126	0	0	4	0
Lane Group Flow (vph)	3	1327	301	284	1762	0	227	33	0	0	1	0
Confl. Peds. (#/hr)	13		38	38		13			2	2		
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	2%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.1	66.3	66.3	26.6	91.8		28.1	28.1			28.1	
Effective Green, g (s)	2.1	67.3	67.3	27.6	92.8		29.1	29.1			29.1	
Actuated g/C Ratio	0.02	0.48	0.48	0.20	0.66		0.21	0.21			0.21	
Clearance Time (s)	6.0	6.0	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	3.0			3.0	
Lane Grp Cap (vph)	26	1720	641	345	2371		288	327			342	
v/s Ratio Prot	0.00	c0.37		c0.16	0.49			0.02				
v/s Ratio Perm			0.23				c0.16				0.00	
v/c Ratio	0.12	0.77	0.47	0.82	0.74		0.79	0.10			0.00	
Uniform Delay, d1	68.0	30.0	24.4	53.9	15.7		52.5	44.9			44.0	
Progression Factor	1.00	0.67	0.62	1.30	0.78		1.00	1.00			1.00	
Incremental Delay, d2	1.3	2.2	1.6	8.1	1.1		13.3	0.1			0.0	
Delay (s)	69.0	22.2	16.6	78.1	13.4		65.8	45.0			44.0	
Level of Service	E	C	B	E	B		E	D			D	
Approach Delay (s)		21.0			22.4			57.3			44.0	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	25.1	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)		16.0	
Intersection Capacity Utilization	86.3%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

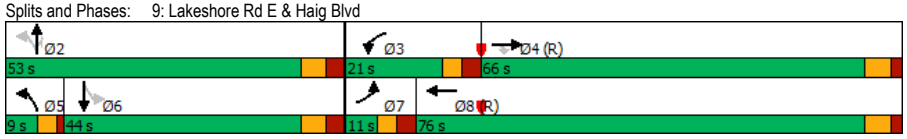
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		50.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	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	1.00				1.00			1.00	0.97		0.99	
Frt			0.850		0.994				0.850		0.901	
Flt Protected	0.950			0.950				0.961			0.993	
Satd. Flow (prot)	1684	3579	1597	1785	3585	0	0	1846	1597	0	1697	0
Flt Permitted	0.950			0.950				0.540			0.929	
Satd. Flow (perm)	1678	3579	1597	1785	3585	0	0	1034	1557	0	1585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		4				163		98	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.3			622.7			123.3			883.5	
Travel Time (s)		14.1			44.8			8.9			63.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	62	1224	192	126	1732	173	38	202	27	23
Future Volume (vph)	62	1224	192	126	1732	173	38	202	27	23
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases	7	4		3	8	5	2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	9.0	44.0	44.0	44.0	44.0
Total Split (s)	11.0	66.0	66.0	21.0	76.0	9.0	53.0	53.0	44.0	44.0
Total Split (%)	7.9%	47.1%	47.1%	15.0%	54.3%	6.4%	37.9%	37.9%	31.4%	31.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	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		6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	10.2	73.3	73.3	15.0	78.1		35.7	35.7		35.7
Actuated g/C Ratio	0.07	0.52	0.52	0.11	0.56		0.26	0.26		0.26
v/c Ratio	0.51	0.65	0.21	0.66	0.90		0.80	0.39		0.40
Control Delay	82.2	14.2	2.2	64.1	34.9		69.6	11.0		20.8
Queue Delay	0.0	0.1	0.0	0.0	0.2		0.0	0.0		0.0
Total Delay	82.2	14.3	2.2	64.1	35.1		69.6	11.0		20.8
LOS	F	B	A	E	D		E	B		C
Approach Delay		15.6			37.0		40.9			20.8
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: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 28.8	Intersection LOS: C	
Intersection Capacity Utilization 105.2%	ICU Level of Service G	
Analysis Period (min) 15		

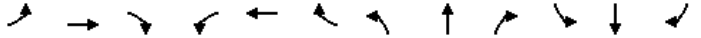
Splits and Phases: 9: Lakeshore Rd E & Haig Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	62	1224	192	126	1803	211	202	189
v/c Ratio	0.51	0.65	0.21	0.66	0.90	0.80	0.39	0.40
Control Delay	82.2	14.2	2.2	64.1	34.9	69.6	11.0	20.8
Queue Delay	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	82.2	14.3	2.2	64.1	35.1	69.6	11.0	20.8
Queue Length 50th (m)	19.2	36.5	2.2	36.5	225.6	57.6	8.7	21.0
Queue Length 95th (m)	m#29.7	52.8	m6.4	m39.5	m#306.5	81.4	27.3	39.6
Internal Link Dist (m)		171.3			598.7	99.3		859.5
Turn Bay Length (m)	50.0		50.0	100.0				
Base Capacity (vph)	122	1873	910	210	2000	347	630	528
Starvation Cap Reductn	0	92	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	18	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.69	0.21	0.60	0.91	0.61	0.32	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	1224	192	126	1732	71	173	38	202	27	23	139
Future Volume (vph)	62	1224	192	126	1732	71	173	38	202	27	23	139
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		6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1684	3579	1597	1785	3585			1840	1557		1694	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.54	1.00		0.93	
Satd. Flow (perm)	1684	3579	1597	1785	3585			1035	1557		1584	
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)	62	1224	192	126	1732	71	173	38	202	27	23	139
RTOR Reduction (vph)	0	0	74	0	2	0	0	0	121	0	73	0
Lane Group Flow (vph)	62	1224	118	126	1801	0	0	211	81	0	116	0
Confl. Peds. (#/hr)	11					11	5		12	12		5
Heavy Vehicles (%)	6%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.2	72.3	72.3	14.0	77.1			34.7	34.7		34.7	
Effective Green, g (s)	10.2	73.3	73.3	15.0	78.1			35.7	35.7		35.7	
Actuated g/C Ratio	0.07	0.52	0.52	0.11	0.56			0.26	0.26		0.26	
Clearance Time (s)	6.0	6.0	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	3.0		3.0	
Lane Grp Cap (vph)	122	1873	836	191	1999			263	397		403	
v/s Ratio Prot	0.04	0.34		c0.07	c0.50							
v/s Ratio Perm			0.07					c0.20	0.05		0.07	
v/c Ratio	0.51	0.65	0.14	0.66	0.90			0.80	0.20		0.29	
Uniform Delay, d1	62.5	24.2	17.2	60.0	27.5			48.8	41.0		41.9	
Progression Factor	1.19	0.49	0.34	0.97	1.12			1.00	1.00		1.00	
Incremental Delay, d2	2.3	1.2	0.2	2.8	2.6			16.0	0.3		0.4	
Delay (s)	76.4	13.1	6.1	60.9	33.4			64.8	41.2		42.3	
Level of Service	E	B	A	E	C			E	D		D	
Approach Delay (s)		14.8			35.2			53.3			42.3	
Approach LOS		B			D			D			D	

Intersection Summary

HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

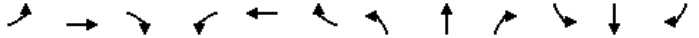
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	1	0		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.919					
Flt Protected	0.980					0.968
Satd. Flow (prot)	1659	0	1842	0	0	1783
Flt Permitted	0.980					0.968
Satd. Flow (perm)	1659	0	1842	0	0	1783
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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	32	48	19	0	112	56
Future Volume (vph)	32	48	19	0	112	56
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	48	19	0	112	56

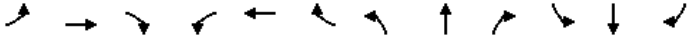
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	80	19	168
Volume Left (vph)	32	0	112
Volume Right (vph)	48	0	0
Hadj (s)	-0.25	0.03	0.17
Departure Headway (s)	4.1	4.3	4.3
Degree Utilization, x	0.09	0.02	0.20
Capacity (veh/h)	843	809	827
Control Delay (s)	7.5	7.4	8.3
Approach Delay (s)	7.5	7.4	8.3
Approach LOS	A	A	A

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
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					0.884			0.979			0.989	
Flt Protected		0.950			0.993						0.992	
Satd. Flow (prot)	0	1750	0	0	1617	0	0	1803	0	0	1807	0
Flt Permitted		0.950			0.993						0.992	
Satd. Flow (perm)	0	1750	0	0	1617	0	0	1803	0	0	1807	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	

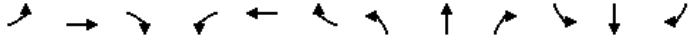
Intersection Summary	
Area Type:	Other



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	16	0	0	30	0	182	0	373	67	106	496	56
Future Volume (vph)	16	0	0	30	0	182	0	373	67	106	496	56
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)	16	0	0	30	0	182	0	373	67	106	496	56

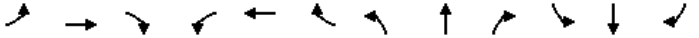
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	16	212	440	658
Volume Left (vph)	16	30	0	106
Volume Right (vph)	0	182	67	56
Hadj (s)	0.23	-0.45	-0.06	0.02
Departure Headway (s)	7.7	6.3	5.6	5.4
Degree Utilization, x	0.03	0.37	0.69	0.98
Capacity (veh/h)	409	549	629	661
Control Delay (s)	11.0	13.0	20.0	53.8
Approach Delay (s)	11.0	13.0	20.0	53.8
Approach LOS	B	B	C	F

Intersection Summary				
Delay		35.6		
Level of Service		E		
Intersection Capacity Utilization		81.2%	ICU Level of Service	D
Analysis Period (min)		15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.966			0.946			0.972			0.982	
Flt Protected		0.977			0.989			0.985			0.994	
Satd. Flow (prot)	0	1738	0	0	1723	0	0	1764	0	0	1798	0
Flt Permitted		0.977			0.989			0.985			0.994	
Satd. Flow (perm)	0	1738	0	0	1723	0	0	1764	0	0	1798	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



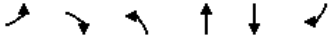
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	35	32	30	50	54	101	169	71	78	454	80
Future Volume (vph)	61	35	32	30	50	54	101	169	71	78	454	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	35	32	30	50	54	101	169	71	78	454	80

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	128	134	341	612
Volume Left (vph)	61	30	101	78
Volume Right (vph)	32	54	71	80
Hadj (s)	-0.02	-0.16	-0.03	-0.02
Departure Headway (s)	6.9	6.7	5.8	5.4
Degree Utilization, x	0.24	0.25	0.55	0.92
Capacity (veh/h)	486	496	599	612
Control Delay (s)	12.1	11.9	15.6	40.5
Approach Delay (s)	12.1	11.9	15.6	40.5
Approach LOS	B	B	C	E

Intersection Summary				
Delay		27.3		
Level of Service		D		
Intersection Capacity Utilization		56.9%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.975				0.985	
Flt Protected	0.961			0.988		
Satd. Flow (prot)	1726	0	0	1820	1814	0
Flt Permitted	0.961			0.988		
Satd. Flow (perm)	1726	0	0	1820	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	129	30	82	257	601	75
Future Volume (vph)	129	30	82	257	601	75
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	129	30	82	257	601	75

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	159	339	676
Volume Left (vph)	129	82	0
Volume Right (vph)	30	0	75
Hadj (s)	0.08	0.08	-0.03
Departure Headway (s)	6.4	5.4	4.9
Degree Utilization, x	0.28	0.51	0.92
Capacity (veh/h)	536	649	728
Control Delay (s)	12.0	13.9	38.5
Approach Delay (s)	12.0	13.9	38.5
Approach LOS	B	B	E

Intersection Summary			
Delay	27.8		
Level of Service	D		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

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						0.974
Satd. Flow (prot)	1593	0	1842	0	0	1794
Flt Permitted						0.974
Satd. Flow (perm)	1593	0	1842	0	0	1794
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

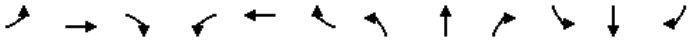
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	15	4	0	48	41
Future Volume (vph)	0	15	4	0	48	41
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	15	4	0	48	41

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	15	4	89
Volume Left (vph)	0	0	48
Volume Right (vph)	15	0	0
Hadj (s)	-0.57	0.03	0.14
Departure Headway (s)	3.5	4.0	4.1
Degree Utilization, x	0.01	0.00	0.10
Capacity (veh/h)	987	870	876
Control Delay (s)	6.6	7.1	7.5
Approach Delay (s)	6.6	7.1	7.5
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1		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		0.905			0.886			0.970			0.998	
Flt Protected		0.986			0.992						0.995	
Satd. Flow (prot)	0	1644	0	0	1619	0	1842	1787	0	0	1829	0
Flt Permitted		0.986			0.992						0.995	
Satd. Flow (perm)	0	1644	0	0	1619	0	1842	1787	0	0	1829	0
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



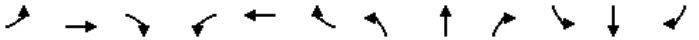
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	0	12	30	0	164	0	270	67	56	463	7
Future Volume (vph)	5	0	12	30	0	164	0	270	67	56	463	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	12	30	0	164	0	270	67	56	463	7

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	17	194	0	337	526
Volume Left (vph)	5	30	0	0	56
Volume Right (vph)	12	164	0	67	7
Hadj (s)	-0.33	-0.44	0.00	-0.11	0.05
Departure Headway (s)	6.3	5.7	5.7	5.6	5.2
Degree Utilization, x	0.03	0.31	0.00	0.53	0.76
Capacity (veh/h)	481	570	612	615	678
Control Delay (s)	9.5	11.3	7.5	13.5	22.8
Approach Delay (s)	9.5	11.3	13.5		22.8
Approach LOS	A	B	B		C

Intersection Summary				
Delay	17.6			
Level of Service	C			
Intersection Capacity Utilization	69.5%	ICU Level of Service		C
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		0.961			0.955			0.978			0.985	
Flt Protected		0.981			0.988			0.988			0.995	
Satd. Flow (prot)	0	1737	0	0	1738	0	0	1780	0	0	1805	0
Flt Permitted		0.981			0.988			0.988			0.995	
Satd. Flow (perm)	0	1737	0	0	1738	0	0	1780	0	0	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



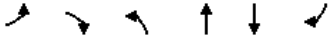
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	44	35	32	30	50	40	101	257	71	49	409	58
Future Volume (vph)	44	35	32	30	50	40	101	257	71	49	409	58
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	35	32	30	50	40	101	257	71	49	409	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	111	120	429	516
Volume Left (vph)	44	30	101	49
Volume Right (vph)	32	40	71	58
Hadj (s)	-0.06	-0.12	-0.02	-0.01
Departure Headway (s)	6.6	6.6	5.5	5.3
Degree Utilization, x	0.21	0.22	0.65	0.77
Capacity (veh/h)	462	476	630	646
Control Delay (s)	11.4	11.4	18.1	23.6
Approach Delay (s)	11.4	11.4	18.1	23.6
Approach LOS	B	B	C	C

Intersection Summary				
Delay		19.2		
Level of Service		C		
Intersection Capacity Utilization		62.0%	ICU Level of Service	B
Analysis Period (min)		15		

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	0.972				0.990	
Flt Protected	0.962			0.987		
Satd. Flow (prot)	1722	0	0	1818	1824	0
Flt Permitted	0.962			0.987		
Satd. Flow (perm)	1722	0	0	1818	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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	115	30	82	224	583	48
Future Volume (vph)	115	30	82	224	583	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	115	30	82	224	583	48

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	145	306	631
Volume Left (vph)	115	82	0
Volume Right (vph)	30	0	48
Hadj (s)	0.07	0.09	-0.01
Departure Headway (s)	6.2	5.3	4.8
Degree Utilization, x	0.25	0.45	0.84
Capacity (veh/h)	543	659	742
Control Delay (s)	11.3	12.4	27.5
Approach Delay (s)	11.3	12.4	27.5
Approach LOS	B	B	D

Intersection Summary			
Delay	21.1		
Level of Service	C		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		