70 Mississauga Road South & 181 Lakeshore Road West

Urban Transportation Considerations For OPA, ZBA and Draft Plan of Subdivision

City of Mississauga

Prepared For: Port Credit West Village Partners

Revised March 2018

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1.0 INTRODUCTION

BA Group is retained by the Port Credit West Village Partnership ("the WVP") to provide urban transportation advisory services in relation to the property located at 70 Mississauga Road South and 181 Lakeshore Road in the City of Mississauga. The site is a 72-acre plot of land on the Port Credit waterfront, generally bounded by Mississauga Road to the east, an existing residential neighbourhood to the west, Lakeshore Road West to the north, and a strip of waterfront lands to the south that are not part of this application, as illustrated in **Figure 1**.

The site is currently vacant but was previously used as an oil refinery and storage facility that was decommissioned in 1990. The existing areas located to the east, west and north of the property are primarily residential, with some commercial land uses fronting onto Lakeshore Road West.

The lands are zoned as a "D" zone (Development) within the City of Mississauga's Zoning By-law 225-2007. According to the Zoning By-law, the D zone recognizes vacant lands not yet developed and/or permits the use that legally existed on the date of passing of this By-law, until such time as the lands are rezoned in conformity with Mississauga Official Plan. The WVP is seeking an Official Plan Amendment (OPA) to permit development of a mixed-use community on the subject lands, as well as submitting concurrent applications for a Zoning By-law Amendment (ZBA) and a Draft Plan of Subdivision.

1.1 REPORT UPDATE

An initial OPA and ZBA application (OZ/OPA 17 12) as well as a Draft Plan of Subdivision for the site was submitted in August of 2017. The submission included a transportation study prepared by BA Group (*70 Mississauga Road South & 181 Lakeshore Road West Urban Transportation Considerations for OPA, ZBA and Draft Plan of Subdivision*, August 25, 2017). City of Mississauga Transportation and Works staff reviewed this study and provided comments in December of 2017.

This revised report has been prepared to:

- Provide an update on the development programme and arrangements of transportation-related site elements since the August 2017 submission; and
- respond directly to the December 2017 staff comments regarding the submitted transportation study and transportation aspects of the development plan.

1.2 REVISED MASTER PLAN

The revised site Master Plan, now envisages approximately 2,969 residential units in the form of apartment condominiums and townhouses, along with approximately 22,412 m^2 of commercial space (including community centre/institutional uses), approximately 14,525 m^2 of retail space and a significant portion of park land and open space. Compared to the previously submitted Master Plan, the revised plan represents an increase of 469 residential units, a decrease of 333 m^2 of commercial space and an increase of 705 m^2 of retail space.

Additionally, the configuration and alignment of the internal public and private road network has been revised in response to staff comments and through the progression and refinement of the site design.

1.3 SCOPE OF WORK

In consultation with the City of Mississauga's Transportation and Works department, the following scope has been adopted for this transportation study. Note this scope is largely identical to that of the original study, with the addition of the Lakeshore Road West / Mississauga Road intersection to the traffic analysis study area.

- A description of the existing transportation context of the site including vehicular, transit, cycling and pedestrian accessibility;
- a description of the concept Master Plan including proposed uses and densities, as well as a review of the proposed street and development block layout;
- a review of relevant planning documentation from a transportation infrastructure planning perspective;
- a review of the concept development plan from three frames of reference – the site, the local area, and the regional level;
- a review of the proposed vehicle parking, bicycle parking and loading facility provisions for the lands;
- trip generation forecasts for the development plan as proposed, including pedestrian, cyclist, transit and personal vehicle trips;
- a Transportation Demand Management (TDM) strategy for the site, which identifies potential measures to implemented as part of the development plan aimed at reducing auto-driver trips; and
- a review of weekday peak hour traffic operations (using the Synchro 9.1 software suite) under existing and future traffic conditions (at the 2027 horizon year) at the following intersections:
    - Lakeshore Road West / Loblaws/Retail Plaza Entrance (signalized);
    - Mississauga Road South / Port Street West (unsignalized);
    - Mississauga Road South / Lake Street (unsignalized);
    - Lakeshore Road West / Lake Street (future unsignalized intersection);
    - Lakeshore Road West / Site driveway west of Wesley Avenue (future unsignalized intersection); and
    - All internal public road intersections (unsignalized).

It is noted that this revised report is the first of two transportation studies completed in support of the OPA, ZBA and Draft Plan of Subdivision applications. The analyses conducted herein focus on operations at the proposed connections to the adjacent municipal streets (i.e. Lakeshore Road West and Mississauga Road South) and the proposed internal future public roads and intersections. This study combines the requirements for a Transportation Impact Study (TIS), Transportation Demand Management Strategy and a Parking Utilization Study.

A second transportation study that addresses transportation impacts on the broader local area network is currently underway and will be completed in coordination with the ongoing Lakeshore Connecting Communities study being undertaken by the City of Mississauga (see Section 6.0). The phased submission was discussed with City Staff as the best method to work in coordination with the Lakeshore Connecting Communities study. Anticipated completion date for this 'Phase 2' transportation study is late April of 2018.

In order to satisfy the established OPA, ZBA and Draft Plan of Subdivision transportation requirements of the City's Transportation and Works department, the forthcoming Phase 2 transportation study will include the following elements:

- VISSIM (microsimulation) analyses;
- analyses of the 2027 and 2031 planning horizon years;
- analyses of the broader local road network including:
    - all significant public road intersections on Lakeshore Road West between Lorne Park Road and Hurontario Street;
    - all significant public road intersections on Mississauga Road between Front Street North and Lake Street; and
    - all public road intersections on Port Street West, Bay Street, Lake Street, Peter Street, John Street and Front Street South;
- consideration for increased bus transit frequency on Lakeshore Road west (5-minute headways);
- estimations of potential Heritage District (east of the site) traffic infiltration quantities;
- recommendations regarding the need for additional area transportation network improvements based on the analyses performed.

2.0 RESPONSE TO CITY OF MISSISSAUGA COMMENTS

City of Mississauga Transportation and Works staff provided comments regarding the originally submitted OPA/ZBA and Draft Plan of Subdivision transportation study prepared by BA Group (*70 Mississauga Road South & 181 Lakeshore Road West Urban Transportation Considerations for OPA, ZBA and Draft Plan of Subdivision*, August 25, 2017) in December of 2017. A copy of these comments have been provided in **Appendix A**.

The following is a summary of the comments provided (action items) and how they have been addressed in this revised study.

Traffic Review (PPP) Comment #2:
The plans shall be revised to identify:
- each entrance: location, width dimension at the lot line and street line, and radii curbing dimensions;
- the required land dedications/ easements as detailed in condition No.: 7;
- road cross-sections (typical);
- geometric details, pavement markings, and signage for all proposed and existing abutting/ opposing roads;

The applicant is to also submit a Municipal Parking Plan (eg.: on-street/ off-street facilities) for review of public parking. Details and quantities are to be in accordance with the design set out through the Transportation Study.

Response:
The revised functional road plan included in **Appendix B** illustrates in concept the proposed public and private road network including new connections to Lakeshore Road West and Mississauga Road South. This plan illustrates the required land dedications (i.e., daylighting triangles and land dedications required for road widenings on Mississauga Road South) as well as preliminary proposed pavement markings. The functional road plan also illustrates proposed on-street parking locations. Off-street parking facilities will be designed and plans submitted as part of future Site Plan applications related to individual development blocks within the Master Plan area. Parking quantities will be provided in accordance with the parking supply rates established as part of the Zoning By-law for the site.

Traffic Review (PPP) Comment #3:
This department is in receipt of an Urban Transportation Conditions Study (dated August 25, 2017), prepared by BA Consulting Group Ltd. Please note, additional comments regarding the analysis have been included by Transportation Planning under their role. Upon review, this section is pleased to provide the following comments, please review and revise accordingly:

While having regard for the evolving cross-sections, the study shall:

- assess proximity of site accesses to:
a) adjacent intersections by relating their proximity using T.A.C. corner clearance methodology;
b) opposing/ adjacent accesses, ensuring avoidance of conflicting left turns and maintaining appropriate separation;
c) laybys, ensuring appropriate clearance.

- review public on-street parking with respect to corner clearance and proximity to adjacent accesses.
- identify transportation demand management (TDM) measures to assist the development achieve transportation mode share objectives which shall be identified within condition No.: 8. The applicant shall include the following:

a) provide secure bicycle parking within close proximity to building entrances.
Distribution should be provided appropriately to service each of the following uses:
i) Residential: minimum 0.70 Long Term, and 0.08 Short Term spaces (per unit);
ii) Retail: minimum 0.10 Long Term, 0.25 Short Term spaces (per 100sq.m. GFA);
iii) Office: minimum 0.15 Long Term, 0.10 Short Term spaces (per 100sq.m. GFA);
iv) School (college/ university): minimum 0.60 Long Term, 0.18 Short Term spaces (per 100sq.m. GFA).

b) further measures are to be investigated and proposed.

Response:
As illustrated in the functional road plan included in **Appendix B**, all public and private road intersections have been designed with adequate spacing relative to each other. On-street parking laybys have been spaced appropriately from adjacent intersections and vehicular access points, as per the Highway Traffic Act Section ONT Regulation 604-Parking No. 4(1)(e & f), which states that on-street parking spaces should be separated from adjacent unsignalized intersections by minimum distance of 9 metres.

Bicycle parking will provided in accordance with the abovementioned supply rates, as discussed in Section 8.3.2 of this report.

Traffic Review (PPP) Comment #4:
A functional review of servicing and truck operations on the street network will be required:
The review should have regard for:
- evolving cross-sections;
- intersection: geometrics, lane configurations, line painting, signalization, and signage;
- pedestrian and vehicular sight line visibility, and sight triangle requirements associated with each proposed intersection;
- satisfactory fire truck turning movements using detailed turning movement diagrams for the public roadways, and establishing intersection curb radii and treatment(s);

The traffic consultant should provide a terms of reference to this Section for review and receive confirmation prior to commencing the assessment.

Response:
Waste collection vehicle turning movement diagrams have been included for all public street intersections in the functional road plan included in **Appendix B**. Vehicle turning movement diagrams for private road and driveway entrances will be submitted as part of future Site Plan applications related to individual development blocks within the Master Plan area.

The proposed fire route for the Master Plan area is also identified on this plan.

Appropriate daylighting triangles and/or corner radii have been provided at all proposed intersections, as illustrated in the functional road plan.

Traffic Review (PPP) Comment #6:
The road network, including tenure and block sizes are to be modified. A finer grained public street system with smaller well-connected blocks is needed throughout the plan. Connections opposite Benson Avenue and Bay Street are required. Public streets are to separate the Campus from the Waterfront Park.

Roadway classification, cross sections, on-street parking, and the active transportation network identified within the TIS remain under review in conjunction with staff from Development and Design, Community Services, Municipal Parking, Transportation Planning, and Active Transportation. It is premature to identify the roadway width and the associated cross-section at this time. Consultation with staff and the applicant will include (but not be limited to) discussion on sidewalk, bike lanes, streetscape (utilities, environmenal capping), parking, higher order transit, servicing, turning requirements, lane widths, and intersection design.

The applicant is to gratuitously dedicate to the City of Mississauga:
- a right of way of approximately TBD meters towards the creation of Street "A";
- a right of way of approximately TBD meters towards the creation of Street "B". Street "B" is to continue South of Street A, turn East and intersect with an extended Mississauga Road South;
- a right of way of approximately TBD meters towards the creation of Street "C". Street "C" is to continue West of Street A, and intersect with the "Benson Avenue extension";
- a right of way of approximately TBD meters towards the creation of Street "D". Street "D" is to continue North of Street C and intersect with Lakeshore Road West;
- a right of way of approximately TBD meters towards the creation of a connection, from Bay Street, westerly and intersecting with the "Benson Avenue extension";
- a right of way of approximately TBD meters towards the creation of a connection, from Benson Avenue, southerly, turning East and intersecting with Street "A";
- sight triangles/ radius roundings at all intersections with new roads;
- a road allowance widening towards the ultimate 20.0m - 26.0m meter right-of-way as identified in the Official Plan, across the site frontage of Mississauga Road South (between Lakeshore Road West and the closed Front Street road allowance);
- a 10.0 m by 10.0 m sight triangle on the South - West corner of Lakeshore Road West and Mississauga Road South.
- property requirements to facilitate sight lines and intersection improvements identified as part of the T.I.S.
- 0.3 meter reserves along the frontages of/ outside of the new widened limits of (Lakeshore Road West and Mississauga Road South, including the associated sight triangles.

- the applicant is to confirm whether additional lands will be necessary to achieve the 26.0m meter right-of-way as identified in the Official Plan, across the site frontage of Lakeshore Road West.

The precise limits of the required land dedications and easements are to be determined to the satisfaction of the City's Ontario Land Surveyor.

This condition will be cleared upon receipt of confirmation from Legal Services identifying that the transfer has taken place and associated fees have been paid.

Response:
The revised Master Plan now includes a public road connection opposite Benson Avenue at a planned future traffic signal. A vehicular connection opposite the existing Bay Street has not been provided, as this connection may facilitate unnecessary traffic infiltration through the Historic District neighbourhood to the east of the site – a major concern of area residents. However, a pedestrian and cyclist connection that bisects the site in an east-west direction is provided across from Bay Street, connecting to Mississauga Road at the proposed public park opposite Bay Street.

Proposed right-of-way widths for all new public roads are illustrated in the functional road plan included in **Appendix B** and are appropriate in accommodating the road cross-section designs discussed in Section 7.1.1 of this report.

A 10 m x 10 m sight triangle is now provided at the southwest corner of the Lakeshore Road West / Mississauga Road intersection, as well as at the southeast and southwest corners of the proposed Lakeshore Road West / Street 'B' intersection and the southeast corner of the Lakeshore Road West / Street 'E' intersection.

The functional road plan illustrates these sight triangles as well as the land dedications required to achieve the intersection improvements at Lakeshore Road West / Mississauga Road discussed in Section 11.4 of this report.

Based on a review of existing topographic survey data, no land dedications are required along Mississauga Road South to achieve a general 20-metre right-of-way width and along Lakeshore Road West to achieve a general 26-metre right-of-way, as illustrated in the functional road plan.

The 0.3-metre reserve along Mississauga Road South and Lakeshore Road West will be reflected in the site plans for development blocks within the Master Plan area along these frontages.

Traffic Review (PPP) Comment #8:
The Urban Transportation Conditions Study (dated August 25, 2017), prepared by BA Consulting Group Ltd, identifies several TDM measures to be implemented as part of the proposed development to reduce single occupancy vehicle (SOV) trips to the site.

The applicant shall enter into an appropriate agreement containing a schedule to incorporate these conditions under a separate heading "Additional Terms, Provisions, Conditions and Notes":

"The owner agrees to incorporate the following TDM measures as part of their proposed development:
a. The owner agrees to provide secure bicycle parking within close proximity to building entrances. Distribution should be provided appropriately to service each of the following uses:
i) Residential: minimum 0.70 Long Term, and 0.08 Short Term spaces (per unit);
ii) Retail: minimum 0.10 Long Term, 0.25 Short Term spaces (per 100sq.m. GFA);
iii) Office: minimum 0.15 Long Term, 0.10 Short Term spaces (per 100sq.m. GFA);
iv) School (college/ university): minimum 0.60 Long Term, 0.18 Short Term spaces (per 100sq.m. GFA)."

Further measures are to be investigated and proposed through the Transportation Study identified in condition No.: 3.

Response:
Bicycle parking will provided in accordance with the abovementioned supply rates, as discussed in Section 8.3.2 of this report.

Transportation Planning Review Comment #1:
A transportation master plan study is currently being undertaken along Lakeshore Road / Royal Windsor Drive by the City of Mississauga (called Lakeshore Connecting Communities). The Lakeshore Connecting Communities study will form the blueprint for addressing transportation and mobility needs of those living and working in the Lakeshore communities over the next 25 years. The study will guide the planning and implementation of the transportation network in the Lakeshore corridor, including decisions about optimizing roadways, improving transit, and enhancing cycling and walking connections. Preliminary transit recommendations for the corridor are available and can be found in the latest Public Information Centre display boards on the study website (www.connectlakeshore.ca). Any work undertaken on the 70 Mississauga Road South site should be coordinated with work that has been completed to date for the Lakeshore Connecting Communities study. The proposal should be able to accommodate the integration of future higher order transit into the site. This could take the form of a turnaround loop through the on-site public roads and provisions for a rapid transit stop.

Response:
Noted. The scope of this study and the forthcoming VISSIM micro-simulation study has been developed in consultation with the Lakeshore Connecting Communities team at the City of Mississauga's Transportation and Works section.

The West Village functional road plan (see **Appendix B**) has been developed to accommodate a future high-order transit turnaround loop running along Street 'B' and Street 'E'. This turnaround facility has been designed in accordance with the guidelines contained within the Eglinton Crosstown Light Rail Transit Environmental Project Report. A centre platform dimension of 3.0 metres in width and 35 metres in length has been assumed.

It is noted that the preferred alignment of higher-order transit through the site, or whether higher-order transit facilities will circulate through the site at all, is subject to the findings of future studies, including the Lakeshore Connecting Communities study. As such, this transit alignment is purely conceptual in nature and is subject to change or removal.

Transportation Planning Review Comment #2:
Comments on 70 Mississauga Rd South & 181 Lakeshore Rd West Transportation Consideration Study:

-Throughout the report there are inconsistences of how the street network is being described and labelled. Some figures/ text use the terminology of 'Street A' while others indicate 'Avenue A' or Lake Street. This creates confusion in the report. Several of the comments below are related to this general comment.

Response:
This error has been corrected within this revised report.

-Page 7, Table 1, does the modal split for 'Walk' also include cycling trips?

Response:
Cycling trips have not been included in the existing travel mode split table because they were found to be less than 1% in both the weekday morning and afternoon analysis periods.

-Page 16, Table 2, why does the table show modal shares for the section of Hurontario St. between Hwy 407 and Hwy 401?

Response:
This was an error. The correct relevant mode share data and forecasts for the section of Hurontario Street between the QEW and Port Credit GO Station have now been presented in this revised report.

-Page 16, Table 2, it should be made clear in the text that the modal shares shown in the table represent on-road modal splits not modal splits for the developments along the corridor.

Response:
This has been noted in the revised report.

-Page 19, 3.3.2 Transit Access Principles
"This will include provisions for the future introduction of a bus-based transit route into the site on a loop created by the proposed municipal roads, as well as planning for a transit-supportive urban form"
Change to "higher order bus-based or streetcar-based rapid transit route into the site on a loop created by the proposed municipal roads and provision for a higher-order transit stop location on-site"

Response:
This change has been made in the revised report.

-Page 26, Section 6.1.1.1 should any of the streets in the development site be classified as major collectors? The City's current OP classifies roads such as Confederation Parkway, Mississauga Road, Creditview Road, etc. as major collectors, will the internal road network have similar characteristics to these type of roadways? Will they not be playing more of a minor collector/ local road function?

Response:
Street 'A' (between Street 'B' and Mississauga Road South), Street 'B', Street 'C', Street 'D' and Street 'E' have now been classified as Minor Collector Roads as shown in the revised **Figure 6**. Street 'A' (between Street 'B' and Street 'F') and Street 'F' are classified as Local Streets. All other roads shown within Master Plan are private Condominium Roads. Please refer to Section 7.1.1 of this revised report for a description of the proposed internal road network.

-Page 26, Section 6.1.1.1, this section indicates that Avenue A is a major collector while Figure 7 shows it as a local street. Street B in the figure is shown as a collector.
-Page 27, Figure 7, while the legend indicates that there are both major and minor collectors illustrated on the figure it is not possible to tell which streets are classified as either major or minor as the same (or very close) blue colour is used.
-Page 29, Section 6.1.1.3, it is not clear where the segments highlighted in this section exist.

** Which segment represents Lake St. between Avenue A and Lakeshore Road West?*

Response:
See response above and refer to Section 7.1.1 of this revised report for a description of the proposed internal road network. **Figure 6** has been updated accordingly.

Figure 6 shows Lake Street ending at Mississauga Road.
** Indicates Port Street West west of Avenue A, Figure 6 does not show Port Street extending west of Avenue A.*
** Indicates Avenue B will be classified as a local street, Figure 7 shows it classified as either a major or minor collector.*

Response:
See response above and refer to Section 7.1.1 of this revised report for a description of the proposed internal road network. **Figure 5** and **Figure 6** has been updated accordingly.

-Page 33, Section 6.1.2, bullet 'b' indicates that Avenue B will have on-street cycle lanes, Page 34, Figure 13 does not show any cycling facilities on this roadway.

Response:
The proposed internal cycling network has been updated as part of the revised site plan, as illustrated in **Figure 13** and discussed in Section 7.1.2 of this revised report.

-Page 33, Section 6.1.3, bullet "b", indicates that a pedestrian plaza is located at the end of Avenue A, does this not exist at the end of Avenue/ Street B?

Response:
The proposed internal pedestrian network has been updated as part of the revised site plan, as illustrated in **Figure 14** and discussed in Section 7.1.3 of this revised report.

- Page 34, Figure 13, Should this be described as Figure 12 instead of Figure 13?

Response:
This error has been corrected within this revised report.

- Page 34, Figure 13, the figure shows a planned on-road shared use trail for Lakeshore Road while in section 6.1.2 it indicates that Lakeshore Road has been identified as a Special Study area in the Draft Cycling Master Plan and is subject to the findings of the Lakeshore Connecting Communities Study. As such Figure 13 should indicate the same.

Response:
This error has been corrected within this revised report.

-Page 37, Figure 14, shows planned LRT Route extending from Hurontario Street down to and along Lakeshore Road East. Higher order transit service along Lakeshore Road has not yet been determined and as such this figure should not show this.

Response:
This has been corrected in the updated **Figure 15**.

-Page 41, Table 3, how were the selected trip rates determined for the residential uses?

Response:
The selected trip rate for the apartment units was taken as the average of the trip generation data collected at the Legion Road Condominiums, trip generation data contained in the ITE Trip Generation Manual, and the rates contained in the One Port Street transportation study.

The selected trip rate for the townhouse units was based on the Manitoba Street Condominiums and Townhouses trip generation surveys. The Port Credit townhomes survey data was included in this table for comparison but not directly factored into the selected rate, as the weekday morning directional split did not seem consistent with typical residential in/out distributions and the observed weekday afternoon trip generation rates were determined to be unusually high compared to other data sources.

-Page 41, Table 3, how is the existing modal split applied in the generation of trips, is it a reduction of the selected auto trip generation rates or is it to convert the selected auto trip generation rates into total person trips?

Response:
Auto driver trip generation was calculated using the selected trip generation rates. The existing travel mode split data was used to estimate trips for other travel modes based on the auto driver trip estimates.

-Page 41, Table 3, are the modal splits shown in the table calculated for the same zones as was presented in Table 1 (page 7)? If yes why are the numbers different?

Response:
The mode splits shown in **Table 3** were based on a 2011 TTS trip data for 2006 TTS Zone 3641 only – the zone in which the site is located. This is why the mode splits are slightly different from those presented in **Table 1**, which reflect the larger Port Credit area.

-Page 42, Table 4, How are the trips rates applied to derive the auto driver trips? Example Table 4 indicates that the 2-way trip rate in the am peak hour is 1.61, taking the 13,627m^2 and multiplying it by that trip rate we derive an auto driver demand of 219 while the table shows 236?

Response:
The rates shown in the table are incorrectly labelled as per 100 m^2 GFA, when they are actually per 1,000 ft^2 GFA (or per 92.91 m^2 GFA). This has been corrected in this revised report.

-Page 44, Table 6, Note 2, can further explanation be provided on why the trip rates were reduced by a certain percentage to account for the size difference between the proxy site and the proposed amount of retail

space. Would this difference not already be captured in the calculation of the trip rates from the proxy site, i.e. less trips generated for a smaller size development?

Response:
Retail trip generation rates based on floor area are known to decrease as floor area increases – i.e., larger retail centres generate less vehicular traffic per unit of floor area than smaller ones. This is apparent in the ITE Trip Generation Manual data set for Shopping Centres (Land Use Code 820), which demonstrates this trend. It is for this reason that the Loblaws retail plaza proxy site trip generation rates were decreased before being directly applied in calculating the selected retail trip generation rate for the site.

- Page 45, 6.2.2.5 Total Site Trip Generation Forecasts - second last paragraph on Page 52 'a sensitivity analysis was performed that considered a 5% mode shift from driver to transit. The 5% assumption was based on direction from City transportation staff, and is not intended to reflect a mode shift that may occur with introduction of rapid transit.' The 5% mode shift assumption was intended to reflect the introduction of higher-order transit to the site.

Response:
Noted. Although we believe the introduction of higher-order transit into the site would result in a mode split shift of more than 5%, considering the site currently does not have access to frequent transit service, this sensitivity analysis was performed at the request of City of Mississauga staff to represent an increased transit use scenario.

-Page 68, Section 10.1, what is the difference between the first two bullet points, i.e. Lakeshore Road @ Loblaws Plaza Access/ New Avenue A and Lakeshore Road @ New Lake Street, figures in previous sections showed Avenue B connecting at the Loblaws entrance.

Response:
The proposed internal public and private road network has been updated since the previously submitted transportation report. Street alignment and naming have also been updated and are consistent throughout this revised report. The revised traffic analysis study area is discussed in Section 11.1 and illustrated in **Figure 24**.

-Starting on Page 70, the figures showing traffic volumes for the different scenarios are labelled different as compared to figures in previous sections of the report. For example Figure 6 shows a Street D while these figures do not show a Street D.

Response:
All traffic figures have been updated in this revised report to be consistent with the street names illustrated in the Master Plan (**Figure 5**) and the functional road plan included in **Appendix B**.

-Page 74, Table 21, according to the trip distribution percentages there should be approximately 144 vehicles inbound east on Lakeshore Road (15%x124 + 10%x201 + 30%x149 + 30%x201), while Figure 18 shows that there are 155 vehicles eastbound on Lakeshore Road, why is there a difference?

Response:
A spreadsheet error was discovered through the process of updating the traffic analysis to reflect the revised site development statistics. This has now been corrected and trip assignments are consistent with the reported site traffic directional distribution in this revised study.

-Page 75, is it possible to provide a figure which highlights the assumed access points for the developments within the site. At this point looking at Figure 18 there seem to be trips removed from the network, for example 48 vehicles in the am peak hour and eastbound direction turn right on Lakeshore Road @ Lake Street while the next downstream intersection on Lake Street shows only 26 vehicles (assuming this difference exists because of the assumptions made in regards to development access points).

Response:
The assumed access points are now shown in **Figure 20** to **Figure 24**.

-Page 80, Figure 22, does this figure highlight the assumed prohibited turning movements in the network? For example why at Avenue B/ Site Access A @ Port Street is an eastbound left turn not shown?

Response:
The revised Future Area Road Network Configuration figure (**Figure 24**) illustrates the network configuration assumed in the analysis, which has been updated since the previously submitted study. Proposed turning restrictions are now clearly identified.

-Page 83, Table 23, the titles for LOS and Avg. Delay (s) are flipped, i.e. under the LOS column the tables are showing the delay while under the Delay column they shown the LOS.

Response:
The revised Future Area Road Network Configuration figure (**Figure 24**) illustrates the network configuration assumed in the analysis, which has been updated since the previously submitted study. Proposed turning restrictions are now clearly identified.

Response:
This error has been corrected within this revised report.

- General Comment: The Transit Stop sizing and loop specifications should reflect the design criteria sent to Stuart Anderson of BA Group via email on October 6, 2017 (summarized below): Design should adhere to the TTC Design Manual Protect for platform dimension of 2.4m wide by 30m long

Response:
The West Village functional road plan (see **Appendix B**) has been developed to accommodate a future high-order transit turnaround loop running along Street ‘B’ and Street ‘E’. This turnaround facility has been designed in accordance with the guidelines contained within the Eglinton Crosstown Light Rail Transit

Environmental Project Report. A centre platform dimension of 3.0 metres in width and 35 metres in length has been assumed.

Transit Reviewer Comment #4:
Please be advised that there is an existing near side transit stop with concrete bus pad and shelter located along Lakeshore Road W at Mississauga Road. As well, MiWay has a near side stop on Lakeshore Road at the driveway into the plaza. The function of both these bus stops is to be maintained and remain in their current location. The applicant is to amend all appropriate drawings to clearly depict the location of these bus stops/pads and shelter and a note be added to the plan stating that the existing bus stops is to remain in its current location.

Response:
The West Village functional road plan (see **Appendix B**) notes that the existing bus transit stops on Lakeshore Road West, with the exception of the bus stops at Benson Avenue, will remain in their current location with the development of the site. The Benson Avenue bus stops are required to be relocated to accommodate the future planned traffic signal at the intersection.

City of Mississauga Parking Review Comments

Appropriateness Of Non-Residential Standards:

… the reduced parking standards in the Port Credit Parking Strategy reflect demand generated by smaller tenants that typically locate in main street environments. It was recommended that larger stores/developments have a higher parking rate. Larger stores may require greater parking to accommodate increases in the amount of time customers spend in the store, the need for vehicles to transport larger purchases, and larger trade areas that attract customers from further away and require the use of a vehicle to get to the store.

For example, the impact of store size is incorporated into the site specific zoning by-law (C4-62) for the commercial development at Lakeshore Road and Enola Avenue (i.e. Trinity Development). The by-law stipulates that the reduced retail standard of 3.0 spaces per 100 square metres applies only to units with a size less than or equal to 2,300 square metres. Larger retail units were required to provide 3.7 spaces per 100 square metres.

Depending on the size of the commercial units, the proposed parking standard may not be appropriate. As such, the consultant should discuss the sizes of proposed tenants and identify a parking standard for larger units.

Response:
At this time, it is proposed that parking for all non-residential uses be provided within the Master Plan lands at a minimum rate of 3.0 parking spaces per 100 m^2 of GFA. The majority of the retail density proposed is located within the mixed-use blocks fronting onto Lakeshore Road West. However, unit sizes and the nature of potential tenants have not yet been finalized.

Given that most of the retail floor area is located within the same blocks as a significant amount of commercial (office) floor (Blocks B and C), it is anticipated, though the proposed shared parking provisions discussed in

Section 8.3.1, that the some of the retail parking demand will be met by the commercial (office) parking supply, particularly during the weekend evening and weekend time periods, when parking demand associated with the office uses are low.

As such, no change to the proposed non-residential minimum parking supply requirements is made at this juncture.

In addition staff note, that the BA Study did not address parking requirements associated with potential YMCA or Evergreen Use. Staff request clarification on the proposed rates for these uses. It may be appropriate to only address parking standards for these uses through a variance once there is a better understanding of the proposed use (e.g. size, complementary uses that could potentially support shared parking, etc.).

Response:
Noted and agreed. It would be premature at this time to specify parking standards for the community-related uses, as the exact nature of these uses/tenants are not yet understood.

Appropriateness Of Residential Standards:

The BA study identified a variety of potential residential uses and made recommendations regarding parking standards; however, the study did not provide sufficient empirical data to support some of the residential rates (e g. observed parking demand for similar developments). Staff offer the following comments and suggestions:

Apartment or Multi-unit Condo Buildings: The proposed parking rate of 1.0 spaces per unit for apartment units or multi-condo buildings requires further empirical substantiation, and appear too low for all unit types. Staff note that:

The proposed rate of 1.0 spaces per residential unit is the same as the recommendation for apartments in the Port Credit Parking Study; however, this rate was identified for the Community Node and specifically for lands within 500 metres of the GO Station main entrance as well as the marina lands should the LRT be extended to Port Street. As the subject lands lack easy access to both GO train and the Hurontario LRT the Community Node is not directly comparable in terms of required parking. Future transit improvements may not provide service equivalent to the community node (e.g. express bus is not the same as LRT transit in a dedicated lane with GO Train service in easy walking distance).

In order to further the discussion the following Table 2 provides examples of parking reductions that have been approved throughout the City. The table identifies characteristics of the area that supported the new standard and identifies a potential parking rate by unit type, ranging from 1 space per unit for bachelor and one bedroom units, to 1.15 spaces for two bedroom units, and 1.3 spaces for 3 bedroom units.

The proposed visitor parking rate of 0.15 spaces per unit is appropriate as the City has accepted this rate for other high density residential developments with similar locational attributes.

Table 1:
Examples Of Residential Parking Reductions In Mississauga

Location	Bach.	One Bedroom	Two Bedroom	Three Bedroom	Comment
Current Zoning Standard (Condo)	1	1.25	1.4	1.75	
Eglinton Ave & Erin Mills	1.1	1.1	1.1	1.2	Site located along two transit priority corridors, wide range of shopping available and is within a Major Node but is not within 500 m of a Major Transit Station.
Eglinton Ave and Mavis Rd	na	1.13	1.27	na	Site located along Eglinton Ave (a transit priority corridor) with a supermarket anchored shopping plaza across the street.
Burnhamthorpe Rd. between Hurontario St. and Central Parkway Ave	na	1.15	1.15	na	Site is approximately 800 metres away from a shopping plaza and Hurontario LRT stop. Parking standard permits tandem spaces as long as both spaces are associated with the same unit.
Elm St. and Hurontario St.	0.8	0.9	1.0	1.3	Site benefits from access to Hurontario LRT
Ann St. & High St.	1.0	1.0	1.0	1.0	Site has access to both GO Station and future Hurontario LRT. Earlier proposal had 10 units where no parking was required.
Benson Ave and High St	na	1.0	1.0	na	Parking Standard reduction based on units being marketed to active adult seniors.
Dundas St and Erin Mills	na	1.0	1.3	1.75	Erin Mills is a priority transit corridor and Dundas St is a higher order transit corridor in the Official Plan. Surrounding development is not transit supportive. Higher order transit may be BRT in a dedicated reversible median.
Range	0.8 - 1.1	0.9 - 1.15	1.0 - 1.3	1.0 - 1.75	
Average	.97	1.04	1.12	1.31	
Potential Rate For Proposal	1.0		1.15	1.3	Potential rates ensure all units have access to at least one parking space and are reasonable given parking demand/requirements elsewhere in Mississauga.
Note: Standards represent what was approved by staff, however, developers sometimes ultimately decide to build additional parking spaces.					

Response:
In support of the proposed minimum residential parking supply rate of 1.0 spaces per apartment unit, BA Group has conducted a number of residential parking surveys at residential buildings located within a similar transportation context within the City of Toronto. The results of these surveys are discussed in Section 8.3.2.

Furthermore, the overprovision of parking puts transit, as well as other sustainable modes of transportation, at a market disadvantage. As such, in principle, parking should be provided in an amount that supports the use of transit that is reasonably achievable within the area. The proposed residential parking supply reduction can be seen as a Transportation Demand Management (TDM) measure meant to support the reduction of driver trips to and from the site.

Townhouse Development: The BA study indicates that townhouse units with exclusive garages should have a parking standard of 2.0 spaces per unit. Staff note that:

The proposed rate appears to be the same as what is required in the zoning by-law. Based on proposed reductions for other uses, staff request clarification why this is the case (is it the result of built form which has a second space underneath a deck?)

The site plan indicates that there are other types of townhouses proposed for the site (i.e. back to back stacked townhouses in Block M, townhouses with what appears to be underground parking in Block R, and townhouses that are part of a higher density development in Block P). What are the proposed parking standards for these uses and associated justification.

What is the proposed visitor parking standard for various types of proposed townhouses? Staff note that the townhouse component for the proposed development at Benson Street and High Street required .20 spaces for visitors to the townhouses.

Response:
The minimum parking requirement for townhouses with exclusive use garages was based on the contemplated built-form of these units, which would include a single-car garage and a space for an additional vehicle on a private driveway (or a similar sort of arrangement). While, at this stage of the site design, it has not yet been determined with full certainty that all of the proposed townhouse units will be provided with exclusive use garages, it is understood that the required risk management measures related to site remediation require that all building footprints be located above a parking level. The inclusion of this parking rate was provided to allow for flexibility in the built-form of townhouse units within the site from a by-law perspective. It is proposed that all townhouses without an exclusive use garage be supplied with parking at a minimum rate of 1.0 spaces per unit.

It is proposed that visitor parking for all residential units on the site be provided at a rate of 0.15 spaces per unit.

Other Residential Development: The BA study proposed parking reduction for other types of residential development. Staff note the following:

Retirement Home: A rate of 0.3 spaces per unit was proposed by BA, which is a reduction from the Zoning By-law rate of 0.5 spaces per unit. It should be noted that the proposed Continuing Care Retirement Community approved at the corner of Benson Avenue and High Street requires 0.4 parking spaces per unit for independent living units (.26 spaces for residents and .14 spaces for visitor/staff). A proposed retirement home at 2021 Cliff Drive was approved with a rate of 0.4 spaces per unit. Similarly a rate of 0.4 spaces per unit was approved for retirement dwellings at the corner of Hurontario Street and Park Street. Additional empirical research is required to support a further reduction below 0.4 parking spaces per unit.

Long Term Dwelling: A rate of 0.3 spaces per unit was proposed by BA, which is a reduction from the Zoning By-law require rate of 0.33 spaces per bed. Depending on how a dwelling unit is defined, a measurement based on beds may be a more accurate reflection of the number of people (some long term care facilities have one room with two beds or the room is subdivided into two separate living areas which share an entrance from a common hall as well as share a bathroom). Additional empirical information is required to support any reduction from the zoning standard.

Hospice: A rate of 0.3 spaces per unit was proposed for hospice space. This use is not defined in the City of Mississauga By-law and does not have an associated parking rate. Staff in the past accepted a proposed parking rate of 2.5 spaces per 100 square metres based on the number of beds and associated gross floor area, as well as the amount of gross floor area allocated for office and day programs (the hospice however

was never developed). It is recommended that should a hospice be proposed that the rate be determined once there is a better description of the space.

Affordable Housing: A rate of 0.4 resident spaces per unit was proposed for affordable housing. This use is not defined in the City of Mississauga By-law and does not have an associated parking rate. Staff initial investigations found that the parking rate can range significantly based upon the residents and type of units (e.g. people considered deep core need who have disabilities may only need a parking rate 0.24 spaces per unit, whereas affordable home ownership may require 1 space per unit). It is recommended that the appropriate parking rate be established once additional information is available.

Response:
The minimum parking requirements associated with the Retirement Home and Long-Term Dwelling uses were based on a recently approved rate of 0.30 space per unit at the 'Shores of Port Credit' seniors' residence project located at the corner of Benson Avenue and Lakeshore Road West. A minimum parking rate of 0.30 space per unit for both 'Assisted Living' and 'Independent Living' units was established for this development. Justification for this parking reduction was provided and accepted by City of Mississauga staff in a *Parking Assessment Letter* authored by BA Group dated November 16, 2017.

Regarding the Hospice and Affordable Housing uses, given that the nature of these uses that would be realized on the site is not fully understood at this early stage in the development process, minimum parking supply requirements for these uses have been excluded from the site specific by-law.

It is the intention of the developer to establish appropriate parking rates for hospice and affordable housing units, which balance the practical parking requirements for such facilities without over-providing on-site parking, through a future by-law variance when more details regarding the proposed uses and additional supporting empirical parking demand data can be provided.

Transportation Demand Management Measures / Other Issues

The BA study identified a number of transportation demand management measures that may be implemented. The Transportation Demand Management Coordinator should provide comments on the proposed TDM measures; however, staff offer the following comments

The potential parking standards proposed for the subject lands are generally considered minimums. The BA group should address the appropriateness of including maximum parking standards in order to help encourage transit usage and address congestion.

The BA study notes that "while the current local public transit service connecting the site to Port Credit GO station is adequate, greater incentive is likely required to successfully leverage that site's location to the station". In addition the study notes that the subject lands include Major Collector Roads with a right-of-way width sufficient to accommodate future transit service routes. In this regard it is suggested that the City and applicant discuss how to ensure a shuttle service and/or Miway service is brought into the site to reduce automobile reliance and support reduced parking standards.

The opportunity to monitor parking demand on the site as it develops should be discussed, as it may help confirm parking requirements on the site in subsequent phases of development.

Response:
At this time, maximum parking supply requirements are not being proposed. However, this could be included as a TDM measure for the site and is currently being contemplated.

A shuttle bus providing service to/from the Port Credit GO station is one of the proposed TDM measures for the site. The feasibility of such a service is currently being investigated. It is likely that some form of public transit, whether it be higher-order transit operating in a dedicated right-of-way or on-road MiWay bus service, will service the site via the proposed public road network at the build-out of the lands.

On-site parking demand/uptake will be monitored during the phased development of the site and is recommended as a proposed TDM measure.

3.0 SITE DESCRIPTION AND AREA TRANSPORTATION CONTEXT

3.1 EXISTING SITE CONDITIONS

The subject site is an approximately 72-acre plot of land located southwest of the intersection of Mississauga Road South and Lakeshore Road West in the City of Mississauga. It is bounded to the west by the rear of residential properties on Pine Avenue South, and to the east by Mississauga Road South. The northern site boundary is Lakeshore Road West, and the southern boundary is a strip of waterfront lands that are not part of this application.

The parcel of land considered for development in this report (herby referred to as “the site” or “the proposed development” or “the development parcel”) is an unoccupied brownfield site that is fenced to prevent access by the general public. Site remediation activities commenced in early 2018, with controlled site access to and from Mississauga Road South and Lakeshore Road West for vehicles engaged in site remediation work. The Waterfront Trail extends across the site’s southern frontage along the Lake Ontario shoreline.

The site location is illustrated in **Figure 1**.

3.2 CURRENT ZONING DESIGNATION

The lands are zoned as a “D” zone (Development) within the City of Mississauga’s Zoning By-law 225-2007. According to the Zoning By-law, the D zone recognizes vacant lands not yet developed and/or permits the use that legally existed on the date of passing of this By-law, until such time as the lands are rezoned in conformity with Mississauga Official Plan.

Site Location

BA Group

70 Mississauga Road South
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Figure 1

3.3 EXISTING AREA TRAVEL CHARACTERISTICS

To gain an understanding of existing travel mode characteristics for the area, the Transportation Tomorrow Survey (TTS) database was queried to derive the existing travel mode shares during the morning and afternoon peak periods, based on the most recent TTS data available (2011).

Table 1 sets out the existing modal split for the site area.

TABLE 1: EXISTING TRAVEL MODE SPLIT

Mode	Morning Outbound	Afternoon Inbound
GO Transit[1]	12%	12%
Mi-Way	2%	2%
Auto driver	66%	68%
Auto passenger	11%	9%
School bus	3%	2%
Walk	6%	7%
Total	**100%**	**100%**

Notes:
1. Either solely GO Transit or in combination with other transit providers i.e. Mi-Way & TTC.
2. Based on 2011 TTS data for home-based trips to/from TTS zones 3640-3642, 3646-3648, and 3877-3878 during the weekday peak travel periods.

The existing modal splits show that between 65% and 70% of all trips to and from these zones during the peak periods are via private car and between 15% and 17% are via public transit. Of the public transit trips, GO Transit rail represent approximately 12% of all trips during both peak periods.

3.4 EXISTING AREA STREET NETWORK

From a road connectivity perspective, Port Credit is served by four major corridors: Lakeshore Road which runs east-west through Port Credit, Mississauga Road which runs north from Lakeshore Road at the east boundary of the subject site, the Queen Elizabeth Way (Q.E.W.) highway, and Hurontario Street, which runs north from central Port Credit. All roads in the vicinity of the site are under the jurisdiction of the City of Mississauga, with the nearest regional arterial road being Cawthra Road to the east of Hurontario Street.

Traffic conditions along the Lakeshore Road corridor can become congested, particularly on left-turn movements at signalized intersections, at times during the weekday peak hours due to the relatively high traffic volumes carried during these periods. An overview of the surrounding existing area street network is provided below. The surrounding street network is illustrated in **Figure 2**.

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Existing Road Network

BA Group

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Figure 2

LAKESHORE ROAD WEST

Lakeshore Road is an east-west major arterial roadway that extends through the entirety of the City of Mississauga, providing connections (in the vicinity of the West Village site) to the Queen Elizabeth Way at Southdown Road, Mississauga Road and Hurontario Street. Lakeshore Road turns into Lake Shore Boulevard at the east limits of Mississauga, where it continues east through the City of Toronto. In the vicinity of the West Village property, Lakeshore Road West forms the northern boundary of the site and operates with four travel lanes with a posted speed limit of 50 km/h, and with lay-by parking on both sides of the street. Near the site (and running from the west to the east), Lakeshore Road West has signalized intersections with Maple Avenue, the Credit Landing Shopping Centre, Mississauga Road, John Street, and Stavebank Road on the east side of the Credit River.

MISSISSAUGA ROAD

Mississauga Road is a generally north-south major collector (Scenic Route) roadway that intersects Lakeshore Road West on the west side of the Credit River. Mississauga Road runs north-south through the majority of the City of Mississauga, and provides access to / from the Queen Elizabeth Way. In the vicinity of the study area, Mississauga Road has two travel lanes with additional turning lanes at its intersection with Lakeshore Road West, and a posted speed limit of 50 km/h. South of Lakeshore Road, Mississauga Road South provides access to J.C. Saddington Park at Lake Ontario, and forms the eastern boundary of the West Village property. Mississauga Road changes classification south of Lakeshore Road West to a local road. Mississauga Road South permits on-street parking on both sides of the street for most of its length, with the exception of sections in proximity to Lakeshore Road West.

PETER STREET

Peter Street is a local road under the jurisdiction of the City of Mississauga that runs between Lakeshore Road West and Lake Street. It has a two-lane cross-section and posted speed limit of 50 km/h, and parking is permitted on both sides of the street. Peter Street has a truck prohibition posted for traffic entering from Lakeshore Road West. The intersection of Peter Street and Lakeshore Road West is stop controlled for traffic on Peter Street.

JOHN STREET SOUTH

John Street South is a local road under the jurisdiction of the City of Mississauga that runs between Lakeshore Road and Lake Street. It has a two lane cross-section and posted speed limit of 50 km/h. John Street South has a truck prohibition posted for traffic entering from Lakeshore Road West. The intersection of John Street South with Lakeshore Road West is signalized.

FRONT STREET

Front Street north of Lakeshore Road West is a minor collector road under the jurisdiction of the City of Mississauga. South of Lakeshore Road West, Front Street South is designated as a minor collector road from Lakeshore Road to Port Street West, and then a local road from Port Street West to Lake Street. It has a two lane cross-section and a posted speed limit of 50 km/h. On-street parking is permitted on both sides north of Port Street, and on the east side only from Port Street to Lake Street. Front Street South has a truck

prohibition posted for traffic entering from Lakeshore Road West. The intersection of Front Street and Lakeshore Road West is not signalized.

PORT STREET WEST

Port Street West is an east-west minor collector road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Port Street West has a two-lane cross-section and a posted speed limit of 40 km/h. On street parking is not permitted west of Peter Street, but is permitted on both sides from Peter Street to Front Street. Port Street West has a truck prohibition posted for traffic entering from Mississauga Road South.

BAY STREET

Bay Street is an east-west local road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Bay Street has a two-lane cross-section and a posted speed limit of 50 km/h. On street parking is not permitted on the south side of Bay Street, and is also not permitted on the north side between John Street and Front Street. Bay Street has a truck prohibition posted for traffic entering from Mississauga Road South.

LAKE STREET

Lake Street is an east-west local road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Lake Street has a two-lane cross-section and a posted speed limit of 50 km/h. On street parking is not permitted on the south side of Lake Street. Lake Street has a truck prohibition posted for traffic entering from Mississauga Road South.

HURONTARIO STREET

Hurontario Street is a north-south arterial road under the jurisdiction of the City of Mississauga and provides access between a number of key destinations throughout the City. From Lakeshore Road north, some key destinations include the Queen Elizabeth Way, the City Centre, and Highways 403, 401 and 407. In the study area, Hurontario Street has a four-lane urban cross section with a posted speed limit of 50 km/h. Auxiliary turn lanes are provided at major intersections.

3.5 CYCLING CONTEXT

Under existing conditions, with the exception of the Waterfront Trail, there is limited cycling-specific infrastructure in place within Port Credit. For example, there are no direct, bicycle-specific connections providing for commuter access to / from the Port Credit GO Station.

A brief description of existing cycling infrastructure is provided in the following section.

3.5.1 Existing Cycling Context

Existing cycling facilities run along the Mississauga waterfront, largely in the form of off-road multi-use paths. In the Port Credit area, the multi-use path and connecting links also make up part of the Great Lakes Waterfront Trail that (within its Mississauga section) runs along the north shore of Lake Ontario.

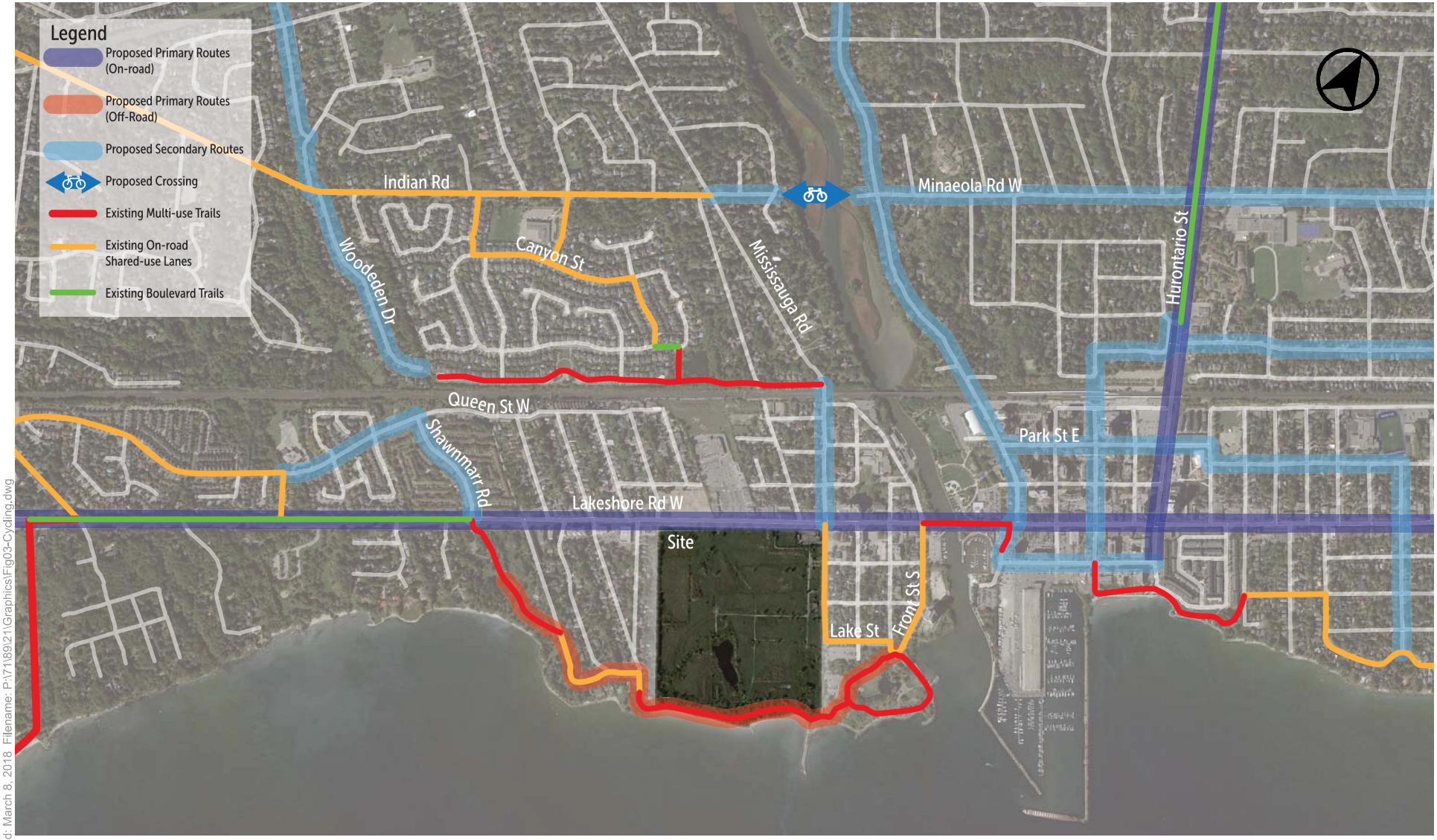
On-street connections to the Waterfront Trail (through shared lanes) are provided on Mississauga Road South, Lake Street and Front Street. Using the trail, and its separate bridge over the Credit River adjacent to Lakeshore Road, it is possible to travel from Mississauga Road South to the Port Credit GO Station via Memorial Park and High Street, or via Port Street East and Elizabeth Street. Under current conditions, cycling from Port Credit GO Station to the intersection of Mississauga Road South and Lake Street would take five minutes or less.

3.5.2 Future Cycling Context

There are plans, both at the municipal level and as part of the Mobility Hub strategy, to considerably improve and enhance the formal facilities provided within Port Credit to provide safe and convenient linkages for cyclists and encourage non-automobile travel.

The City of Mississauga is planning significant improvements to cycling and pedestrian infrastructure in the Port Credit area extending across the Lake Ontario waterfront and, significantly, to the Port Credit GO Station. In particular, Lakeshore Road is identified as a primary on-road cycling route in the City's Cycling Master Plan, and in the Official Plan. The proposed site Master Plan includes cycling facilities that will connect to future cycling infrastructure on Lakeshore Road West, as discussed in Section 7.1.2.

The existing and proposed cycling context is illustrated in **Figure 3**.



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Existing and Future Cycling Context

BA Group

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Figure 3

3.6 EXISTING TRANSIT CONTEXT

The site is currently served by a number of bus routes providing transit connections to employment and education areas within Mississauga as well as to the nearest regional transit station (Port Credit GO Station), which provides broader transit connections. The Port Credit GO Station located west of Hurontario Street, which is an approximately 1.2-kilometre walk from the eastern boundary of the site.

The Regional Transportation Plan for the Greater Toronto and Hamilton Area (GTHA), otherwise known as "The Big Move", identifies Port Credit as a Mobility Hub. Mobility hubs are identified as major transfer points between all types of modes (transit, walk, cycle, drive) that provide connections to regional transportation systems and support intensification and centres of attraction at each hub.

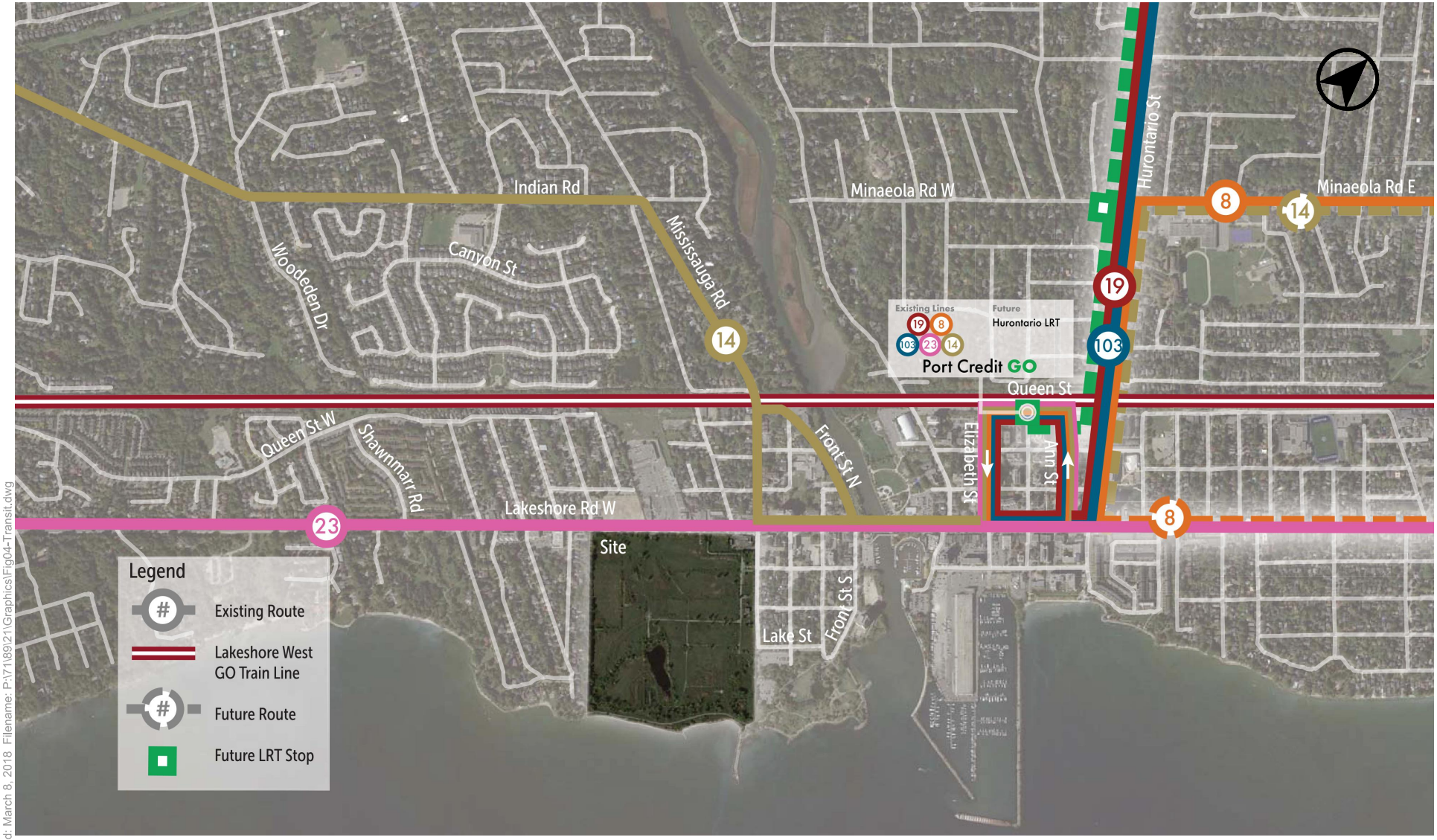
The existing transit context is illustrated in **Figure 4** and detailed in the section below.

3.6.1 GO Transit

Port Credit GO Transit station, which is a station on the Lakeshore West GO rail line, is located approximately 1.5 kilometres (km) from the centre of the site (a 5-minute drive or cycle from the site). Port Credit GO Station currently has 936 parking spaces comprising free, car-pool only and rented spaces. Metrolinx has been engaged in a master planning exercise for redevelopment plans for the southeast station area, through which the addition of residential and non-residential development is proposed.

In June 2013, Metrolinx introduced a 30-minute or better all-day two-way service on the Lakeshore West line between Aldershot and Union stations with more frequent services during peak periods. On weekdays, six trains serve Hamilton directly in the morning and the evening rush hour; four at Hamilton GO Centre, and two at West Harbour GO Station. Prior to June 2013, service on the Lakeshore West line operated hourly during off-peak periods with more frequent services during peak periods.

As part of Metrolinx's Regional Express Rail (RER) project, 15-minute two-way all-day service is planned for five GO rail lines including the Lakeshore West line. This service is expected to be in place once electrification of the GO network is completed by around the year 2024.



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Existing and Future Transit Context

BA Group

70 Mississauga Road South
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Figure 4

3.6.2 MiWay

MiWay is the City of Mississauga's municipal transit provider. The nearest bus stops to the site are located on Lakeshore Road at the access for Credit Landing Shopping Centre and at the intersection of Lakeshore Road and Mississauga Road. Both sets of bus stops are served by the following routes operated by Mi-Way:

- **23 Lakeshore** – operates daily between Clarkson GO Transit station to the west and Long Branch GO Transit station to the east via Port Credit GO Transit station at a peak period frequency of every 11 to 17 minutes.

- **335 Allan A. Martin** – a school service that operates on weekdays only during term time between several high schools to the east and Clarkson GO Transit station to the west with part of the route operating along Lakeshore Road past the site. This service operates eastbound only during the morning school run and westbound only during the afternoon school run.

- **14 Lorne Park** – operates on weekdays only between Clarkson station and Port Credit station predominantly via Mississauga Road and Indian Road at a peak period frequency of every 30 to 40 minutes (this route is only accessible via bus stops north of the Lakeshore Road and Mississauga Road intersection).

3.7 PLANNED TRANSIT INFRASTRUCTURE CONTEXT

3.7.1 MiWay 5 Year Plan

In 2015, MiWay published the *MiWay Five Year Transit Service Plan* outlining planned service improvements. The service plan includes providing more frequent service on main corridors, increasing the number of express routes and streamlining routes through transit corridors in a grid-pattern.

The improvements included in MiWay's 5-year plan would not directly increase the service level on the MiWay bus routes that currently access the site, but will make transit more attractive for trips across the City by resulting in a more efficient and connected network, in particular through service increases on Hurontario Street.

3.7.2 Metrolinx Regional Transit Plan

Metrolinx is an agency of the Government of Ontario and is responsible for coordinating regional transportation in the Greater Toronto Hamilton Area (GTHA). The Regional Transportation Plan (RTP) outlines a number of transit improvement programs, which includes building a higher-order transit system on the Hurontario-Main corridor, which is discussed in greater detail in Section 3.7.3.

The RTP also includes a number of other transit improvements in the area, which, in combination with a rapid transit program along Hurontario Street, would provide excellent and efficient access between Port Credit and Downtown Mississauga and other areas in the GTHA. These programs include the following:

- increased service on GO Transit lines and at area GO Stations (Port Credit, Brampton, and Cooksville);
- higher-order transit on Dundas Street between Waterdown and Kipling Station;

- the Mississauga Transitway along Highway 403 between Oakville and Renforth; and
- higher-order transit along Lakeshore Road between Hurontario Street and Union Station.

3.7.3 Hurontario-Main LRT

The Hurontario-Main Light Rail Transit (The Hurontario LRT) will be the most significant transit improvement to the proposed development site area. A new LRT line will be provided along the Hurontario Street corridor connecting Brampton's Gateway Terminal in the north and Port Credit GO Station in the south. The Hurontario LRT will run generally at grade in a segregated lane, separate from other road traffic and will use grade-separated crossings at rail lines and highways as required. The LRT plan proposes a total of 26 stops along Hurontario Street and Downtown Mississauga City Centre.

Initial planning and assessment of the alignment investigated continuing the Hurontario LRT south of Port Credit GO Station to a terminal station on Port Street at Elizabeth Street. The alignment that has been arrived at through the design process and which is planned for implementation has its southern terminus at the Port Credit GO Station, which is an approximately 1.2-kilometre walk from the eastern boundary of the West Village site.

Construction of the Hurontario LRT is anticipated to start in 2018. It is expected to be completed and fully operational by 2022.

The *Hurontario / Main Street Master Plan Report* (October 2010) considers the impact of the LRT line from a travel mode share perspective. The forecast for future transit mode share considers two land development scenarios. The base growth scenario considers population growth of 6 percent and employment growth of 14 percent along the corridor and the high growth scenario considers population growth of 21 percent and employment growth of 31 percent.

Existing and future mode share for northbound and southbound trips along the Hurontario corridor, as shown in table 3.6.3 of the Hurontario / Main Street Master Plan Report, are summarized in **Table 2**. As noted in **Table 2**, a considerable change in public transit use along the corridor is forecast together with a corresponding reduction in auto travel.

TABLE 2 FORECAST MODE SHARE ASSUMPTIONS

Mode Share for Hurontario Street between QEW and Port Credit GO	Auto		Transit	
	Southbound	Northbound	Southbound	Northbound
Existing	82.5%	78.7%	17.5%	21.3%
Future (2031) Base LRT	43.5%	51.5%	56.5%	48.5%
Future (2031) High Growth	32.8%	54.4%	67.2%	45.6%

Notes:
1. Table source: *Hurontario / Main Street Master Plan Report, table 3.6.3 (p. 99)*.
2. Travel mode share data presented in this table represents on-road modal splits, as opposed to modal splits for developments along the Hurontario Street corridor.

4.0 THE MASTER PLAN

The Master Plan identifies the subject site as a mixed-use development comprising residential, retail, community/institutional and office uses.

The Master Plan was informed by the framework laid out in the Inspiration Port Credit document (see Section 5.6), and shows how a mixed-use development could be realized on the site with consideration of good planning and urban design principles. Key consideration is given for transportation items including the provision of a mobility network that will support the site with pedestrian and cycling connections, and connections to existing and planned transit. The Master Plan is illustrated in **Figure 5**.

An overview of the Master Plan is provided below. An evaluation of the Plan considering three different perspectives – the site itself, local and regional – is provided in Section 7.0.

4.1 BUILDING PROGRAMME

In total, the Master Plan includes 2,969 new residential units (505 townhouse units and 2,464 apartment units), 14,525 m^2 of retail gross floor area (GFA), and 22,412 m^2 of commercial and community/institutional GFA. The residential units include traditional townhomes, stacked and back to back townhomes, and apartment units.

The Master Plan includes five different precincts within the site, each with a different character:

- Retail and commercial land uses are to be focused primarily along Lakeshore Road West on the northern portion of the site, in the area referred to as the West Village Precinct.
- On the southern area of the site, the Campus precinct will contain community uses (a partnership with the YMCA is being explored along with other institutional and community uses) and residential apartment uses.
- The Promenade precinct links the West Village and Campus precincts and contains mid- and high-rise residential uses through the central area of the proposed Master Plan.
- To the east, the Old Port Transition precinct contains predominantly townhouse forms with a lower density.
- To the west, the Parkside precinct also contains predominantly townhouse forms with a lower density.

4.2 PHASING OF DEVELOPMENT

The proposed development will be phased to respond to site remediation needs, as well as market absorption for the various proposed land uses. It is anticipated that the full build-out of the Master Plan may take 8-10 years from commencement of work on the site to final occupancy of the last phase.

West Village Master Plan

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Figure 5

4.3 MASTER PLAN TRANSPORTATION PRINCIPLES

The proposed development plan provides a fine-grained network of streets and blocks, facilitating access by all modes of transportation by generally replicating the existing street network pattern. The network includes both municipal streets and private condominium roads to ensure a range of facilities are provided to accommodate the different needs of various parts of the site.

4.3.1 Vehicular Traffic Access Principles

It is important that any development plan established for the site does not rely upon a single point of access, to avoid a concentration of traffic at a single location, along with a consideration of limiting traffic volumes in the existing adjacent residential areas.

The adoption of multiple vehicular connections to Lakeshore Road West and Mississauga Road South, along with a network of condominium and municipal streets through the site will provide for vehicular circulation around the property, connections to on-site parking and loading facilities, and will enable a distribution of traffic activity on the area street system. With the exception of the campus area, the non-residential land uses are proposed to be generally focused on Lakeshore Road West, limiting the extent to which traffic and parking impacts may occur in residential areas within and adjacent to the site.

It is intended that Port Street West and Lake Street will be extended as municipal streets into the subject site – Street ‘C’ and Street ‘A’, respectively – with a non-automobile connection along the alignment of Bay Street. The main site access will be on Lakeshore Road West at the location of the existing traffic control signal that serves the existing retail plaza on the north side of the street. A secondary signalized vehicle access point will be provided at Benson Avenue, taking advantage of the already planned traffic signal that will be implemented as part of another development on the north side of Lakeshore Road West. Furthermore, secondary vehicle access points will be provided on Lakeshore Road West, east and west of the main signalized intersection.

Further details regarding the planned public and private internal road network are provided in Section 7.1.1.

4.3.2 Transit Access Principles

The proposed development plan will capitalize on the available existing and planned transit facilities in Port Credit and adopt other strategies that seek to minimize auto-dependent travel, maximize transit usage and provide an environment that encourages pedestrian and cycling usage.

The transit strategy for the site will accommodate future provision of rapid transit on Lakeshore Road (in a form to be determined through the City’s Lakeshore Connecting Communities study), anticipated within a 20+ year time frame. While the City’s study is not yet complete and its recommendations have not yet been made, the site has been designed to accommodate the possibility of either bus rapid transit or light rail/streetcar based transit. Provision for future transit on the site will include a higher order bus-based or streetcar-based rapid transit route into the site on a loop created by the proposed municipal roads, provision for a higher-order transit stop location on-site, and a reduced parking provision to support the use of transit.

4.3.3 Non-Automobile Access Principles

Non-automobile connections will be provided on the site that link to the existing Waterfront Trail to the south, with pedestrian and bicycle connections throughout the site that compliment the primary bike route along Lakeshore Road West and support non-auto trip making for work and recreation. In terms of the City's Cycling Master Plan route network, the new cycling connections will provide a significant improvement in connectivity. Secure bicycle parking facilities will be provided for residents and employees of the development, along with bicycle parking facilities for visitors to the site.

The development plan will integrate a high quality, pedestrian-focused public realm that emphasizes walkability and is at a pedestrian scale. The additional pedestrian connections, along with mixed-use and community components of the proposed development will provide an increased permeability and accessibility between Lakeshore Road West and the Lake Ontario shoreline.

5.0 RELEVANT PLANNING DOCUMENTATION

Urban transportation policies and direction from the Provincial Policy Statement (2014), the Growth Plan for the Golden Horseshoe (2006), the City of Mississauga Official Plan (2015), and Moving Mississauga (2011) support the proposed Official Plan Amendment as discussed below. Further, the City's policies contained in the Port Credit Local Area Plan and the Inspiration Port Credit Master Plan provide more detailed guidance for the site development. The transportation-related elements of the above planning documents are summarized below.

5.1 PROVINCIAL PLANNING DOCUMENTS

The **Provincial Policy Statement** (PPS) is issued under the authority of Section 3 of the Planning Act. It provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial "policy-led" planning system.

With respect to transportation systems, Part V of the PPS, through the Policies in Section 1.6.7, promote maintaining and improving connectivity within and among transportation systems and modes (1.6.7.3) as well as a land use pattern, density and mix of uses that minimize the length and number of vehicle trips and support current and future use of transit and active transportation (1.6.7.4). The integration of residential, retail and employment land uses, as proposed in the West Village Master Plan, supports this policy direction and encourages the residential mixing of land uses in a major regional employment node.

The **Growth Plan for the Greater Golden Horseshoe** (2006) provides a framework for implementing the Government of Ontario's vision for building stronger, prosperous communities within the Greater Golden Horseshoe area. The Plan directs growth within the Greater Golden Horseshoe area to existing urban areas in order to make better use of land and infrastructure. The intensification of existing built-up areas supports transit and infrastructure investment.

The Growth Plan, through policies in Section 3.2.2, supports a transportation system that exhibits connectivity amongst modes, a balance of modal choices for users of the system with priority given to walking, cycling, transit and, sustainability (i.e., economical and environmentally appropriate). Furthermore, the Growth Plan directs Transportation Demand Management (TDM) policies to be adopted by municipalities towards reducing trip distance and time and increasing modal share to alternatives other than the automobile.

The proposed West Village redevelopment fulfills a number of transportation related policy directions, by intensifying land use along a major transit corridor and mixing commercial and residential land uses to permit and encourage the uptake of active transportation options and ensure the viability of planned transit.

5.2 REGION OF PEEL OFFICIAL PLAN

The Region of Peel Official Plan provides coordinated planning in the Peel region through long-term policies with an intention of promoting sustainable forms of transportation.

Regional policies include Regional Intensification Corridors, which promote the development of urban areas within the region that 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.

Policy 5.3.3 provides that Regional Intensification Corridors are characterized by the following:

- urban Growth Centres linked by public transit;
- high intensity, compact urban form with an appropriate mix of uses including commercial, office, residential, recreational and major institutional;
- transit-supportive and pedestrian-oriented urban forms; and
- opportunities for higher order transit;

The proposed West Village development is in line with development of the type of corridor listed above.

5.3 CITY OF MISSISSAUGA OFFICIAL PLAN

The City of Mississauga Official Plan contains direction and policies which link land use and transportation stressing multi-modal accessibility to support the daily needs of residential and business communities.

Section 4.5 of the Official Plan puts an emphasis on direction growth towards higher order transit such as Hurontario Street.

Policies in the Official Plan set out development criteria for Intensification Areas. Among these are provisions for promoting multi-modal transportation and avoiding excessive car-traffic on the road system within the intensification area. The Intensification Area through Port Credit has its western boundary at Mississauga Road and while the area does not cover the subject lands, it is considered that the policies related to transportation provide relevant guidance for the development of the site.

Policy 8.2.3.8 outlines criteria for decisions on transit planning and investment, which relates to land use planning and development. This policy requires the following:

- using transit infrastructure to shape growth, and planning for high residential and employment densities that ensure the efficiency and viability of existing and planned transit; and
- expanding transit service to areas that plan to achieve transit supportive mixed residential and employment densities.

The proposal for a mixed-use development on the site promotes the viability of a potential future extension of higher order transit by adding residential, office and retail, along with community uses, all in a transit-supportive density.

5.4 MOVING MISSISSAUGA

Moving Mississauga is the City's interim transportation strategy outlining the City's vision for movement of good and people through a safe and connected multi-modal transportation system. The document identifies actions that the City will undertake to achieve a viable multi-modal transportation system and address the

City's existing and future transportation needs. Moving Mississauga proposes a number of strategic directions to address the key transportation related issues facing the City. These directions include the following:

- advancing the development of a multi-modal transportation network;
- enhancing system capacity through design, network linkages, and new roads; and
- supporting the integration of context sensitive design and transportation.

The addition of new streets within the proposed mixed-use West Village development parcel is consistent with these policies.

5.5 PORT CREDIT LOCAL AREA PLAN

The Port Credit Local Area Plan includes a detailed section on how the development of the Port Credit area would support the creation of a "Multi-Modal City". The Plan focuses on the consideration of needs for all modes and all users of the transportation network.

The Port Credit Local Area Plan also documents issues related to peak hour travel times and queuing on Lakeshore Road, and refers to the City's Lakeshore Road Transportation Master Plan (now known as the "Lakeshore Connecting Communities Study"). The Plan notes that improvements to connectivity and provision of a fine-grained network may be identified through the Transportation Master Plan and lists a number of potential road connections in the Port Credit area.

For development site traffic, the Plan gives direction that traffic should be directed towards signalized intersections and vehicular turning movements consolidated at other locations. Further, the Plan requires that development applications will consider methods to limit impacts on the transportation network such as:

- Reduced parking standards;
- Transportation demand management;
- Transit oriented design;
- Pedestrian/cycling connections; and
- Access management plan.

The Port Credit Local Area Plan designates the subject lands as Special Site 3, and requires that a comprehensive master plan be prepared that addresses transportation, amongst other things. The Inspiration Port Credit Master Planning Framework was prepared by the City in consultation with the Port Credit community to describe a master plan framework for the subject site. The transportation elements of that framework are described in the following section.

5.6 INSPIRATION PORT CREDIT

The Inspiration Port Credit Master Planning Framework (November 2015) was prepared by the City of Mississauga to establish a framework to guide the renewal of the site. The mobility aspects of the Framework were described in Section 4.5.3 of the plan.

Key aspects of the Framework included support for a variety of transportation modes, prioritizing active transportation and consideration of the site's internal transportation network and a sensitivity to integrating the site's transportation network into the surrounding area. In particular, the Framework gave direction that:

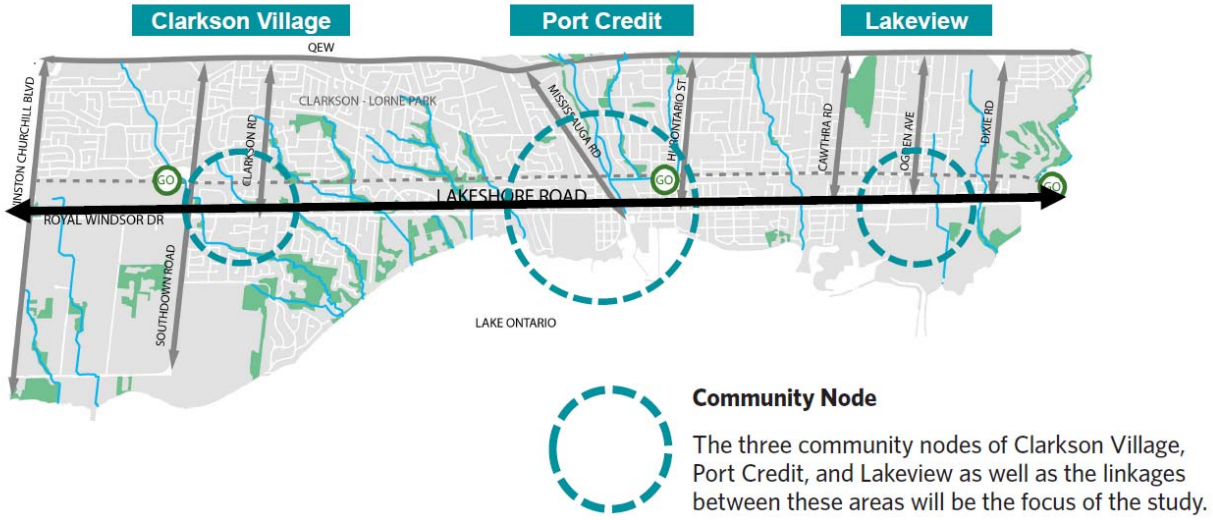
- Rapid transit supporting the site should be explored (noting that specific transit options will need to be coordinated with the City's Lakeshore Road Transportation Master Plan);
- Parking requirements should be appropriate for a mixed-use community and support transit-oriented development;
- A walkable fine-grained street network should include connections for pedestrians, cyclist and vehicles;
- Connections to adjacent areas need to be carefully considered and sensitive to the existing neighbourhood communities;
- An active transportation network should provide for many opportunities for pedestrian and cycling connections;
- The Waterfront Trail will be a key active transportation corridor through the site; and
- Mississauga Road South will be recognized as a street with special character.

The proposed development has been designed from a transportation perspective to be in line with the intent of the Framework. Descriptions of the proposed transportation connections, parking provision and transportation demand management measures are described in the following sections, along with the anticipated impacts on the adjacent transportation network.

6.0 LAKESHORE CONNECTING COMMUNITIES STUDY

The City of Mississauga is currently undertaking a Transportation Master Plan study along the Lakeshore Road / Royal Windsor Drive corridor named *Lakeshore Connecting Communities*. The intention of the study is to guide the planning and implementation of the transportation network along the Lakeshore corridor over the next 25 years, including decisions about optimizing roadways, improving transit, and enhancing cycling and walking connections.

The focus of the study is improving long-term mobility for the Clarkson Village, Port Credit and Lakeview communities located along the corridor.



The study will include detailed transportation modelling for existing and future conditions, with a review of network connectivity for all modes, and an investigation of opportunities to provide enhanced linkages at key locations. It is expected that the findings of analysis of options for the corridor will be published in the fall of 2018.

At this juncture, in advance of the Lakeshore Connecting Communities study being completed, the Master Plan has been designed to be able to accommodate the integration of future higher-order transit within the site via the proposed internal public road network, as discussed in Section 4.3.2.

Going forward, the forthcoming subsequent transportation study related to the 70 Mississauga Road South OPA/ZBA/Draft Plan of Subdivision (see Section 1.3) will be coordinated with the Lakeshore Connecting Communities study, with the aim of being consistent with the methodology, assumptions and conclusions made in the City's study once it is complete. Likewise, it is anticipated that the Lakeshore Connecting Communities study will consider the transportation needs of the subject site.

7.0 REVIEW OF DEVELOPMENT CONCEPT – THREE FRAMES OF REFERENCE

The OPA/ZBA/Draft Plan of Subdivision for the West Village Master Plan seeks to introduce mixed-use development onto the site. The Master Plan is evaluated based upon three frames of reference; from the site planning (internal) perspective, from the local area (external) perspective, and from the regional perspective.

The three applications are being submitted concurrently to permit certain height, density, parking and other matters. The application will address the appropriateness of any specific development concept including its proposed intensity, form and supporting infrastructure to enable the proposal to be appropriately supported from a transportation perspective.

7.1 SITE PLAN CONSIDERATIONS

7.1.1 Internal Road Network

As part of the redevelopment of the site, a street network is required to service the property and provide connectivity to the existing surrounding transportation infrastructure. The concept Master Plan internal road network is illustrated in **Figure 6**. A concept functional road plan is included in **Appendix B**.

A finer grain of local roads are provided in a 'grid' throughout the site, with key connections onto Lakeshore Road West to the north and Mississauga Road South to the east. The road network illustrated throughout the site is in line with Mississauga Official Plan objectives for Intensification Areas, which identify a creating a finer grained road network, and providing the completion of road network connections through site development.

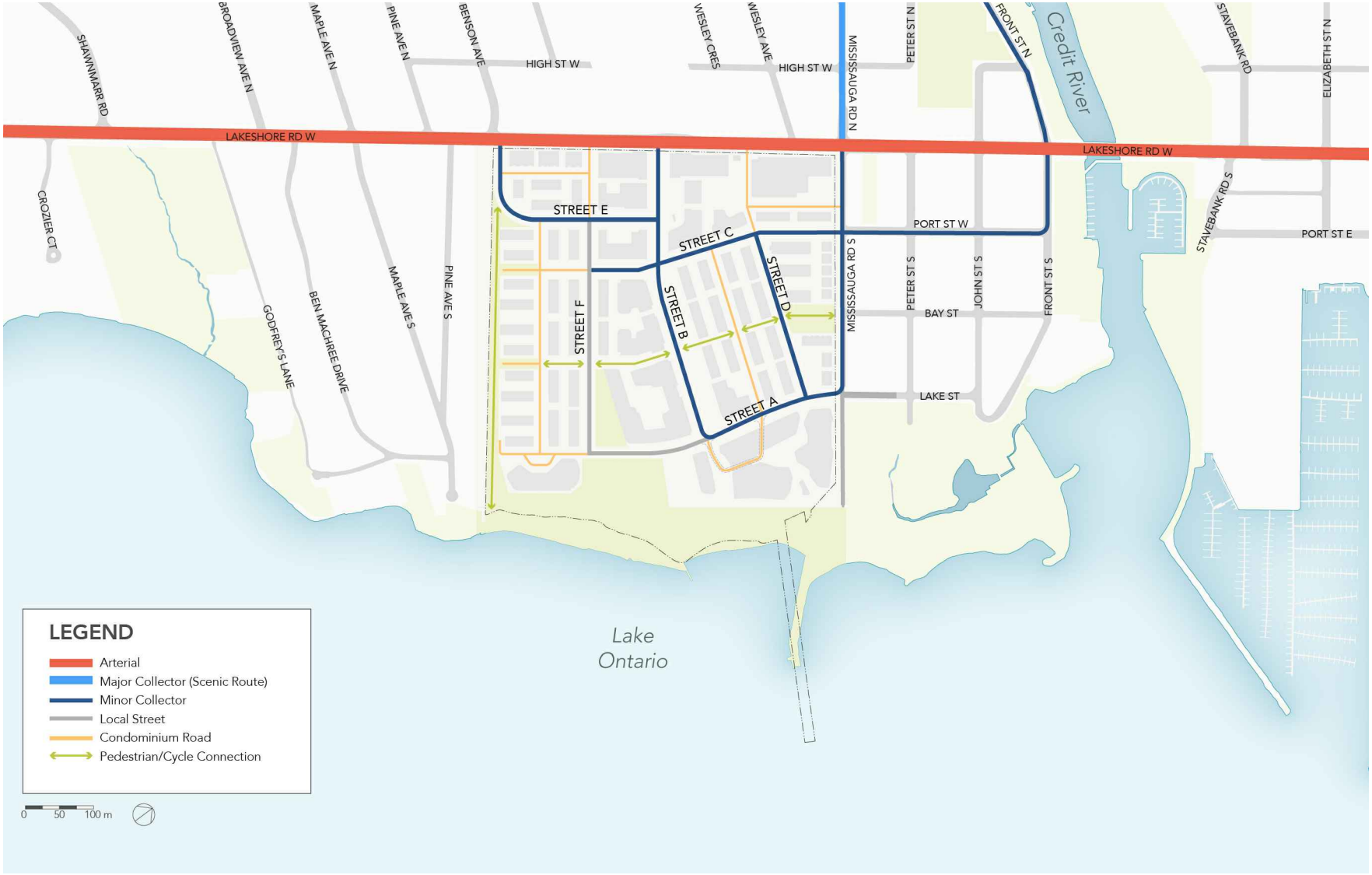
The concept internal road network comprises a hierarchy of roads that provide network connectivity for all modes of travel. Each classification of road is described in the following sections.

7.1.1.1 Minor Collector Roads

Street 'A' (between Street 'B' and Mississauga Road South), Street 'B', Street 'C', Street 'D' and Street 'E' are classified as Minor Collector Roads as shown in the revised **Figure 6**.

Street 'A' (between Street 'B' and Mississauga Road South) will include 3.5-metre-wide vehicle travel lanes in each direction with bicycle lanes on both sides of the road. Sidewalks 2.7 metres in width will be provided on both sides of the street. Street 'A' will have a 16-metre-wide right-of-way (ROW) width.

Street 'B' will also include 3.5-metre-wide vehicle travel lanes in each direction and will include on-street parking laybys on the east side of the road, south of Street 'C'. Sidewalks 2.0 to 2.2 metres in width will be provided on both sides of the road. Street 'B' will have a 16-metre-wide right-of-way (ROW) width.



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Master Plan Road Network

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Figure 6

Street ‘C’ will include 3.0-metre-wide vehicle travel lanes in each direction with bicycle lanes on both sides of the road. Street ‘C’ will also include on-street parking laybys on the north side of the road and 2.5-metre-wide sidewalks on both sides of the road. Street ‘C’ will have a 20-metre-wide ROW width.

Street ‘D’ will include 3.0-metre-wide vehicle travel lanes in each direction with 2.5-metre-wide sidewalks on both sides of the road and will have an 18-metre-wide ROW width.

Street ‘E’ will include 3.5-metre-wide vehicle travel lanes in each direction and bicycle lanes on both sidesd of the road. Sidewalks 2.5 metres in width will be provided on both sides of the road. Street ‘E’ will have a ROW width of 22 metres. Note that this increased ROW width is being provided with the intention of Street ‘E’ being able to accommodate a future higher-order transit turnaround facility, as shown in the inset on the functional road plan included in **Appendix B**.

Concept cross-sections associated with the proposed Minor Collector roads are illustrated in **Figure 7** to **Figure 9**.

7.1.1.2 Local Streets

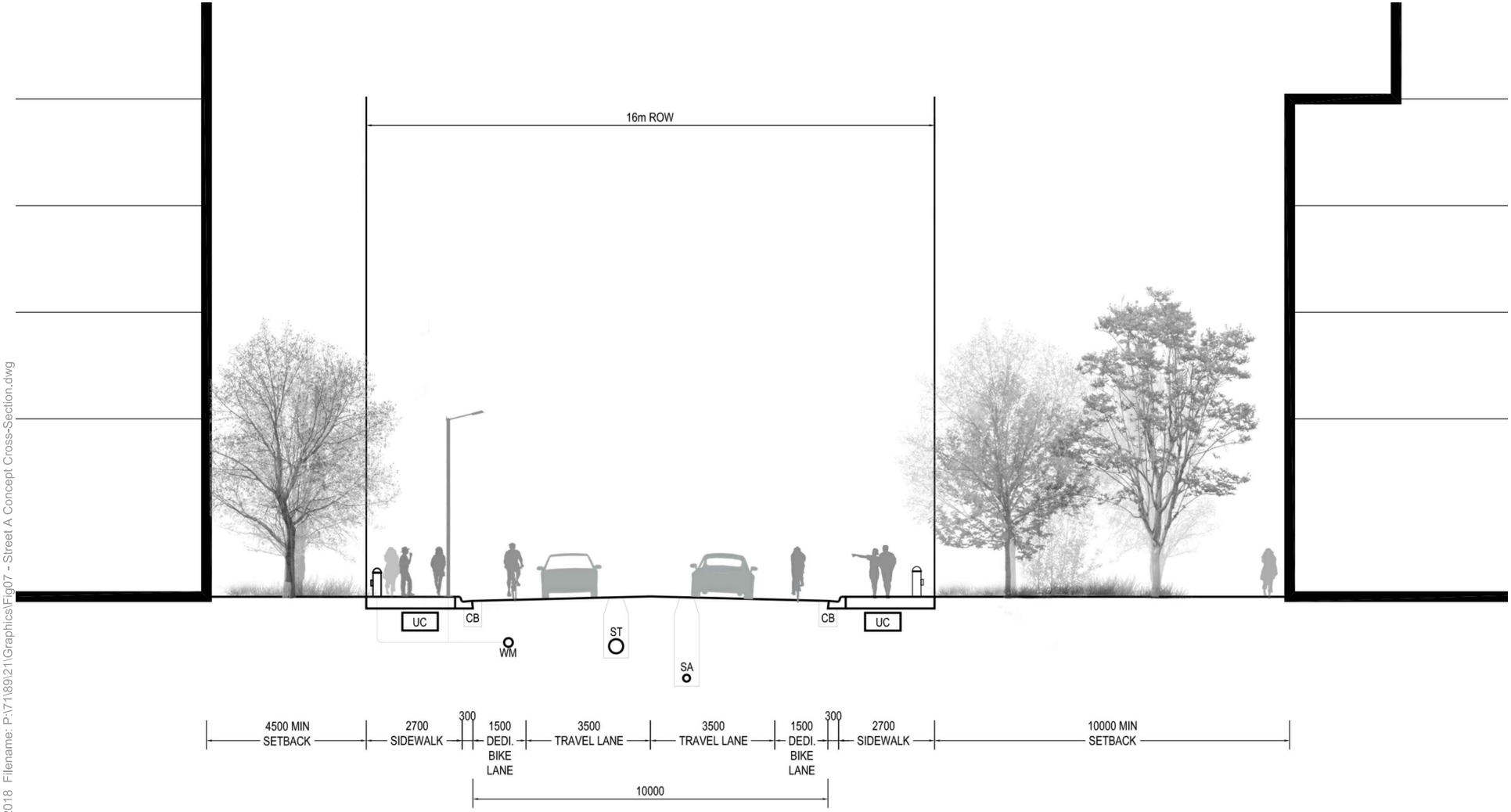
Street ‘A’ (between Street ‘B’ and Street ‘F’) and Street ‘F’ are classified as Local Streets.

Street ‘A’ (between Street ‘B’ and Street ‘F’) will include 3.5-metre-wide vehicle travel lanes in each direction and bicycle lanes on both sides of the road. Sidewalks 2.7 metres in width will be provided on both sides of the road. Street ‘A’ will have a ROW width of 16 metres.

The section of Street ‘F’ adjacent to the proposed park area will include 3.5-metre-wide vehicle travel lanes in each direction with bicycle lanes on both sides of the road. Sidewalks 2.7 metres in width will be provided on both sides of the street.

North of the park, Street ‘F’ will include 3.0-metre-wide vehicle travel lanes in each direction. A 2.0-metre-wide sidewalk will be provided on the east side of the road. On the west side of the road, a 1.7-metre-wide sidewalk will be provided along with a 3.0-metre-wide multi-use trail. Street ‘F’ will have a ROW width of 20 metres.

Concept cross-sections associated with the proposed Local Streets are illustrated in **Figure 10** and **Figure 11**.



'The cross-section shown is a concept design and subject to change'

Street 'A' Concept Cross-Section

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Figure 7

'The cross-section shown is a concept design and subject to change'

Street 'B' Concept Cross-Section

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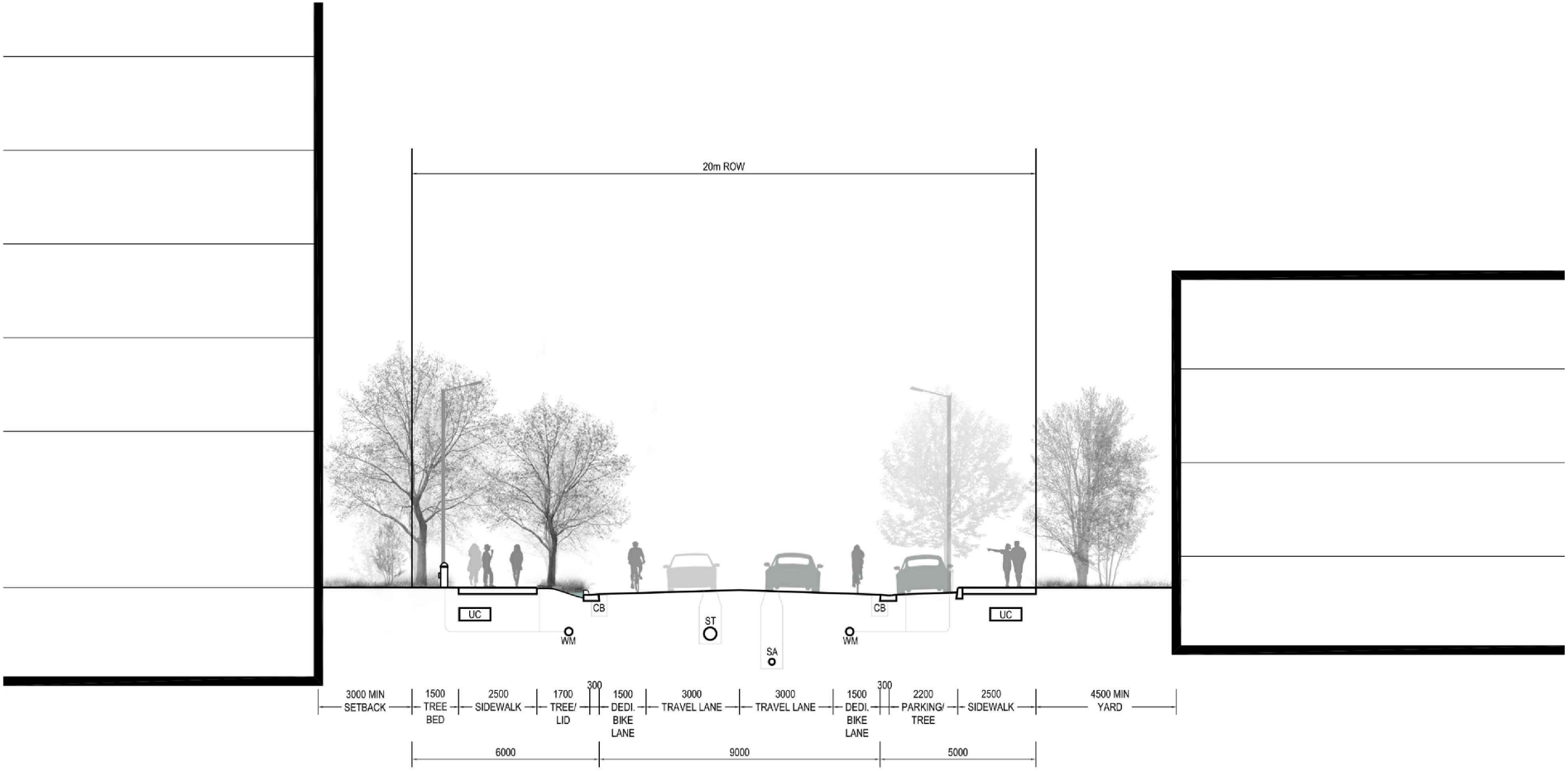
Figure 8



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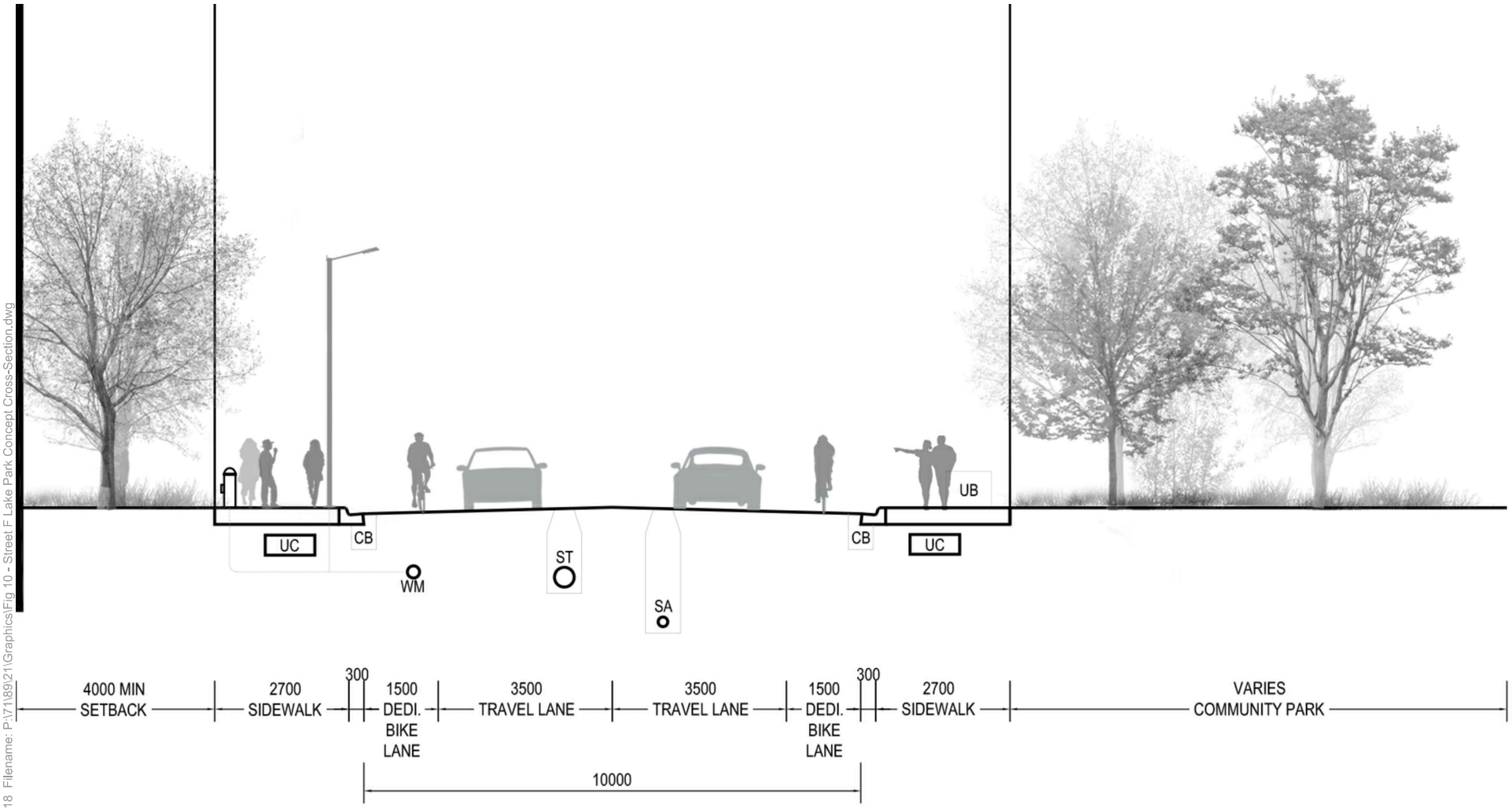
Street 'C' Concept Cross-Section



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Street 'F' (Adjacent To Park) Concept Cross-Section

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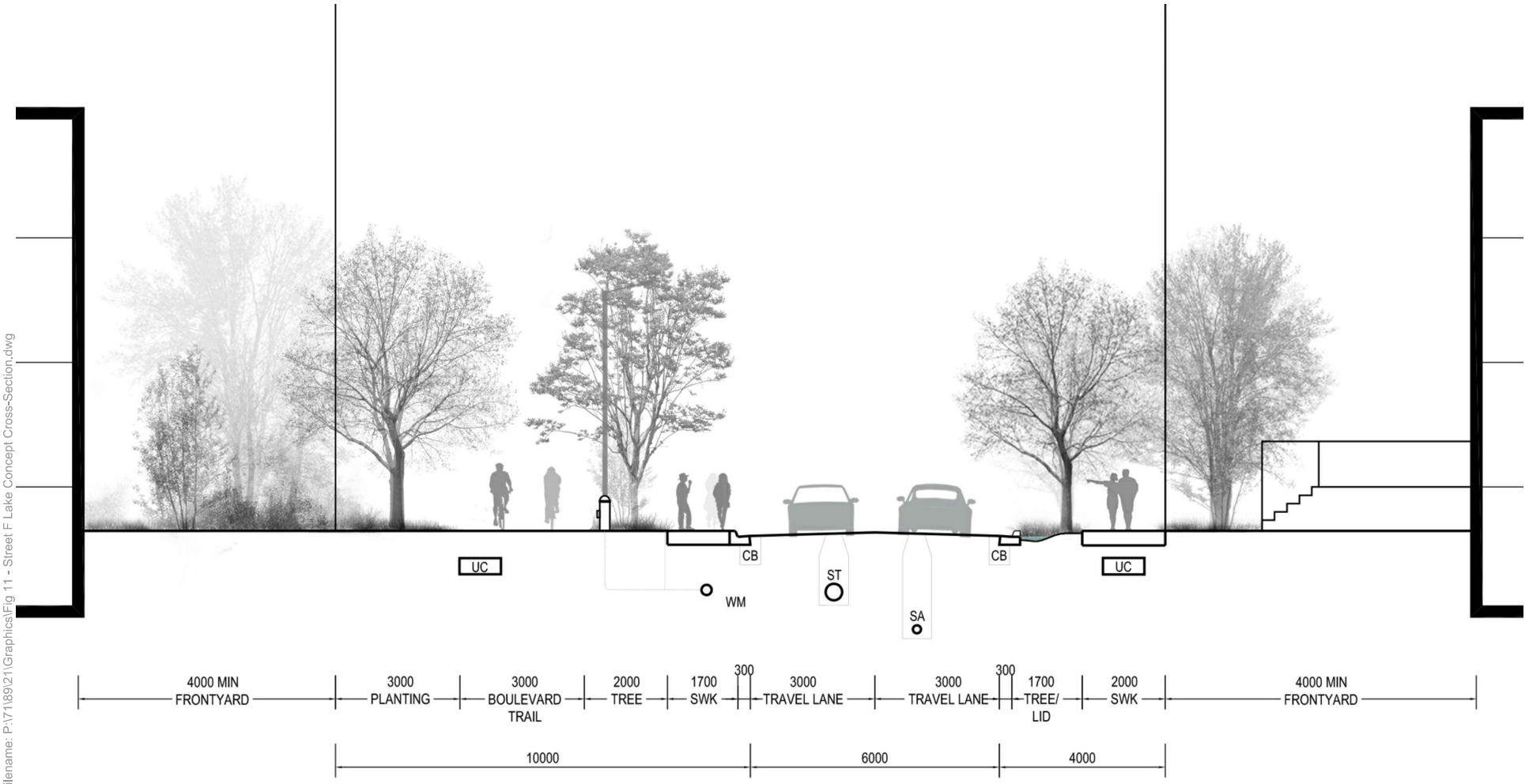
Figure 10



'The cross-section shown is a concept design and subject to change'

Street 'F' (North of Park) Concept Cross-Section

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Figure 11

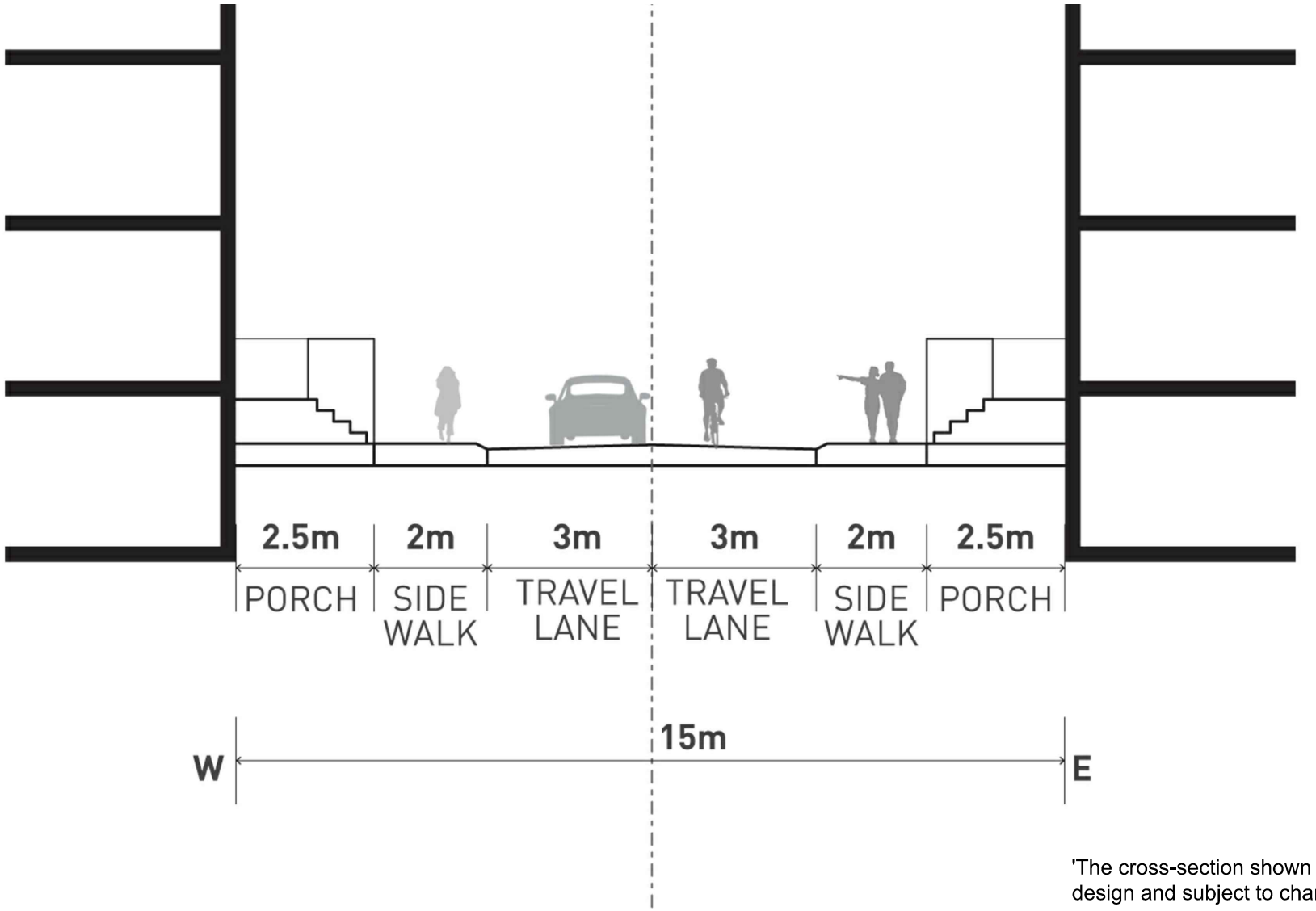
7.1.1.3 Condominium Roads

All other roads will be private condominium roads whose function will be primarily to provide direct access to the residential townhouses. These roads will carry low volumes of vehicular traffic and be ideal cycling and pedestrian travel routes. In some cases, condominium roads are provided above below-grade parking.

In general, the condominium roads will include 3.0-metre-wide vehicle travel lanes in each direction with no on-street parking. Pedestrian sidewalks (1.8 metres in width) will be provided on both sides of the road. In general, building setback distances will be reduced compared to the other road classes, given that mainly low-density residential housing will front onto these streets.

A pedestrian-focused route (woonerf) is also envisioned connecting between Street ‘B’ and the Waterfront through the southern Campus (Blocks T and U), providing access to the recreational Waterfront area for pedestrians, and also allowing for service vehicle access.

A concept cross-section of a typical condominium road is shown in **Figure 12**.



'The cross-section shown is a concept design and subject to change'

Private Condominium Road Concept Cross-Section

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Figure 12

7.1.2 Internal Cycling Route Network

The internal cycling route network proposed as part of the Master Plan is illustrated in **Figure 13**.

There are two main components of the proposed internal cycling route network:

a) the off-road two-way route running along the western edge of the site, Street 'F', an east-west midblock cycling link and along Mississauga Road between Lakeshore Road West and the existing Waterfront trail; and
b) the on-street cycle lanes on Street 'A', Street 'C' and Street 'E'.

The off-road two-way cycling lane is proposed to be 3.0 metres wide and will function primarily as a recreational route connecting to the Waterfront area and throughout the site. The on-street cycle lanes will be a minimum of 1.5 metres wide and provide cycling connectivity throughout the site and to the east via Port Street West, on which a shared-lane cycling route is proposed as part of the development plan.

The City of Mississauga's Draft Cycling Master Plan identifies Lakeshore Road West as a 'Special Study Area', indicating that the potential for cycling route along the corridor will be investigated as part of the Lakeshore Connecting Communities study.

7.1.3 Internal Pedestrian Route Network

The internal pedestrian route network proposed as part of the Master Plan is illustrated in **Figure 14**.

In general, pedestrian sidewalks and/or paths are provided along all public and private roads within the Master Plan lands. Additionally, the following pedestrian-focused elements are proposed:

a) A 'natural corridor' running along the west border of the site (to be conveyed as a public park), connecting between Lakeshore Road West and the Waterfront area;
b) a central pedestrian plaza located at the north end of Street 'B';
c) an east-west, off-road pedestrian connection between Mississauga Road South and the western natural corridor;
d) a park area located just west of Mississauga Road South and south of the east-west pedestrian connection;
e) a 25-metre-wide 'linear park' located on the east side of Street 'B' between Street 'C' and Street 'A';
f) a park space located at the northeast corner of Street 'A' and Street 'F';
g) a second pedestrian plaza centred on and around the southern Campus area (Blocks T and U), connecting to Street 'A' and the Waterfront;
h) a pedestrian-focused 'woonerf' style connection between the southern terminus of Street 'B' and the Waterfront area through the southern Campus, serving as an access to the recreational Waterfront area; and
i) a large park area south of Street 'A' and west of the southern Campus, which interfaces with the redesigned Waterfront recreational trail along the south edge of the site.

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Master Plan Cycling Connections

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70 Mississauga Road South
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Figure 13

Master Plan Pedestrian Connections

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Figure 14

7.1.4 Transit Accessibility

The site is within 1.2 kilometres of the Port Credit GO Station and existing bus service in the area running along Lakeshore Road West and Mississauga Road North. Furthermore, the future Hurontario LRT route terminating at the Port Credit GO Station will provide additional transit connectivity for the site.

The Master Plan transit context is illustrated in **Figure 15**.

Given the site's proximity to these facilities, it is anticipated that a significant portion of trips to/from the site will be transit oriented. As the plan seeks to provide a mix of uses on the vacant lands, it is anticipated that it will increase ridership at the Port Credit GO Station and on the MiWay bus service, and therefore provide greater utilization of planned infrastructure investments.

The Master Plan has been developed with the intention of accommodating a potential future transit route through the site via the proposed new public road connections. This potential route could loop through the site between Lakeshore Road West and Mississauga Road South along the proposed Street 'A', Street 'B' and Street 'E'.

In the short-term horizon, this will likely be a bus transit route – either MiWay, GO Bus or private shuttle bus to/from the Port Credit GO Station (a potential Transportation Demand Management strategy discussed in Section 10.0). In the long-term horizon, the route may utilize higher-order transit, subject to the findings of the ongoing Lakeshore Connecting Communities study.

It is noted that portion of the internal public road network comprising Street 'B' (north of Street 'C') and Street 'E' has been designed to accommodate a future high-order transit turnaround loop, as illustrated within the concept functional road plan included in **Appendix B**. This turnaround facility has been designed in accordance with the guidelines contained within the Eglinton Crosstown Light Rail Transit Environmental Project Report. A centre platform dimension of 3.0 metres in width and 35 metres in length has been assumed.

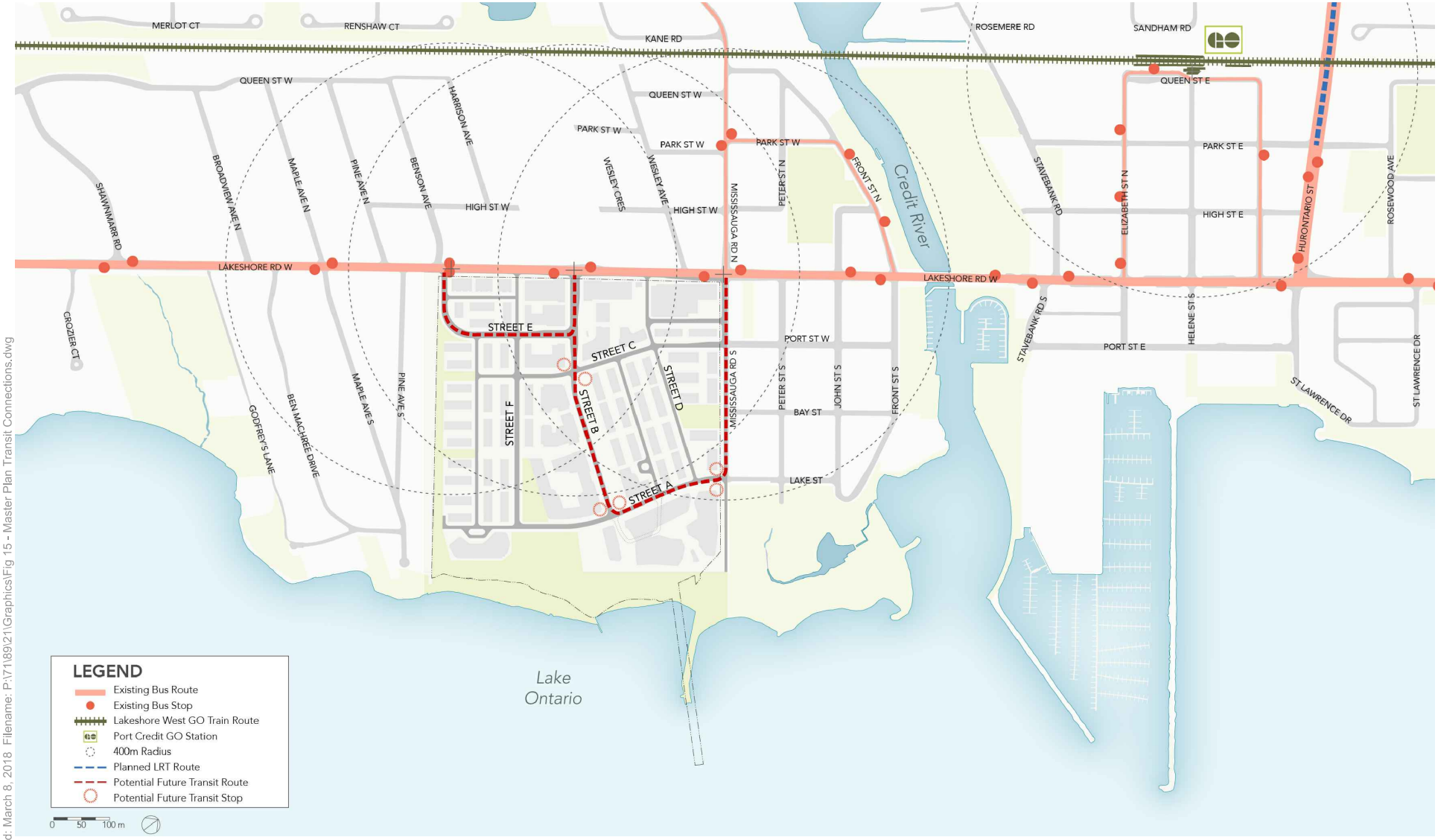
It is noted that the preferred alignment of higher-order transit through the site, or whether higher-order transit facilities will circulate through the site at all, is subject to the findings of future studies, including the Lakeshore Connecting Communities study. As such, this transit alignment is purely conceptual in nature and is subject to change or removal.

7.1.5 Parking and Loading

The subject site is sufficiently large to accommodate the provision of the appropriate vehicular parking supply and service vehicle loading facilities that are required to support the proposed mixed-use development on the property.

Parking and loading operations on-site will be developed in a way so as to take maximum advantage of any shared parking / loading relationships between the contemplated mixed land uses in order to minimize the supply of both for the proposal as a whole.

Proposed parking and loading requirements for the site are discussed further in Section 8.0.



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Master Plan Transit Connections

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Figure 15

7.1.6 Broader Mixed-Use Site Plan Benefits

A mixed-use development on the site would address the following transportation objectives:

- Provide greater potential for the internalization / interaction of site traffic within the development site itself, as well as in the local area, thereby reducing external trip making while realizing similar or greater development intensity.
- Provide a greater variety of land uses and services within the site and immediate area thereby potentially reducing trip distances and encouraging active transportation.
- Provide potential for more interaction between the site and other area development activities including existing / emerging retail land uses, office development, and other employment land uses in the immediate vicinity.
- Provide for more efficient use of on-site infrastructure through shared:
  - general amenity space for employees, residents, and visitors to the proposed development;
  - parking supply between residential visitors, retail patrons and staff as well as other non-residential land uses, particularly during evening and weekend periods;
  - vehicular servicing / loading requirements – i.e., refuse collection, general delivery, and moving needs; and
  - pedestrian facilities / connections to public rights-of-way and public transit facilities (residential and employment peak directions are generally opposite to one another so there are economies of scale when considering peak direction loads).

7.2 LOCAL AREA PERSPECTIVE

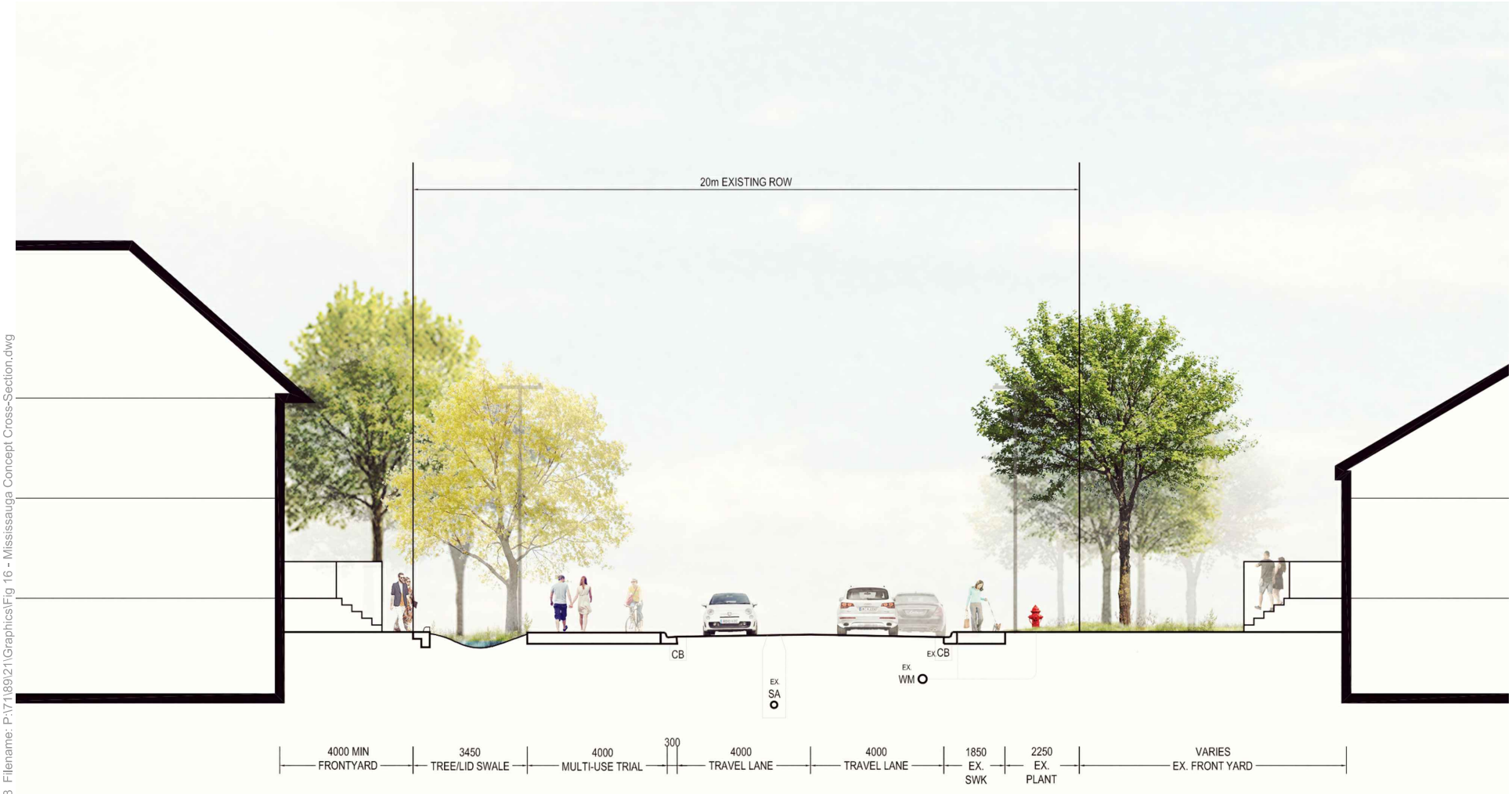
7.2.1 Arterial Road Improvements

Improvements to Mississauga Road South along the site's frontage, between Lakeshore Road West and the Waterfront, are proposed as part of the Master Plan. A concept cross-section is shown in **Figure 16**.

Mississauga Road changes classification south of Lakeshore Road West from a Major Collector road to a Local Road. Mississauga Road will be reconstructed as a more pedestrian- and cyclist-focussed route connecting the Lakeshore Road corridor to the Waterfront and J.C. Saddington Park. It is proposed that the reconstructed Mississauga Road South be designated as a Minor Collector road.

Vehicle travel lanes 4.0 metres in width will be provided in each direction with on-street parking on the east side of the street. The existing 1.85-metre-wide sidewalks will be maintained on the east side of the road while a 4.0-metre-wide multi-use trail will be provided on the west side of road.

The south side of Lakeshore Road West along the frontage of the site will also be improved from a pedestrian standpoint with an increased sidewalk width (3.5 metres) and boulevard width accommodating landscape elements and on-street layby parking areas. A concept cross-section for Lakeshore Road West adjacent to the site is shown in **Figure 17**.



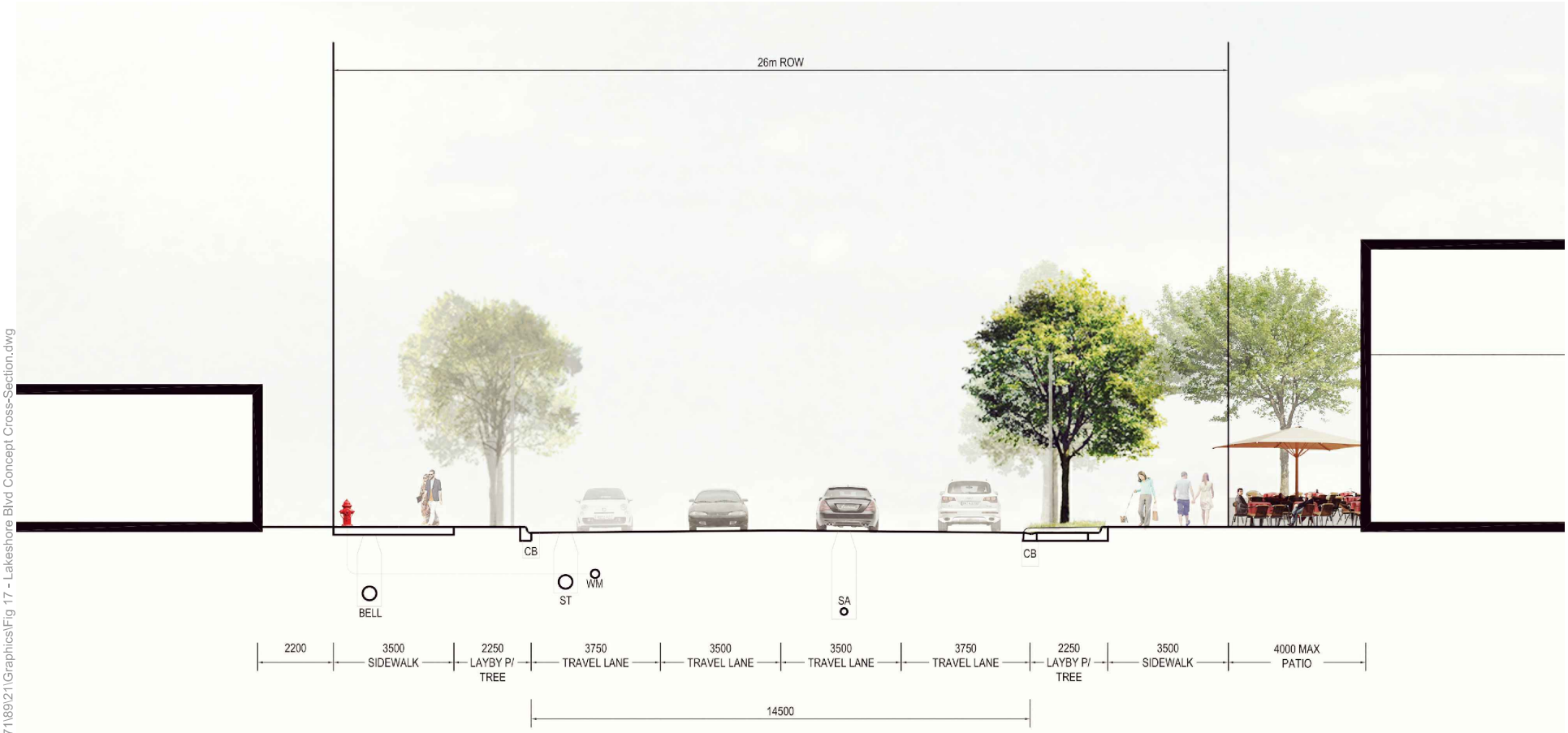
'The cross-section shown is a concept design and subject to change'

Mississauga Road South Concept Cross-Section

BA Group

70 Mississauga Road South
7189-21 March 2018

Figure 16



'The cross-section shown is a concept design and subject to change'

Lakeshore Boulevard West Concept Cross-Section

BA Group

70 Mississauga Road South
7189-21 March 2018

Figure 17

7.2.2 Travel Demand Forecasts

In order to assess the impacts of the type and intensity of development proposed in the Master Plan on the local area transportation infrastructure, travel demand forecasts were made for future walking, cycling, transit and automobile trips.

7.2.2.1 Residential Trips

Residential trip generation forecasts were based upon:

a) proxy trip generation surveys conducted at comparable residential townhouse and condominium developments located within a similar transportation context as the subject site (i.e. west of the downtown Toronto area with good access to transit and within approximately 1 kilometre of a GO station);
b) data from the ITE Trip Generation Manual for Land Use Code 230 – Residential Condominium/Townhouse;
c) trip generation rates utilized in the One Port Street transportation study conducted by BA Group in 2013; and
d) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for home-based trips in the Port Credit area.

Trip generation forecasts for the proposed 2,969 residential units are summarized in **Table 3**.

7.2.2.2 Commercial Office Trips

Commercial office trip generation forecasts were based upon:

a) proxy trip generation surveys conducted at the Hatch Global office building located at 2800 Speakman Drive in Mississauga, which was selected as a proxy site because of its proximity to the Clarkson GO Station and access to local transit;
b) data from the ITE Trip Generation Manual for Land Use Code 710 – General Office Building; and
c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for work-based trips in the Port Credit area.

Trip generation forecasts for the proposed 13,764 m^2 of commercial office GFA are summarized in **Table 4**.

7.2.2.3 Community/Institutional Use Trips

The trip generation forecast for community/institutional uses was based upon ITE data, along with data from a YMCA site. The trip generation approach was as follows:

a) proxy trip generation surveys conducted at the Oakville YMCA located at 410 Rebecca Street, which was selected as a proxy site because of its similar transportation context compared to the subject site;
b) data from the ITE Trip Generation Manual for Land Use Code 495 – Community Centre; and
c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for all trips in the Port Credit area.

Trip generation forecasts for the proposed community/institutional use (8,648 m^2 GFA in size) are summarized in **Table 5**.

TABLE 3 RESIDENTIAL TRIP GENERATION SUMMARY

Vehicle Trip Generation Rate Source		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
		Vehicle Trip Generation Rates per Residential Unit					
Legion Road Condominiums[1]		0.02	0.24	0.27	0.17	0.09	0.26
Manitoba Street Condominiums and Townhomes[2]		0.08	0.44	0.51	0.38	0.23	0.61
Port Credit Townhomes[3 4]		0.17	0.36	0.52	0.66	0.55	1.22
ITE Trip Generation Manual[5]		0.05	0.23	0.27	0.23	0.11	0.34
One Port Street Transportation Study[6]		0.07	0.27	0.34	0.28	0.12	0.40
Selected Vehicle Trip Generation Rate (Apartment Units)		**0.05**	**0.25**	**0.29**	**0.23**	**0.11**	**0.33**
Selected Vehicle Trip Generation Rate (Townhouse Units)		**0.08**	**0.44**	**0.51**	**0.38**	**0.23**	**0.61**
Travel Mode	**Split[7]**	**Total Future Trips by Travel Mode – 2,464 Condominium Apartment Units + 505 Townhouse Units**					
Driver Trips	**67%**	**150**	**822**	**973**	**743**	**373**	**1,116**
Auto Passenger Trips	12%	28	151	178	136	68	205
Transit Trips	19%	43	236	279	213	107	320
Cycling/Walking Trips	2%	4	22	26	20	10	30
Total Person Trips	**100%**	**225**	**1,231**	**1,455**	**1,111**	**558**	**1,670**

Notes:

1. Survey conducted by BA Group on Wednesday, April 26, 2017 at 155 Legion Road North. Proxy site contains approximately 930 residential condominium apartments units in total.
2. Survey conducted by BA Group on Wednesday, April 26, 2017 at 210 Manitoba Street. Proxy site contains approximately 32 townhouse units and 310 residential condominium apartments units in total.
3. Survey conducted by BA Group on Thursday, June 1, 2017 at townhouse development bordered by St. Lawrence Drive in Port Credit. Proxy site contains 185 townhouse units (include 8 live/work units) in total.
4. Weekday afternoon trip generation rates not utilized, as they were found to be unusually high.
5. Based on trip generation data for Land Use Code 230 (Residential Townhouse/Condominium) contained in the ITE Trip Generation Manual, 9th edition.
6. Based on transportation study associated with the One Port Street development in Port Credit conducted by BA Group in 2013. The One Port Street Master Plan contemplated 1,500 new residential units.
7. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for home-based trips made during the weekday peak periods in the Port Credit area.

TABLE 4 COMMERCIAL OFFICE TRIP GENERATION SUMMARY

Vehicle Trip Generation Rate Source		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
		Vehicle Trip Generation Rates per 1,000 ft² GFA					
Hatch Global Office Site[1 2]		1.30	0.15	1.45	0.11	1.27	1.38
ITE Trip Generation Manual[3]		1.56	0.21	1.77	0.28	1.37	1.65
Selected Vehicle Trip Generation Rate		**1.43**	**0.18**	**1.61**	**0.20**	**1.32**	**1.52**
Travel Mode	**Split[4]**	**Total Future Trips by Travel Mode – 13,764 m² Commercial GFA**					
Driver Trips	**85%**	**212**	**27**	**238**	**29**	**195**	**224**
Auto Passenger Trips	10%	24	3	27	3	22	25
Transit Trips	3%	9	1	10	1	8	9
Cycling/Walking Trips	2%	6	1	7	1	6	7
Total Person Trips	**100%**	**250**	**31**	**281**	**34**	**230**	**265**

Notes:
1. Survey conducted by BA Group on Tuesday, April 25, 2017 at 2800 Speakman Drive. Proxy site contains approximately 11,700 m² of office-related gross floor area.
2. Trip generation rates reduced by a decreasing rate factor of 98% in the AM peak hour and 96% in the PM peak hour to account for the size difference between the proxy site and the proposed amount of commercial office (11,700 m² versus 13,627 m²). These factors were calculated based on a comparison of ITE Trip Generation Manual (9th Ed.) vehicle trip generation rates for a General Office Building (Land Use Code 710) 11,700 m² and 13,627 m² in size.
3. Based on trip generation data for Land Use Code 710 (General Office Building) contained in the ITE Trip Generation Manual, 9th edition.
4. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for work-based trips made during the weekday peak periods in the Port Credit area.

7.2.2.4 Retail Trips

Retail trip generation forecasts were based upon:

a) proxy trip generation surveys conducted at Loblaws retail plaza located directly north of the site at 220 Lakeshore Road West;
b) data from the ITE Trip Generation Manual for Land Use Code 820 – Shopping Centre; and
c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for market-based trips in the Port Credit area.

Trip generation forecasts for the proposed 14,525 m² GFA (13,073 m² Gross Leasable Area) of retail space are summarized in **Table 6**.

TABLE 5 COMMUNITY/INSTITUTIONAL USE TRIP GENERATION SUMMARY

Vehicle Trip Generation Rate Source		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
		Vehicle Trip Generation Rates per 1,000 ft² GFA					
YMCA Oakville Site[1]		2.92	1.14	4.06	3.12	2.09	5.21
ITE Trip Generation Manual[2]		1.35	0.70	2.05	1.34	1.40	2.74
Selected Vehicle Trip Generation Rate		**2.14**	**0.92**	**3.06**	**2.23**	**1.74**	**3.97**
Travel Mode	**Split[3]**	**Total Future Trips by Travel Mode – 8,648 m² Community/Institutional Use GFA**					
Driver Trips	**74%**	**199**	**86**	**284**	**208**	**162**	**370**
Auto Passenger Trips	16%	41	17	58	42	33	76
Transit Trips	7%	20	8	28	20	16	36
Cycling/Walking Trips	3%	9	5	14	10	8	17
Total Person Trips	**100%**	**268**	**116**	**384**	**280**	**219**	**499**

Notes:

1. Survey conducted by BA Group on Tuesday, April 25, 2017 at YMCA Oakville. Proxy site contains approximately 4,140 m² of floor area.
2. Based on trip generation data for Land Use Code 495 (Community Centre) contained in the ITE Trip Generation Manual, 9th edition.
3. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for all trips made during the weekday peak periods in the Port Credit area.

TABLE 6 RETAIL TRIP GENERATION SUMMARY

Vehicle Trip Generation Rate Source		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
		Vehicle Trip Generation Rates per 1,000 ft² GLA					
Loblaws Retail Site[1 2]		1.59	0.70	2.29	3.10	2.49	5.59
ITE Trip Generation Manual[3]		1.00	0.61	1.62	2.97	3.21	6.18
Selected Vehicle Trip Generation Rate		**1.30**	**0.66**	**1.95**	**3.03**	**2.85**	**5.88**
Travel Mode	**Split[4]**	**Total Future Trips by Travel Mode – 12,437 m² Retail GLA[5]**					
Driver Trips	**81%**	**154**	**78**	**232**	**370**	**347**	**717**
Primary Trips[6]		154	78	232	208	186	394
Pass-by Trips[6]		0	0	0	161	161	323
Auto Passenger Trips	15%	28	14	41	66	62	128
Transit Trips	1%	2	1	4	6	5	11
Cycling/Walking Trips	3%	5	3	8	12	12	25
Total Person Trips	**100%**	**189**	**96**	**285**	**454**	**427**	**881**

Notes:

1. Survey conducted by BA Group on Thursday, May 4, 2017 at the Loblaws retail plaza located at 240 Lakeshore Road West. Proxy site contains approximately 3,320 m² of retail gross leasable floor area. Vehicle trip rates exclude the Loblaws grocery store.
2. Trip generation rates reduced by a decreasing rate factor of 69% in the AM peak hour and 73% in the PM peak hour to account for the size difference between the proxy site and the proposed amount of retail space (3,320 m² versus 8,465 m²). These factors were calculated based on a comparison of ITE Trip Generation Manual (9th Ed.) vehicle trip generation rates for a Shopping Centre (Land Use Code 820) 3,320 m² and 12,437 m² in size.
3. Based on trip generation data for Land Use Code 820 (Shopping Centre) contained in the ITE Trip Generation Manual, 9th edition.
4. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for market-based trips made during the weekday peak periods in the Port Credit area.
5. Gross Leasable Area (GLA) assumed to be 90 percent of Gross Floor Area (GFA).
6. A pass-by trip percentage of 45% was assumed in the PM peak hour based on pass-by trip data for Shopping Centres contained in the ITE Trip Generation Handbook, 3rd Edition. Pass-by trips are vehicle trips made to the site that are already on the road network on route to another destination. These trips are opposed to primary trips, which are trips made to the site where the site is the primary destination.

7.2.2.5 Total Site Trip Generation Forecasts

Total site trip generation was estimated by summing the trips generated by the individual proposed uses on-site – residential, office, community/institutional use, and retail uses – and applying an 'internalization' factor to account for a reduction in external home-based trips due to several common destination points being on-site.

An internalization factor of 5% was applied to the total amount of forecast residential person trips during the peak hours. These internal trips represent persons who would normally make an external trip to either a place of work, retail store or recreational destination if they lived on a site containing no other uses but residential,

who now only travel internally to the site, taking advantage of the mixed uses in their immediately local community.

Correspondingly, it was assumed that 50% of these internal trips displace external trips to the office and community/institutional uses on the site. The other 50% of internal trips are assumed to travel to the retail uses on the site, but don't displace any external trips associated with those uses – i.e. the internal trips are additive, not substitutional. These assumptions were made with the logic that the offices and community/institutional uses on the site have a more fixed person capacity compared to retail uses.

Total trip generation for the site is summarized in **Table 7**.

In total, the proposed 70 Mississauga Road South site as a whole is anticipated to generate approximately 2,297 and 3,190 new person trips during the critical weekday morning and afternoon peak hour periods, respectively. Of these trips, 1,654 and 2,020 are net new vehicle trips (i.e. new vehicles on the local road network) during the weekday morning and afternoon peak hour periods, respectively.

The above-noted number of trips forecasted assumes that people travel the same as they do today with respect to their travel mode of choice. In order to gain an understanding of future vehicle trip generation associated with the proposed site if future improvements to transit infrastructure resulted in a modal shift away from personal automobiles to transit, a sensitivity analysis was performed that considered a 5% mode shift from driver to transit. The 5% assumption was based on direction from City transportation staff, and is not intended to reflect a mode shift that may occur with introduction of rapid transit. The forthcoming Phase 2 transportation study related to the proposed site will consider more aggressive mode shifts to transit based on future mode split targets established in the Peel Region Growth Management Strategy.

Total trip generation for the proposed site assuming this 5% modal shift is summarized in **Table 8**. In this scenario, the total number of net new vehicle trips on the local road network is reduced to 1,539 and 1,861 during the weekday morning and afternoon peak hour periods, respectively.

TABLE 7 TOTAL SITE TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
	Residential					
Auto Driver	143	781	924	705	355	1,060
Auto Passenger	26	143	170	129	65	195
Transit	41	224	265	202	102	304
Cycle/Walk	4	21	25	19	9	28
Total Residential Person Trips	**213**	**1,169**	**1,383**	**1,056**	**531**	**1,586**
	Office					
Auto Driver	201	25	226	25	186	210
Auto Passenger	22	3	25	2	20	23
Transit	6	1	6	0	5	5
Cycle/Walk	6	1	7	1	5	6
Total Office Person Trips	**235**	**29**	**263**	**27**	**216**	**244**
	Community/Institutional Use					
Auto Driver	188	84	272	203	153	356
Auto Passenger	39	17	56	42	31	73
Transit	17	8	24	19	13	32
Cycle/Walk	9	4	13	9	7	17
Total Community/Institutional Use Person Trips	**253**	**113**	**366**	**273**	**205**	**478**
	Retail					
Auto Driver	154	78	232	370	347	717
Primary	154	78	232	208	186	394
Pass-by	0	0	0	161	161	323
Auto Passenger	28	14	41	66	62	128
Transit	2	1	4	6	5	11
Cycle/Walk	5	3	8	12	12	25
Total Retail Person Trips	**189**	**96**	**285**	**454**	**427**	**881**

Table continued on next page…

TABLE 9 TOTAL SITE TRIP GENERATION SUMMARY (CONTINUED FROM PREVIOUS PAGE)

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
	Total Trips					
Auto Driver	686	968	1,654	1,303	1,040	2,343
Primary	686	968	1,654	1,141	879	2,020
Pass-by	0	0	0	161	161	323
Auto Passenger	114	177	291	239	179	418
Transit	66	234	299	227	126	353
Cycle/Walk	24	28	52	42	35	76
Total Site Person Trips	**890**	**1,406**	**2,297**	**1,811**	**1,379**	**3,190**

Notes:
1. Assumes 5% of residential trips are internalized compared to residential trip forecasts made in Section 7.2.2.1. Half of internalized trips are deducted from the office and community/institutional use external trip generation forecasts estimated in Sections 7.2.2.2 and 7.2.2.3.

TABLE 8 TOTAL SITE TRIP GENERATION SUMMARY – 5% MODE SHIFT TO TRANSIT

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
	Residential					
Auto Driver	132	723	855	653	328	981
Auto Passenger	26	143	170	129	65	195
Transit	52	282	334	255	128	383
Cycle/Walk	4	21	25	19	8	28
Total Residential Person Trips	**213**	**1,169**	**1,383**	**1,056**	**531**	**1,586**
	Office					
Auto Driver	190	23	213	23	175	198
Auto Passenger	22	3	25	2	20	23
Transit	17	2	19	1	16	17
Cycle/Walk	6	1	7	1	5	6
Total Office Person Trips	**253**	**113**	**366**	**273**	**205**	**478**
	Community/Institutional Use					
Auto Driver	176	78	254	189	143	332
Auto Passenger	39	17	56	42	31	73
Transit	29	14	43	33	24	56
Cycle/Walk	9	4	13	9	7	17
Total Community/Institutional Use Person Trips	**253**	**113**	**366**	**273**	**205**	**478**
	Retail					
Auto Driver	145	73	218	347	326	673
Primary	145	73	218	186	165	350
Pass-by	0	0	0	161	161	323
Auto Passenger	28	14	41	66	62	128
Transit	12	6	18	29	27	55
Cycle/Walk	5	3	8	12	12	25
Total Retail Person Trips	**189**	**96**	**285**	**454**	**427**	**881**

Table continued on next page…

TABLE 10 TOTAL SITE TRIP GENERATION SUMMARY – 5% MODE SHIFT TO TRANSIT (CONTINUED FROM PREVIOUS PAGE)

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
	Total Trips					
Auto Driver	642	897	1,539	1,212	971	2,184
Primary	642	897	1,539	1,051	810	1,861
Pass-by	0	0	0	161	161	323
Auto Passenger	114	177	291	239	179	418
Transit	110	304	414	318	195	512
Cycle/Walk	24	28	52	42	35	76
Total Site Person Trips	**890**	**1,406**	**2,297**	**1,811**	**1,379**	**3,190**

Notes:

1. Assumes 5% of residential trips are internalized compared to residential trip forecasts made in Section 7.2.2.1. Half of internalized trips are deducted from the office and community/institutional use external trip generation forecasts estimated in Sections 7.2.2.2 and 7.2.2.3.
2. Assumes a 5% mode shift from auto driver trips to transit trips compared to the base trip generation estimates summarized in Table 7.

7.2.3 Master Plan Transportation Network Impacts Evaluation

The impacts of the Master Plan on the broader area transportation network will be evaluated as part of the Phase 2 transportation study to be conducted following the initial OPA/ZBA/Draft Plan of Subdivision application submission, which will build upon the travel demand forecasts made in this study.

The ability of the proposed Master Plan to accommodate the travel demand on the immediately local area transportation network – i.e. the proposed internal road system and its intersections with Lakeshore Road West and Mississauga Road South – are discussed in detail in Section 11.0.

Based on this review, the transportation elements of the Master Plan are able to appropriately accommodate its estimated future travel demand from a traffic capacity perspective, with a reasonable impact on the local area transportation network.

7.2.4 Transportation Working Group

As part of the community consultation process initiated by the West Village Partners, a neighbourhood transportation working group was established to discuss neighbourhood traffic issues and opportunities. A number of concerns have been raised by area residents through the working group, including the impact of site traffic on the existing residential neighbourhoods to the west, north and east of the West Village site. Due to the combination of the existing road network and the internal road layout proposed within the West Village site, the existing residential neighbourhood east of the West Village site would be the most likely area that site traffic could be expected to pass through.

Based on earlier analysis contained in the August 2017 report, it was estimated that approximately 120-150 peak hour vehicle trips in the peak direction (or approximately 270 two-way trips) could be expected to travel through the existing neighbourhood immediately to the east of Mississauga Road. Based on The City of Mississauga's 2016 Traffic Calming Policy, traffic calming could be considered on a minor roadway if the level of traffic infiltration exceeds 40% of the volume on that street. A plan is being developed through the working group process to investigate potential traffic calming alternatives that could be considered as a means of limiting the traffic impact on the adjacent existing neighbourhoods. The plan will be finalized through further consultation with the transportation working group and presented to the City for review.

For the purposes of the assessment of traffic operations on the road network (described in later sections of this report) it has been assumed that some traffic controls or restrictions to address potential traffic increases in existing neighbourhoods would be in place in the future, and no site traffic volumes have been assumed to travel through the existing residential neighbourhoods. All eastbound site traffic leaving the site at Mississauga Road has been assumed to turn left and travel to Lakeshore Road before turning to the east (with a similar but opposite assumption for inbound traffic arriving at the site from the east).

7.3 REGIONAL AREA PERSPECTIVE

The mixed-use nature of the proposal brings about land use synergies that will allow for a reduction in inter-regional vehicle kilometres travelled by creating local points of both origin and destination. The complement of uses on site reduce the need for residents and employees to travel outside of the local area to accomplish daily tasks and reduces the need for stop-over vehicle trips, thereby benefiting traffic conditions in the region at large.

A balance of uses on site will also achieve a more complete community that reduces the need for long-distance commuting and increases the proportion of travel by transit, walking and cycling, thereby lessening regional road congestion.

From a regional area transportation planning perspective, the concept Master Plan is consistent with the planning documents discussed in Section 5.0 with respect to:

- promoting, maintaining and improving connectivity within and among transportation systems and modes;
- minimizing the length and number of vehicle trips and supporting current and future use of transit and active transportation;
- the intensification of existing built-up areas to support transit and infrastructure investment;
- promoting a high intensity, compact urban form with an appropriate mix of uses including commercial, office, residential, recreational and major institutional;
- promoting transit-supportive and pedestrian-oriented urban forms;
- enhancing system capacity through design, network linkages, and new roads;
- creating new pedestrian and cycling connections;
- implementing reduced parking standards; and
- designing and implementing an effective transportation demand management strategy aimed at reduced the number of personal vehicle trips made.

8.0 MASTER PLAN PARKING CONSIDERATIONS

The Master Plan includes provision of parking in a manner that supports the proposed development but is also in line with sustainable transportation practices and the City of Mississauga's strategic direction towards a multi-modal city. The following section describes the prevailing current Zoning By-law requirements, parking policy context and rationale for the proposed parking provision.

8.1 ZONING BY-LAW PARKING REQUIREMENTS

The parking supply requirements for buildings in Port Credit and Lakeview are set out in Tables 3.1.2.1 and 3.1.2.2 in Part 3 of Mississauga Zoning By-Law 0225-2007. The predominant uses and associated requirements are summarized in **Table 9**.

Much of the Port Credit commercial area is classified as a C4 zone. The C4 zone parking supply rates for some uses are lower than those for similar uses in other areas of the City in recognition that they tend to generate lower parking demands than typical suburban uses.

A shared parking schedule in **Table 10** is also provided in the general zoning regulations which allows the amount of parking for mixed-use development projects to be reduced by taking into account the different temporal parking characteristics for each use.

8.2 POLICY CONTEXT FOR PARKING

As part of the Mississauga Parking Master Plan and Implementation Strategy (PMPIS), a review of city parking policies, such as by-law parking requirements, was undertaken in the May 2017 "*Parking Matters – Mississauga Best Practices Overview"* report. In general, it was found that Mississauga's existing minimum parking standards were consistently found to be higher than municipalities such as Toronto, Vancouver, and Oakville. As Mississauga strives to shift towards becoming a multi-modal city, lower parking requirements and policies are required to further encourage the shift from auto-based modes of transportation to more active modes of transportation.

By way of context, recent studies indicate that the City of Mississauga general office parking standards (3.2 spaces / 100 m^2 of GFA) and general retail parking standards (4.0 spaces / 100 m^2 of GFA) are approximately 1.5 to 2 times higher than the office rates and more than 2 times the retail rates required by municipalities such as Toronto, Victoria, and Vancouver.

Lower parking minimums and the introduction of parking maximums help promote an urban, compact neighbourhood environment and foster the growth of more vibrant mixed-use neighbourhoods.

8.2.1 Port Credit Local Area Plan

Supplementary to the Mississauga Official Plan document, the Port Credit Local Area Plan provides policies for lands in south central Mississauga. Based on the language in the Local Area Plan, it is intended that larger redevelopment sites be self-sufficient in the provision of parking, with preference to the maintenance of

pockets of small parking lots as opposed to large centrally located parking structures. However, it is noted that the above policies may not necessarily be in line with the sustainable development vision for the site.

TABLE 9 ZONING BY-LAW 0225-2007 PARKING REQUIREMENTS

Use	Zoning Requirement
Condominium Apartment Dwelling	1.00 resident / bachelor unit 1.25 resident spaces / one-bedroom unit 1.40 resident spaces / two-bedroom unit 1.75 resident spaces / three-bedroom unit 0.20 visitor spaces / unit
Rental Apartment Dwelling	1.00 resident space / bachelor unit 1.18 resident spaces / one-bedroom unit 1.36 resident spaces / two-bedroom unit 1.50 resident spaces / three-bedroom unit 0.20 visitor spaces / unit
Office	3.2 spaces / 100 m^2 of GFA [1]
Medical Office	6.5 spaces / 100 m^2 of GFA
Retail Store (in a C4 Zone)	4.0 spaces / 100 m^2 of GFA
Restaurant (in a C4 Zone)	9.0 spaces / 100 m^2 of GFA
Take-out Restaurant	6.0 spaces / 100 m^2 of GFA
Warehousing (Single Occupancy Building)	1.1 spaces / 100 m^2 of GFA up to 6975m^2 0.6 spaces / 100 m of GFA over 6975m^2
Marina	0.6 spaces / slip or berth
Art Gallery, Museum	3.6 spaces / 100 m^2 GFA
Financial Institution	5.5 spaces / 100 m^2 of GFA
Animal Care Establishment (in a C4 Zone)	4.0 spaces / 100 m^2 of GFA
Real Estate Office	6.5 spaces / 100 m^2 of GFA
Repair Establishment (in a C4 Zone)	4.0 spaces / 100 m^2 of GFA
Personal Service (in a C4 Zone)	4.0 spaces / 100 m^2 of GFA
Dwelling Unit (located above a commercial development with a max height of three storeys)	1.25 spaces / unit
Detached or semi-detached Townhouse	2.0 resident spaces / unit 0.25 visitor spaces / unit
Condominium Horizontal multiple dwelling (without exclusive use garage and driveway)	As for Condominium Apartment Dwelling

Notes:

1. Where the non-office uses are greater than 10% of the total GFA, separate parking will be required for all such uses in accordance with Table 3.1.2.2. of Zoning By-law 0225-2007.

TABLE 10 SHARED PARKING IN ZONING BY-LAW 0225-2007

Use	Percentage of Peak Period[1]			
	Morning	Noon	Afternoon	Evening
Office / Medical / Financial Institution	100 (10)	90 (10)	95 (10)	10 (10)
Retail Centre / Retail Store / Personal Service	80 (80)	90 (100)	90 (100)	90 (70)
Restaurant / Take-out Restaurant	20 (20)	100 (100)	30 (50)	100 (100)
Overnight Accommodation	70 (70)	70 (70)	70 (70)	100 (100)
Residential – Resident Residential – Visitor	90 (90) 20 (20)	65 (65) 20 (20)	90 (90) 60 (60)	100 (100) 100 (100)

Notes:
1. 00 – Indicates weekday peak period percentage, (00) indicates weekend peak period percentage.

8.2.2 Inspiration Port Credit

The "*Inspiration Port Credit*" planning document dated November 2015 provides the planning framework for 1 Port Street East and 70 Mississauga Road South. It is intended that the parking requirements for the 70 Mississauga Road South site be appropriate for a mixed-use community and support transit-oriented development.

8.2.3 Port Credit & Lakeview Parking Strategy

The study entitled *"City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview"*, conducted by BA Group in June 2014 develops an effective parking strategy for the Port Credit and Lakeview areas that support's the City's urban design, economic, land use, and transportation objectives.

The study found that the peak commercial parking demand in the Port Credit commercial area was well below current Zoning By-law requirements, and noted that this is a common occurrence in main street commercial areas which tend to exhibit lower parking demand characteristics compared to similar suburban commercial centres, which are often used as the basis for establishing zoning requirements.

It was recommended that the City reduce parking supply requirements in the Zoning By-law to reflect actual need, achieve broader urban design objectives, and support good urban design.

8.2.3.1 Automobile Parking

The Port Credit & Lakeview Parking Strategy recommended reduced and consolidated Zoning By-law parking requirements for the Port Credit area. The study recommended the following revisions to the existing Zoning By-law rates for commercial uses be implemented for C4 zones, to be applied to land uses in a main street type setting:

- 3.0 spaces per hundred square metres GFA for retail, personal service, repair establishments, art galleries and museums;
- 4.85 spaces per hundred square metres GFA for financial institutions, real estate offices, medical offices and take-out restaurants; and
- 3.0 spaces per hundred square metres GFA for office uses.

For residential uses, the study recommended reducing parking requirements within the Port Credit Mobility Hub area (generally within 500 metre radius of the Port Credit GO Station) and also in proximity to the future extension of light rail through Port Credit. Within those areas, the study recommended a reduced residential parking requirement of:

- a minimum of 1.0 space per unit for residents; and
- a minimum of 0.15 space per unit for visitors.

The Port Credit & Lakeview Parking Strategy also recommended a modified shared parking schedule to better reflect the temporal variations in demand found in main street commercial areas. The recommended shared parking schedule is shown in **Table 11** below.

TABLE 11 PORT CREDIT PARKING STRATEGY - RECOMMENDED SHARED PARKING SCHEDULE

Use	Percentage of Peak Period[1]			
	Morning	Noon	Afternoon	Evening
Office / Medical Office	100 (10)	90 (10)	95 (10)	10 (10)
Real Estate Office	90 (50)	80 (50)	100 (50)	50 (20)
Financial Institution	70 (90)	75 (90)	100 (90)	80 (20)
Retail Store / Personal Service/Art Galleries/Museums/Repair Establishments	50 (50)	50 (75)	70 (100)	75 (10)
Restaurant / Take-out Restaurant	25 (20)	65 (90)	25 (50)	100 (100)
Hotel - Rooms	50 (70)	25 (25)	25 (25)	65 (50)
Hotel – Function Space[2]	95 (95)	100 (95)	90 (90)	95 (95)
Residential – Resident Residential – Visitor	90 (90) 20 (20)	65 (65) 20 (20)	90 (90) 50 (60)	100 (100) 100 (100)

Notes:
1. 00 – Indicates weekday peak period percentage, (00) indicates weekend peak period percentage.
2. Hotel Function space includes restaurants, meeting rooms, banquet and conference facilities.

8.2.3.2 Bicycle Parking

The Port Credit & Lakeview Parking Strategy noted that the existing City of Mississauga Zoning By-law 0225-2007 did not have bicycle parking requirements, but recommended that the bicycle parking requirements for the City Centre area developed in Phase I of the Parking Strategy be applied to new developments in the Port Credit and Lakeview areas. The bicycle parking supply requirements are summarized in **Table 12**.

TABLE 12 PORT CREDIT PARKING STRATEGY - RECOMMENDED BICYCLE PARKING REQUIREMENTS

Use	Bicycle Parking Requirement
Office Uses	0.17 spaces per 100 m² GFA for staff plus 0.03 spaces per 100 m² GFA for visitors
Retail Uses	0.085 spaces per 100 m² GFA for staff plus 0.25 spaces per 100 m² GFA for visitors
All other non-residential uses	4% for staff and 4% for visitors
Residential Apartments & Townhomes[1]	0.60 resident spaces per unit 0.15 visitor spaces per unit

Notes:
1. Residential requirement applies to apartments and townhouses that do not have an exclusive garage.

The Port Credit & Lakeview Parking Strategy also recommended that the City should implement a requirement for showers and change rooms in the Zoning By-law for any non-residential use to further encourage cycling in the Port Credit area and Lakeview. It was recommended that the City adopt shower and change room requirements for employment uses as shown in **Table 13** below. The study recommended that developments with less than 2,325 m^2 (approximately 25,000 ft^2) of office space and 4,700 m^2 (50,650 ft^2) of retail/restaurant/personal service uses should be exempted from the requirement for showers and change rooms.

TABLE 13 SHOWER AND CHANGE FACILITIES

Required No. of Employee Bike Spaces	Number of Shower Stalls per gender
0 - 4	0
5 - 29	1
30 - 59	2
60 - 89	3
90 - 119	4
120 - 149	5
150 - 179	6
over 179	7 plus 1 for each additional 30 bike spaces

Notes:
1. Each gender will also require a change and washroom facility, including storage lockers equal to 0.70 times the number of employee parking spaces provided.

8.3 PROPOSED PARKING PROVISION

Parking is a powerful tool that can be used to achieve a variety of community objectives. It is intended that the parking provisions on the site meet the projected the demands of the site such that the residents and visitors will be unlikely to disrupt off-site roadways and parking areas, but not provide so much parking as to discourage achievement of the City of Mississauga multi-modal objectives.

The proposed parking requirements will be appropriate for a mixed-use community and support transit-oriented development. Transportation demand management measures (discussed further in Section 10.0) such as maximum parking standards, shared parking, enhanced bicycle parking, and carpool / car share priority parking will complement the characteristics of transit-oriented mixed-use neighbourhood, support the increased use of non-automobile travel and reduce the need for car ownership.

8.3.1 Automobile Parking

8.3.1.1 Proposed Non-Residential Parking Supply

It is proposed to meet the non-residential parking requirements outlined in BA Group's *"City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview"* report (summarized in Section 8.2.3.1), which represent a 25% reduction in parking spaces for retail, personal service, repair, real estate and medical office uses, a 19% reduction for take-out restaurants, a 17% reduction for art galleries and museums, a 12% reduction for financial institutions and a 6% reduction for office uses compared to current by-law rates. These rates more closely represent the rates outlined for non-downtown core areas in the City of Toronto in their new consolidated zoning by-law review.

On-street parking spaces are proposed where feasible along the new municipal streets, namely Street 'B' and Street 'C', to support the need for short-term visitor parking within the development.

8.3.1.2 Proposed Residential Parking Supply

Guidance in the Local Area Plan and Inspiration Port Credit gives direction to consider reduced and transit supportive parking requirement rates for residential developments in proximity to the Port Credit GO Station. As a matter of policy, and to reflect the intended transit supportive nature of the subject site, it is proposed to adopt minimum residential parking supply rates as follows:

- 1.0 resident spaces per unit for apartment units, multi-unit condo buildings and townhouses without exclusive-use garages;
- 0.15 visitor spaces per unit for apartment units, multi-unit condo buildings and all townhouses;
- 2.0 resident parking spaces for townhouse units with exclusive-use garages; and
- 0.3 parking spaces per unit for Retirement Home and Long-Term Dwelling units.

Reducing the parking supply requirement would recognize the potential for higher transit, walk and active transportation use in the area, and is in line with the sustainability objectives of the City. In addition, it would recognize a trend to a more urban lifestyle and minimise the cost of expensive underground parking for residents who do not actually want or need it, while making the most efficient shared use of the parking capacity that is provided, including on-street parking for visitors to the site.

The minimum parking requirements associated with the Retirement Home and Long-Term Dwelling uses were based on a recently approved rate of 0.30 space per unit at the 'Shores of Port Credit' seniors' residence project located at the corner of Benson Avenue and Lakeshore Road West. A minimum parking rate of 0.30 space per unit for both 'Assisted Living' and 'Independent Living' units was established for this development. Justification for this parking reduction was provided and accepted by City of Mississauga staff in a *Parking Assessment Letter* authored by BA Group dated November 16, 2017.

Regarding the Hospice and Affordable Housing uses, given that the nature of these uses that would be realized on the site is not fully understood at this early stage in the development process, minimum parking supply requirements for these uses have been excluded from the site specific by-law.

It is the intention of the developer to establish appropriate parking rates for hospice and affordable housing units, which balance the practical parking requirements for such facilities without over-providing on-site parking, through a future by-law variance when more details regarding the proposed uses and additional supporting empirical parking demand data can be provided.

8.3.2 Appropriateness of Proposed Residential Parking Supply

In order to provide some insight based on empirical data regarding the anticipated demand for residential parking within the future development, BA Group conducted residential parking demand surveys at two existing residential condominium buildings located on The Queensway between Islington Avenue and Kipling Avenue. These residential buildings were chosen as proxy sites because they are located a similar transportation context as the site – i.e., along an arterial road with access to only a bus transit route and within walking distance of several services/stores such as a grocery store, drug store, consumer banks and restaurants. This data is summarized in **Table 14**.

TABLE 14 RESIDENTIAL PROXY SITE PARKING DEMAND SURVEY DATA SUMMARY

Site	Survey Date	Number of Residential Units (Condo Apartment)	Observed Residential Parking Demand (Spaces per Unit)	Observed Parking Demand Increased by 5%[2]
			(Spaces per Unit)	
1040/1050 The Queensway	Tuesday, Oct 21, 2017	316	0.90	0.95
1193 The Queensway	Tuesday, Oct 21, 2017	303	0.89	0.93

Notes:
1. Surveys conducted between 1:00 and 1:30 a.m. to maximize resident parking demand capture.
2. Observed parking demand increased by a factor of 5% to account for resident absenteeism.

Recognizing that the surveyed buildings contain only apartment-type condominium units, and that the suite-type mix of units within these buildings is unknown, this data is not meant to serve as a complete justification that the proposed 1.0 per unit residential parking rate would be sufficient in accommodating anticipated future residential parking demand on the site. However, this data does provide some indication that, on an overall basis, parking demand at condominium buildings in urban areas with access to only surface bus transit routes may actually be close to (and less) than 1.0 spaces per unit.

Additional residential proxy site surveys may be conducted at a later stage in the development's approval process to provided further justification and empirical evidence supporting the proposed reduced residential parking supply.

8.3.3 Bicycle Parking

Based on the recommendations of the City of Mississauga's Transportation and Works section, the bicycle parking supply rates summarized in **Table 15** are proposed as part of the Master Plan. It is noted that these bicycle parking supply rates are greater than those recommended in Phase 1 of the Port Credit & Lakeview Parking Strategy.

TABLE 15 PORT CREDIT PARKING STRATEGY - RECOMMENDED BICYCLE PARKING REQUIREMENTS

Use	Bicycle Parking Requirement
Office Uses	0.15 spaces per 100 m² GFA for staff plus 0.10 spaces per 100 m² GFA for visitors
Retail Uses	0.10 spaces per 100 m² GFA for staff plus 0.25 spaces per 100 m² GFA for visitors
School Uses (College/University)	0.60 spaces per 100 m² GFA for staff/students plus 0.18 spaces per 100 m² GFA for visitors
All other non-residential uses	4% for staff and 4% for visitors
Residential Apartments & Townhomes[1]	0.70 resident spaces per unit 0.08 visitor spaces per unit

Notes:
1. Residential requirement applies to apartments and townhouses that do not have an exclusive garage.

It is intended that visitor bicycle parking spaces be placed at highly visible and publicly accessible locations and occupant spaces be located in secure and weather-protected facilities.

The provision of bicycle parking on site will encourage the use of sustainable and active modes of transportation to / from the site. Shower and change facilities will be considered for the office uses on the site, dependant upon operational feasibility.

9.0 MASTER PLAN LOADING CONSIDERATIONS

The provision of appropriate loading facilities is crucial to the functionality of the Master Plan from servicing perspective for both the proposed residential and non-residential uses.

It is proposed that loading facilities for the site be provided in accordance with the requirements of the prevailing City of Mississauga Zoning By-law 0225-2007. By-law 0225-2007 requires loading spaces be provided for the following uses:

- Retail store;
- Retail centre;

- Office;
- Medical office;
- Overnight accommodation;
- Restaurant;
- Convenience restaurant;
- Manufacturing facility;
- Warehouse/Distribution facility;
- Wholesaling facility; and
- Apartment dwellings containing a minimum number of 30 dwelling units.

The number of loading spaces required for each type of use is summarized in **Table 16**.

TABLE 16 ZONING BY-LAW 0225-2007 LOADING REQUIREMENTS

Use	Loading Space Requirement [1]	
	Gross Floor Area [2]/ Number of Units	Minimum Number of Off-Street Loading Spaces
Office / Medical Office	GFA ≤ 2,350 m^2	None
	2,350 m^2 ≤ GFA ≤ 11,600 m^2	1 space
	GFA ≥ 11,600 m^2	1 space plus 1 additional space for each 9,300 m^2 GFA or portion thereof
All Other Non-Residential Uses	GFA ≤ 250 m^2	None
	250 m^2 ≤ GFA ≤ 2,350 m^2	1 space
	2,350 m^2 ≤ GFA ≤ 7,500 m^2	2 spaces
	7,500 m^2 ≤ GFA ≤ 14,000 m^2	3 spaces
	GFA ≥ 14,000 m^2	3 spaces plus 1 additional space for each 9,300 m^2 GFA or portion thereof
Apartment Buildings	Number of Units < 30	None
	Number of units ≥ 30	1 space

Notes:
1. A loading space is defined as an unobstructed rectangular area with a minimum width of 3.5 metres and a minimum length of 9.0 metres.
2. Excluding mezzanine space

9.1 SHARED LOADING PROVISIONS

In addition to adopting the Zoning By-law 0225-2007 base loading requirements, it is also proposed that the sharing of loading spaces between uses located within the same development block be permitted on the Master Plan lands in order to facilitate the design of efficient, pedestrian-oriented buildings and spaces while still meeting the functional servicing requirements of the multiple uses on the site.

Specifically, it is proposed to allow the sharing of loading spaces in the mixed-used blocks between the residential uses and commercial/retail uses, as well the sharing of loading spaces between uses on the solely commercial/retail use blocks. This permitting of sharing is intended to be accomplished through provisions in the site-specific Zoning By-law for the Master Plan lands.

10.0 TRANSPORTATION DEMAND MANAGEMENT PLAN

A central element of the transportation strategy for the Master Plan will be the adoption of a sustainable transportation demand management (TDM) Plan for the project that will attempt to influence the way people travel to and from the site through a comprehensive suite of TDM strategies.

These measures will include the application of various site design elements, alternative transportation offerings, property management, and operational policies, each of which have the goal of redistributing and reducing the travel demand of the project. Specifically, the primary goal is to reduce the overall reliance on single-occupant vehicles (SOV) while promoting the use of more active and sustainable modes of transportation.

Generally, this TDM Plan has three primary objectives:

a) Reduce car dependence and the need for everyday SOV travel;
b) Make it easy and attractive for people to walk and cycle; and
c) Promote car-sharing and transit, each of which are low-carbon in comparison to car ownership and SOV travel.

The Site has the potential to set a sustainable precedent of urban development in Mississauga. The City of Mississauga's strategic plan – *Our Future Mississauga* – states the aspiration for the City to be one where people can travel without an automobile, where transit is promoted as a preferred, affordable, and accessible choice, and to provide all people with the choice to walk, cycle, or use transit because these options will be desirable and convenient. The TDM Plan aims to leverage the advantages imbedded within the design of the Master Plan (i.e. it will be a compact, mixed-use development) to achieve its objectives.

10.1 SITE LOCATION AND TRANSPORTATION CONTEXT

While the site currently has convenient access to Lakeshore Road West, Mississauga Road South, and Hurontario Street, it is also well located from a sustainable transportation perspective.

The site is located in close proximity to the Port Credit GO Station (approximately one kilometre from the northeastern corner of the site), itself a part of the GO Transit Lakeshore West line which provides frequent train service between Aldershot GO Station in Burlington to the west and Union Station in Toronto to the east. As was outlined in Section 3.6, the site is currently directly serviced by several local MiWay Transit routes that connect it (from Lakeshore Road West) to Port Credit GO Station. Providing more convenient access to the Port Credit GO Station to and from the site is considered within the TDM Plan.

In addition, the southern portion of the site is bordered by the Waterfront Trail which alternates between being a paved multi-use trail and a route that shares space with automobiles on residential streets, and travels the extent of the City of Mississauga along its waterfront. Providing more thorough walking and cycling connections to the surrounding area (and specifically to Port Credit GO Station) is a featured aspect of the TDM Plan.

10.2 TDM-SUPPORTIVE ELEMENTS OF THE MASTER PLAN

10.2.1 Mixed-use and Compact Development

The Master Plan includes a mix of land uses on the site and the introduction of a fine-grained network of streets and blocks. Each of these features are conducive to sustainable transportation behaviour. With retail and commercial facilities along Lakeshore Road and community/institutional uses being considered for the southern area of the site, a series of prominent destinations will serve residents that are located close enough to their residence that they will not need to drive. Further, shorter distances between residential blocks are conducive to walking activity.

10.2.2 Vehicular Parking

Sensible vehicular parking management and the provision of an extensive suite of TDM measures are mutually supportive. If vehicular parking is oversupplied on the site, residents and visitors would have less incentive to utilize the options that are available to them. Likewise, a modest parking supply without appropriate TDM measures would negatively affect local traffic and place undue parking demand on the surrounding area. This concept was taken into consideration in Section 8.0 of this Report where vehicular and bicycle parking standards were contemplated. A reduction in vehicular parking rates is supportive of the TDM measures discussed in this section.

As the Master Plan is built out in phases, vehicular parking demand and parking space sales data should be monitored in order to gain an understanding of actual parking demand on the site. This information may be used to further reduce minimum vehicle parking supply rates for future development phases.

10.3 TDM PLAN STRATEGIES AND INITIATIVES

The future site context provides for good public transit service as well as pedestrian and cycling connectivity. Additional strategies have been developed to further support the use of non-auto modes of travel, and to encourage a change in travel behaviour that reduces automobile travel.

Based upon the site context and proposed land uses, the following TDM strategies will be explored. These measures are summarized in **Table 17**. The table outlines which of the three general TDM Plan objectives the strategy is targeting. The following sections provide additional details regarding each proposed TDM strategy.

10.3.1 Travel Mode Information Packages

Marketing programs aimed at new residential unit purchasers should be implemented to ensure that new residents have comprehensive information on modal choices in the area now and in the future. These programs should be made available at the sales centres for the new residential buildings and also be available to residents of the building once it is occupied. Residents should have the option to opt-in to e-mailing lists dedicated to updates regarding their travel options and printed materials should also be available.

TABLE 17 RECOMMENDED SITE TDM MEASURES

Measure	Description	TDM Plan Objective	Cost Estimate
Travel Mode Information Packages	Implement marketing programs aimed at new residential unit purchasers to ensure that residents are aware of available modal choices in the area.	1. Reduce car dependence and the need for everyday travel. 2. Make it easy and attractive for people to walk and cycle. 3. Promote car-sharing and transit.	To be determined.
Shuttle to/from Port Credit GO Station	Explore opportunities to provide service on a shuttle route that loops within the site and travels to Port Credit GO Station to replace short vehicular trips.	1. Reduce car dependence and the need for everyday travel. 3. Promote car-sharing and transit.	To be determined.
Ride-Sharing Program	Explore opportunities to offer ride-sharing programs originating within the buildings. Online services are freely available and can be promoted on the site to facilitate carpooling activity.	1. Reduce car dependence and the need for everyday travel. 3. Promote car-sharing and transit.	To be determined.
Unbundled Vehicular Parking	Provide unbundled parking for all residential apartments on the site (excluding townhouse units with dedicated parking), allowing home purchasers to only pay for the amount of parking they require.	1. Reduce car dependence and the need for everyday travel.	None (likely an opportunity for revenue generation if resulting excess parking can be sold.)
Pedestrian Connections	Provide public pedestrian sidewalks on all new public streets within the Project's boundaries.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.
Bicycle Parking	Where possible, provide bicycle parking in excess of requirements outlined in Section 8.2.3.2.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.
Bike Repair Stations	Consider a bicycle repair / maintenance station on the site and/or smaller public facilities located where there is bicycle parking.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.
Bike Share / Bike Fleet System	Facilitate the implementation of a bike share system on the Site and in the surrounding area; make the site a catalyst for a larger bike share system in the Port Credit area.	2. Make it easy and attractive for people to walk and cycle.	Implementation: To be determined. Usage: Provide a subsidy to future residents

Table continued on next page…

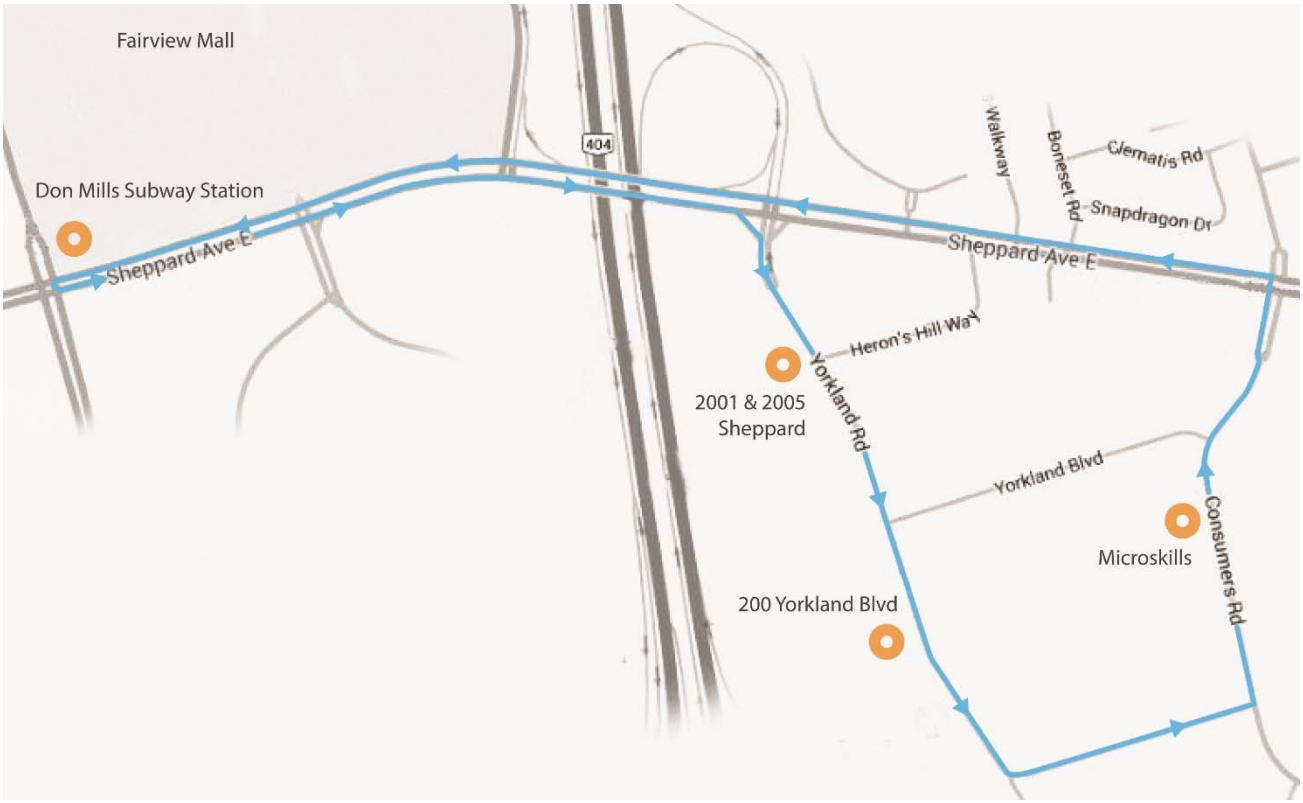
TABLE 17 RECOMMENDED SITE TDM MEASURES (CONTINUED FROM PREVIOUS PAGE)

Measure	Description	TDM Plan Objective	Cost Estimate
CAN-BIKE Cycling Course Subsidies	Provide subsidy/rebate towards a CAN-BIKE cycling course for purchases of residential units for the first two years of occupancy.	2. Make it easy and attractive for people to walk and cycle	Provide a subsidy to future residents
Shower and Change Facilities	For the office components of the Project, provide shower and change facilities in accordance with the Port Credit & Lakeview Parking Strategy recommendations, as outlined in Section 8.2.3.2.	2. Make it easy and attractive for people to walk and cycle	Integrated into overall development cost.
Transit Information Centres (with real-time Transit Screens)	Provide an information centre within all commercial, mid-rise and high-rise buildings that ensures current transit information (arrival times, route information, advisory notices) is conveniently available to all residents of and visitors to the Project. This information will be delivered electronically via a transit information screen located in a central location of each building.	3. Promote car-sharing and transit.	Integrated into overall development cost.
Car-Share Program	Explore opportunities to offer car-share service on the site, ideally with car-share stations (parking spaces) located within the parking area of every residential building within the Site and	1. Reduce car dependence and the need for everyday travel. 3. Promote car-sharing and transit.	Subject to which commercially-oriented ride-matching service can be provided on-site.
Pre-loaded PRESTO Cards	Provide PRESTO fare cards to purchasers of new condominium units for the first two years of occupancy.	3. Promote car-sharing and transit.	Provide one fare card pre-loaded with $100 per residential unit.
Electric Vehicle Charging	Provide electric vehicle charging stations within residential parking areas and in proximity to the non-residential land uses found within the site.	3. Promote car-sharing and transit.	Integrated into overall development cost
Community Outreach	Organize local events for residents once substantial occupancy has been achieved. At the events, attendees can receive information about the transportation options available to them, including all elements of this TDM Plan.	1. Reduce car dependence and the need for everyday travel. 2. Make it easy and attractive for people to walk and cycle. 3. Promote car-sharing and transit.	To be determined.

10.3.2 Shuttle to/from Port Credit GO Station

While the current local public transit service connecting the Site to Port Credit GO Station is adequate, greater incentive is likely required to successfully leverage the site's location in relation to the station. A shuttle service operating on a loop between the two locations would provide significant disincentive to car ownership and car usage for residents of the site who must use the Lakeshore West GO Rail service. A shuttle service would reduce the strain on parking demand at this GO Station if it is well-utilized. In addition, the future Hurontario-Main LRT service will terminate in Port Credit; a shuttle can deliver residents to this service as well.

The shuttle could be publicly or privately operated; there are more examples of the latter in the GTHA than there are of the former. In the North York, Smart Commute operates three shuttle services that operate on loops with Don Mills (subway) station as their origin and destination (more information on this service can be found here: http://smartcommute.ca/north-toronto-vaughan/get-me-there/corporate-shuttles/). Although that shuttle service is predicated on delivering commuters to workplaces in the area, a similar service can be provided to residents of the Site intending to access Port Credit GO Station.



Source:http://smartcommute.ca/north-toronto-vaughan/wp-content/uploads/sites/15/2014/07/dec-2014-map.jpg

10.3.3 Ride-Sharing Program

Explore opportunities to offer ride-sharing (carpooling) programs originating within the buildings. Carpooling services tend to be less effective at the residential end of the trip because it is likely that destinations will vary; residents are not likely to be travelling to the same destination. Nevertheless, ride-sharing services should be offered, perhaps informally, through the various property managers for each building. Free online ride-matching (with potential to upgrade to location-only matching services at cost) is widely available; www.explore.smartcommute.ca is an example that is entirely focused on the Greater Toronto & Hamilton Area.

10.3.4 Unbundled Vehicular Parking

Provide unbundled parking for all residential development on the site (excluding townhouse units with dedicated parking), allowing home purchasers to only pay for the amount of parking they require. Prospective residents should not be forced to own a parking space because if they are and are not inclined to use it, they can be expected to sell it. This can add traffic to the site and can be avoided if home purchasers are not required to purchase parking along with their unit.

10.3.5 Pedestrian Connections

High quality pedestrian connections within the site (and surrounding it) are one of the most important design features in the effort to ensure the viability of non-automotive modes of travel. Thus, it is critical for pedestrian and sidewalk infrastructure to enhance the pedestrian experience especially as it relates to safety and convenience. Children and elderly residents should feel comfortable walking within the site.

10.3.6 Bicycle Parking

Secure long-term bicycle parking should be provided in conveniently-located and accessible facilities within each residential building on the site. Short-term bicycle parking should be widely distributed across the site in conveniently-situated and readily accessible locations relative to key building entrances, open spaces, and destinations.

Proposed bicycle parking standard for the site are discussion in Section 8.3.

10.3.7 Bike Repair Stations

Public bike repair stations can be located throughout the site to allow cyclists to engage in timely repairs if required. Public stations can be spread throughout the site, ideally located alongside bicycle racks. A larger, more comprehensive bike repair station to service the entire site can also be considered.

10.3.8 Bike Share Systems

The introduction of a bike share system to the surrounding area is included in the Metrolinx GO Rail Station Access Plan for Port Credit GO Station. As a mixed-use development covering a large area in close proximity to this station, the Site is an ideal candidate to launch a bike share system within the area. There are several locations included in the Master Plan that would be ideal locations for bike share stations, including at the

community/institutional uses being considered on the Site's southern end, located adjacent to the Waterfront Trail.
A variety of service providers should be considered, including the following:

Bike Share Toronto: Operated by the Toronto Parking Authority, Bike Share Toronto currently does not extend west of High Park in Toronto. Nevertheless, it would be worthwhile to investigate the possibility of agency's first expansion outside of Toronto's city limits occurring on the Site and in the larger Port Credit area.

CycleLoan: Based in Mississauga and operated by SustainMobility, CycleLoan (www.cycleloan.ca) is a turnkey bike fleet program that requires minimal infrastructure to launch and operate. After launch, property management for residential buildings would likely be responsible for keeping the bike fleet operational on a daily basis.

City of Mississauga Bike Share: Mississauga does not have a municipally-operated bike share system although the Site and the Port Credit area are ideal locations to launch this type of program should the City decide to do so.

10.3.9 CAN-BIKE Cycling Course Subsidies

Cycling Canada's CAN-BIKE program is a series of courses for adults and children intended to educate participants on the safe and enjoyable use of a bicycle on the road.

Program development is coordinated through national instructor committees and Cycling Canada. Course delivery and administration takes place through CAN-BIKE Delivery Agents, such as provincial and territorial cycling associations, regional instructor committees, community associations, municipal departments, service groups and the efforts of individual/independent instructors.

Courses are offered frequently in several locations throughout the GTA (as can be viewed here: http://canbikecanada.ca/who-we-are-2/). It is recommended that a subsidy or rebate of approximately $100 be provided to purchasers of new units for the first two years of occupancy. This course subsidy will encourage the use of cycling by residents as a viable means of travel to and from the proposed subdivision.

10.3.10 Shower and Change Facilities

Depending upon operational feasibility, shower and change facilities should be provided within office buildings and will be available for staff use in accordance with the rates discussed in Section 8.2.3.2.

10.3.11 Transit Information Centres (with real-time Transit Screens)

Given the proximity to a regional rail station and a future LRT terminus, at least one transit information centre should be located on the site and ideally, real-time transit screens should be provided in all multi-unit residential buildings. It should be maintained by the property manager of each building in tandem with the local transit service providers (MiWay and GO Transit). The objective of providing real-time transit information is to enhance the convenience and comfort of using public transit. Bus arrival times, transit route information, and transit service advisory notices should be included among the information provided at these stations.

Multiple vendors provide real-time transit information boards, including *TransitScreen*. To obtain this service, there would be an initial capital cost for equipment and an ongoing subscription fee to keep it operational.

10.3.12 Car-Share Program

Car-sharing programs should be introduced through third-party providers (e.g. ZipCar, Car2Go, Enterprise CarShare, etc.) at each building on the site. It should be noted that the provision of a car-share program on-site is contingent on a service provider agreeing to locate car-share spaces on the Site. Car-share providers are currently active in Mississauga, including the following:

Enterprise CarShare: There are four cars available in Mississauga at three locations, all of which are located in the Downtown Mississauga (Square One) area.

Zipcar: There are 16 cars available in Mississauga at 10 locations, including GO Stations, the University of Toronto Mississauga, Credit Valley Hospital, Toronto Pearson Airport, and downtown Mississauga.

Car-sharing programs are 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.

10.3.13 Pre-loaded PRESTO Cards

Considering the site's location relative to both existing local transit service, the Port Credit GO Station, and the future terminus of the Hurontario-Main LRT, it is recommended that pre-loaded PRESTO fare cards be provided to purchasers of new condominium units for the first two years of occupancy to encourage the use of transit to travel to and from the site. A fare card value of $100 per unit is recommended, which equates to approximately 33 MiWay Adult fares, or 16 GO Train trips into the downtown Toronto area.

10.3.14 Electric Vehicle Charging

Allocating vehicular parking spaces as electric vehicle (EV) charging stations is advised to accommodate growing demand as the site matures. Including EV charging stations within each residential parking garage and supporting the non-residential components of the site would support the broader environmental goals of the Project.

10.3.15 Community Outreach

Local events can be launched for residents of each building once substantial occupancy has been achieved. Residents would be invited to receive information about their transportation options including information on pedestrian, cycling and transit routes. The WVP would be required to coordinate the date of the meetings with Transportation Planning staff at the City of Mississauga so that a representative can attend to provide information packages to each new residential unit which contain information / pamphlets about cycling, walking, and transit options.

10.4 IMPLEMENTATION

Some of the measures being considered as part of the TDM Plan can be classified as ‘hard’ TDM measures; these are the physical infrastructure components and they include pedestrian connections, bicycle parking, bicycle repair stations, shower and change facilities, transit information centres, and electric vehicle charging stations. The implementation of a number of these elements and the costs associated with them will be the responsibility of the applicant / land developer, as they will be constructed as part of the development. After construction, their integration into the greater transportation network can be confirmed and monitored by planners and property managers.

Other measures can be classified as ‘soft’ measures, including travel mode information packages, a ride-sharing program, unbundled vehicular parking, CAN-BIKE cycling course subsidies, and pre-loaded PRESTO cards. Efforts to implement these measures should be the shared responsibility of property managers, City staff, and staff representing the relevant transit agencies.

The remainder of TDM initiatives included in the Master Plan involve connecting the site to other locations and are likely to be provided by third parties (i.e. Port Credit GO Station shuttle, bike-share system, and car-share program). Obtaining these services for the site will require negotiations with service providers and in some cases, minor infrastructure additions will be required for implementation (i.e. signs marking car-share parking spaces), and it is anticipated that the City would be involved in implementing such measures.

11.0 MASTER PLAN TRAFFIC OPERATIONS

This section provides details regarding the traffic analysis that was performed as part of this study to assess the impacts of the contemplated Master Plan on the immediately local area road network and confirm acceptable traffic operations on the proposed future internal public road network.

Note that a Phase 2 transportation study that will assess the impacts of the Master Plan on the broader area traffic network will be completed subsequent to this study. This analysis will utilize both the Highway Capacity Manual methodology and a VISSIM micro-simulation model and will consider the 2027 and 2031 horizon years. This study will be coordinated with the ongoing Lakeshore Connecting Communities study being undertaken by the City of Mississauga with respect to model inputs and future traffic volume assumptions.

11.1 STUDY AREA

Based on the foregoing, the following study area was adopted for this analysis:

- Lakeshore Road West / Mississauga Road South
- Lakeshore Road West / Benson Avenue (new traffic signal)
- Lakeshore Road West / Western Private Driveway
- Lakeshore Road West / Loblaws Retail Plaza Access / Street ‘B’
- Lakeshore Road West / Eastern Private Driveway
- Mississauga Road South / North Private Driveway
- Mississauga Road South / Street ‘C’ / Port Street West
- Mississauga Road South / Street ‘A’ / Lake Street
- Street ‘A’ / Street ‘D’
- Street ‘C’ / Street ‘D’
- Street ‘A’ / Street ‘B’
- Street ‘B’ / Street ‘C’
- Street ‘B’ / Street ‘E’
- Street ‘C’ / Street ‘F’
- Street ‘E’ / Street ‘F’

11.2 HORIZON YEAR

A specific build-out date and phasing timeline for the Master Plan will be determined by market factors as well as the length of time necessary to satisfy the requirements of the municipal approvals process. Preliminary estimates regarding the phasing timeline for the development are that development may take place within a range of 8-10 years.

For the purpose of this analysis, a horizon year of 2027 (i.e. a 10-year build-out period) was assumed.

11.3 TRAFFIC VOLUMES

11.3.1 Existing Traffic Volumes

Levels of existing vehicular traffic volumes on the area road network have been assessed using turning movement count data collected in 2016 and 2017. This data is summarized in **Table 18**.

TABLE 18 EXISTING TRAFFIC VOLUME DATA SOURCES

Intersection	Count Date	Count Times	Source
Lakeshore Road West / Mississauga Road South	Thursday, May 4, 2017 Wednesday, March 30, 2016	7:30am–9:30am 4:00pm–6:00pm	Spectrum Traffic Data
Lakeshore Road West / Loblaws Retail Plaza Access	Thursday, May 4, 2017	7:30am–9:30am 4:00pm–6:00pm	Spectrum Traffic Data
Mississauga Road South / Port Street West	Thursday, May 4, 2017	7:30am–9:30am 4:00pm–6:00pm	Spectrum Traffic Data
Mississauga Road South / Lake Street	Thursday, May 4, 2017	7:30am–9:30am 4:00pm–6:00pm	Spectrum Traffic Data

All of the amassed vehicle turning movement data was considered to create a comprehensive base existing traffic network that is meant to represent typical traffic volumes on that area road network during the peak hour periods.

It is noted that the site currently does not generate any significant volume of traffic, as the gas station located on the site at the southwest corner of Lakeshore Road West / Mississauga Road South is no longer in operation. Since the time that traffic data was collected in 2017, site remediation activity has commenced on the site and controlled truck movements to and from the site have begun in January 2018, however these minor traffic volumes are considered to be temporary.

The adopted existing area road network traffic volumes are illustrated in **Figure 18**.

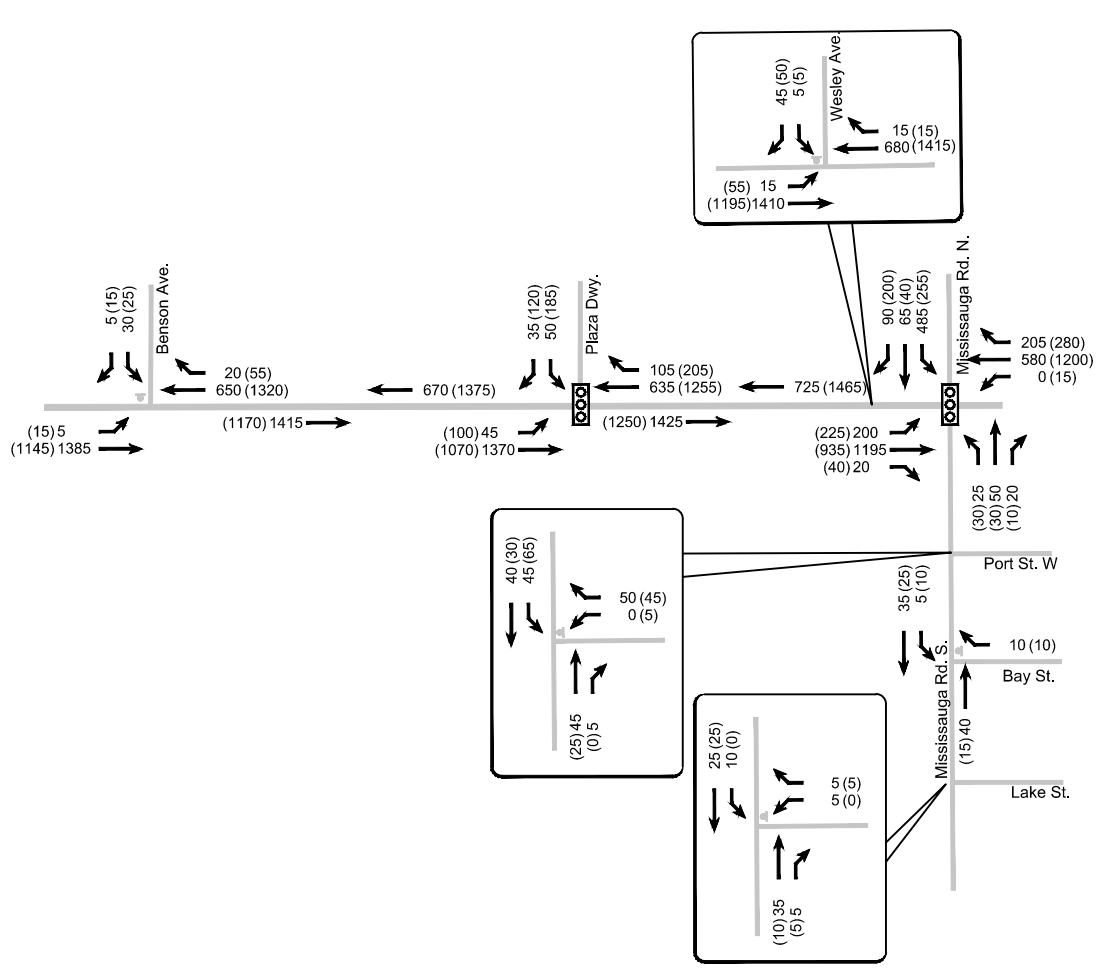
11.3.2 Future Background Traffic Volumes

Future background traffic volumes were established based on a review of area developments that are planned or under construction and historical corridor growth.

11.3.2.1 Background Developments

A number of area developments that are planned or under construction have been considered in the traffic analysis model. The background developments included in this study have been confirmed with City of Mississauga Transportation and Works section and are summarized in **Table 19**.

Traffic volumes allowances made for background developments estimated made based on the residential vehicular trip generation methodology discussed in Section 7.2.2.1 and the residential traffic distribution summarized in Section 11.3.3.



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EXISTING AREA TRAFFIC VOLUMES

BA Group

70 Mississauga Road South
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Figure 18

TABLE 19 BACKGROUND DEVELOPMENTS CONSIDERED

Site	Development Programme
5-7 Benson Avenue	139 residential apartment units 170 rental retirement units 16 townhouse units
8 Ann Street	70 residential condominium apartment units 2 townhouse units
21-27 Park Street East	142 residential condominium units
Total	**539 residential units**

11.3.2.2 Corridor Growth

In addition to considering specific allowances for area developments, based on consultation with the City of Mississauga's Transportation and Works section, the annual compounded traffic growth rates summarized in **Table 20** were applied to forecast future corridor traffic volumes on Lakeshore Road West at the 2027 horizon year.

TABLE 20 LAKESHORE ROAD WEST CORRIDOR TRAFFIC VOLUME GROWTH RATES

Peak Period	Direction	Growth Rate per Annum
Weekday Morning Peak Hour	Eastbound	0.25%
	Westbound	1.75%
Weekday Afternoon Peak Hour	Eastbound	1.25%
	Westbound	0.5%

Future background traffic volumes, which are developed by adding traffic volume allowances made for area background developments to existing traffic volumes are illustrated in **Figure 19**.

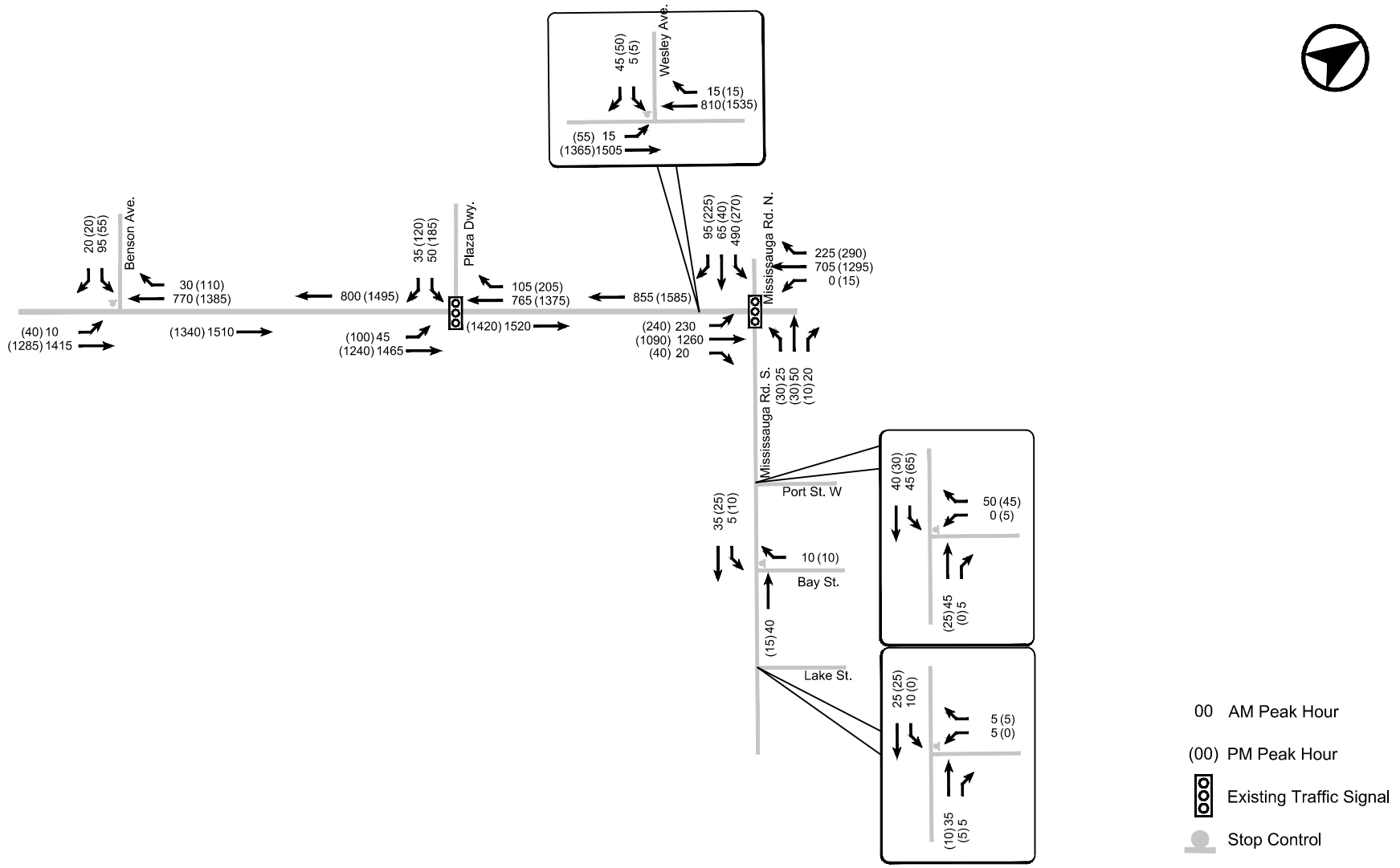
11.3.3 Site-Generated Traffic Volumes

Person-based trip generation forecasts have been developed in order to quantify the estimated number of new driver, passenger, transit, cycling and walking trips associated with the proposed Master Plan during the critical weekday morning and afternoon peak travel hours. Details regarding the person trip generation analysis are provided in Section 7.2.2.

The vehicular trip generation forecasts for the Master Plan as proposed are summarized in **Table 21**. As discussed in Section 7.2.2, a sensitivity analysis was performed that considered a 5% modal shift from auto driver to transit. Vehicular trip generation forecasts for this scenario are summarized in **Table 22**.

New site traffic is distributed to the traffic network based on a review of the 2011 Transportation Tomorrow Survey (2011 TTS) data for home-based, work-based and market-based trips to/from the local area during the weekday peak travel periods. Traffic generated by the community/institutional uses was distributed based on existing area traffic patterns. The adopted traffic distribution is summarized in **Table 23**.

Site-generated traffic volumes assigned to the area road network for the base and improved transit mode split scenarios are illustrated in **Figure 20** and **Figure 21**, respectively.



FUTURE BACKGROUND TRAFFIC VOLUMES

TABLE 21 MASTER PLAN VEHICULAR TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential Driver Trips	143	781	924	705	355	1,060
Office Driver Trips	201	25	226	25	186	210
Community Centre Driver Trips	188	84	272	203	153	356
Retail Driver Trips	154	78	232	370	347	717
Primary Trips	154	78	232	208	186	394
Pass-by Trips	*0*	*0*	*0*	*161*	*161*	*323*
Total Driver Trips	**686**	**968**	**1,654**	**1,303**	**1,040**	**2,343**
Primary Trips	**686**	**968**	**1,654**	**1,141**	**879**	**2,020**
Pass-by Trips	***0***	***0***	***0***	***161***	***161***	***323***

TABLE 22 MASTER PLAN VEHICULAR TRIP GENERATION SUMMARY – 5% MODAL SHIFT

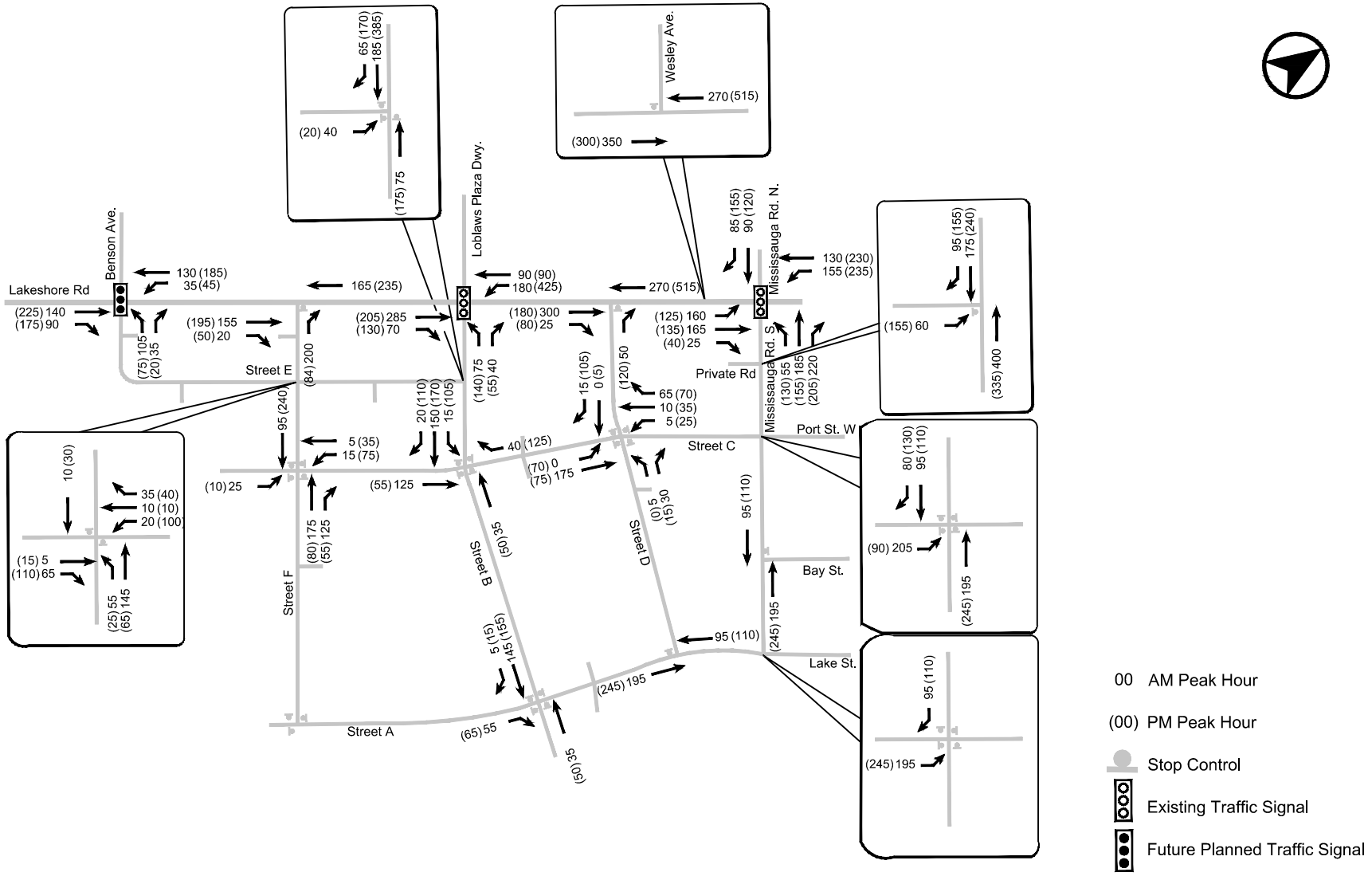
	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential Driver Trips	132	723	855	653	328	981
Office Driver Trips	190	23	213	23	175	198
Community Centre Driver Trips	176	78	254	189	143	332
Retail Driver Trips	145	73	218	347	326	673
Primary Trips	145	73	218	186	165	350
Pass-by Trips	*0*	*0*	*0*	*161*	*161*	*323*
Total Driver Trips	**642**	**897**	**1,539**	**1,212**	**971**	**2,184**
Primary Trips	**642**	**897**	**1,539**	**1,051**	**810**	**1,861**
Pass-by Trips	***0***	***0***	***0***	***161***	***161***	***323***

TABLE 23 SITE TRAFFIC DISTRIBUTION

To/From Route	Residential		Office		Retail Store		Community/ Institutional	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
East on Lakeshore Road	15%	15%	10%	10%	30%	20%	30%	30%
West on Lakeshore Road	30%	20%	15%	15%	40%	45%	50%	50%
North on Mississauga Road	30%	40%	45%	45%	15%	20%	10%	10%
North on Hurontario Street	25%	25%	30%	30%	15%	15%	10%	10%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

11.3.4 Future Total Traffic Volumes

Future total traffic volumes are developed by adding traffic generated by the proposed Master Plan to future background traffic volumes. Future total traffic volumes for the base analysis scenario and 5% modal shift to transit scenario are illustrated in **Figure 22** and **Figure 23**, respectively. As noted previously, the assumption of a 5% modal shift was a result of direction from City staff and is not intended to reflect a longer term modal shift that may occur with introduction of rapid transit on Lakeshore Road. The Phase 2 transportation submission will look in more detail at the impacts of higher shifts in travel mode from automobile driver to transit.



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SITE-GENERATED TRAFFIC VOLUMES

BA Group

70 Mississauga Road South
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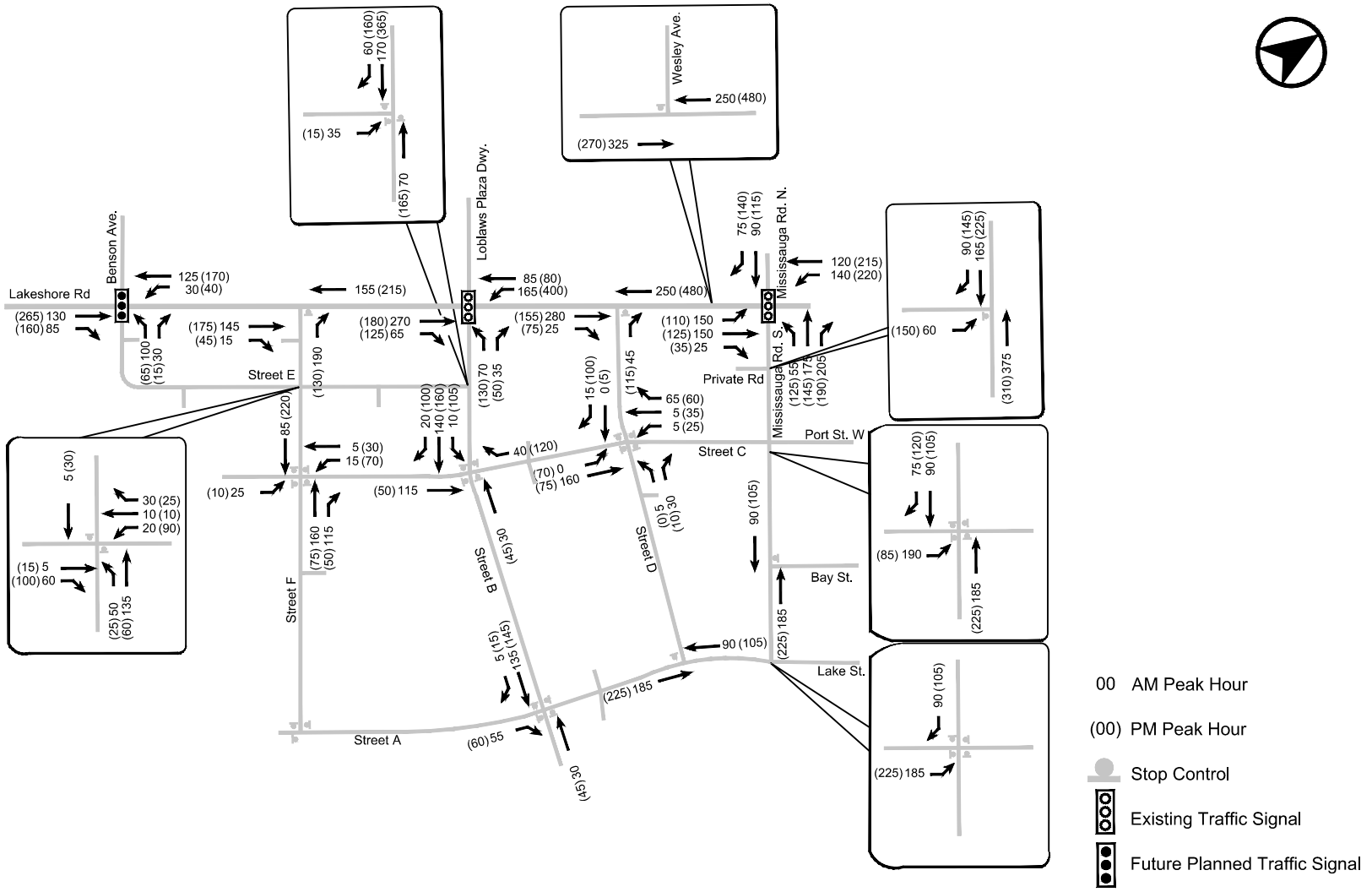
Figure 20



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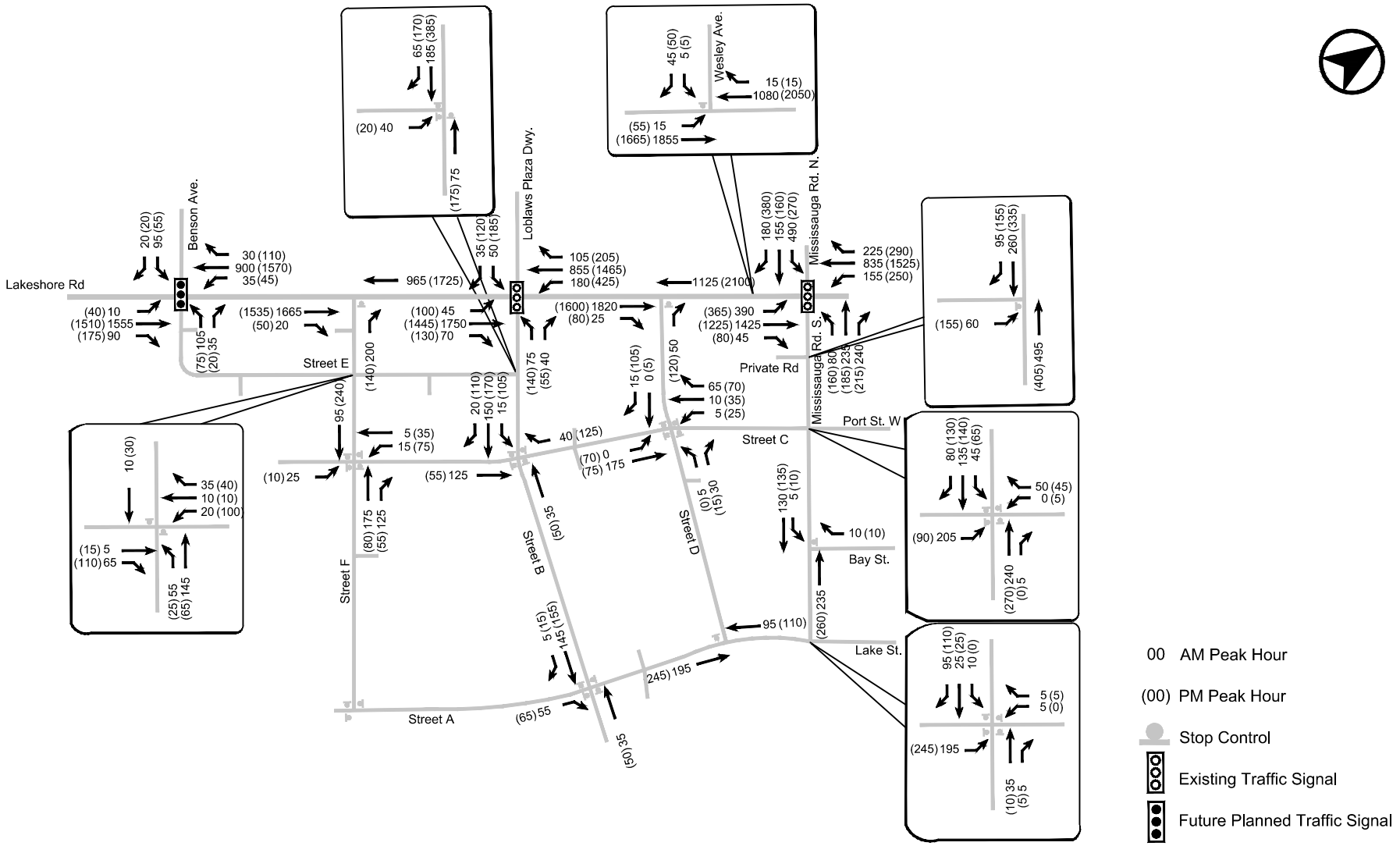
SITE-GENERATED TRAFFIC VOLUMES
(5% MODAL SHIFT TO TRANSIT)

BA Group

70 Mississauga Road South
7189-21 March 2018

Figure 21



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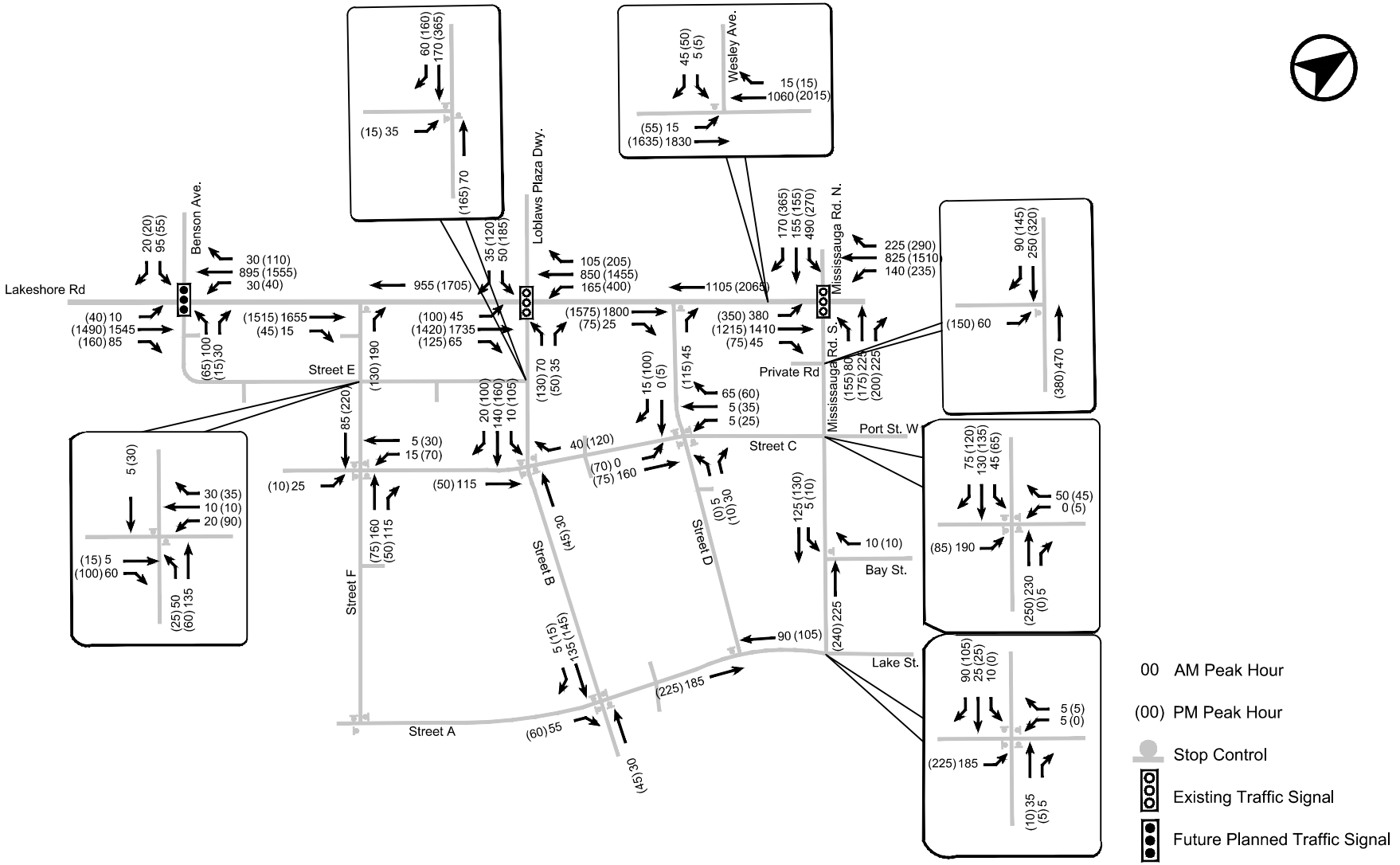
FUTURE TOTAL TRAFFIC VOLUMES

BA Group

70 Mississauga Road South
7189-21 March 2018

Figure 22



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FUTURE TOTAL TRAFFIC VOLUMES
(5% MODAL SHIFT TO TRANSIT)

BA Group

70 Mississauga Road South
7189-21 March 2018

Figure 23

11.4 OPERATIONS ANALYSIS

11.4.1 Analysis Methodology

The traffic capacity impact analysis has been completed using the Synchro (version 9.1) capacity analysis software in accordance with the methodologies outlined in the Highway Capacity Manual (HCM), and in accordance with the City of Mississauga's *Traffic Impact Study Guidelines*.

The key performance indicator 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.

The key performance indicator of the unsignalized intersection / driveway analyses is an average delay per vehicle (in seconds) and a level of service (LOS) designation, where the LOS A (little delay) to LOS F (extended delay) range provides an understanding of the relative time a motorist may have to wait to complete a turn at an intersection or driveway.

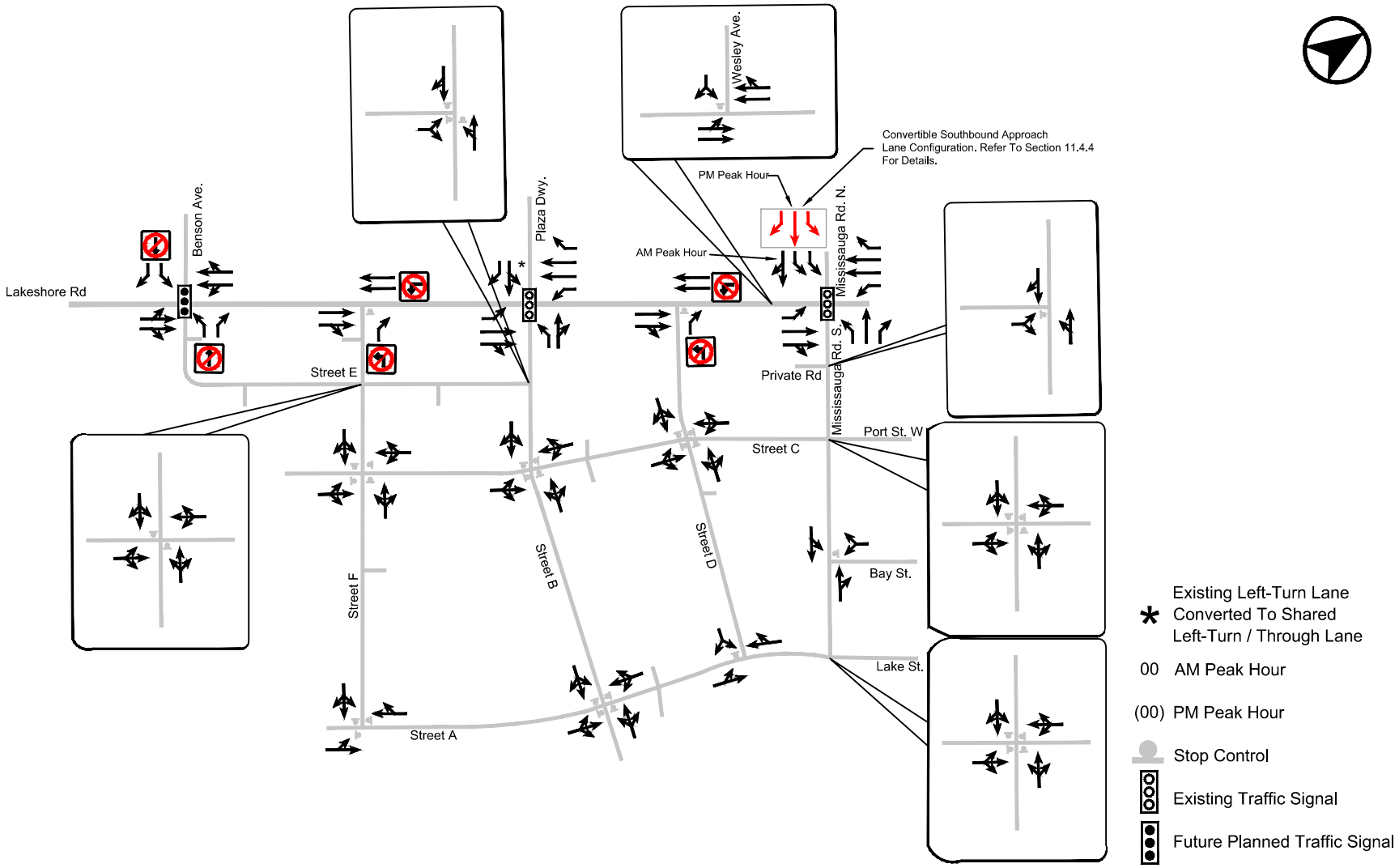
11.4.2 Key Analysis Parameters

Lane Configurations
Existing lane configurations are used for existing and future background traffic conditions.

Under future total traffic conditions, the additional road network connections proposed as part of the Master Plan are assumed. These include:

- the connection of the proposed Street 'B' to Lakeshore Road West at the existing signalized intersection of Lakeshore Road West and the Loblaws retail plaza access to the north of the site;
- the connection of the proposed Street 'E' to Lakeshore Road West at a new signalized intersection at Benson Avenue;
- the addition of a new driveway access on Lakeshore Road West between Benson Avenue and the Loblaws retail plaza access;
- the addition of a new driveway access on Lakeshore Road West between the Loblaws retail plaza access and Mississauga Road;
- the addition of a new driveway access on Mississauga Road South between Lakeshore Road West and Port Street West / the proposed Street 'C';
- the connection of the proposed Street 'C' to Mississauga Road South at an unsignalized, all-way STOP-controlled intersection;
- the connection of the proposed Street 'A' to Mississauga Road South at an unsignalized, all-way STOP-controlled intersection;
- the internal road network proposed the Master Plan, as illustrated in **Figure 5** and within the functional road plan included in **Appendix B**; and
- the reconfiguration of the Lakeshore Road West / Mississauga Road intersection, as further discussed in Section 11.4.4.1.

The future area road network configuration is illustrated in **Figure 24**.



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FUTURE AREA ROAD NETWORK CONFIGURATION

Signal Timing Plans
The existing signal timing plans for the Lakeshore Road West / Mississauga Road and Lakeshore Road West / Loblaws retail plaza access intersections were obtained from the City of Mississauga and utilized in the analysis of the existing traffic scenarios. Under the future background and future total traffic scenarios, signal timing plans have been optimized (including the addition of a number of protected left-turn phases) at a cycle length of 140 seconds during the both weekday morning and afternoon peak hour analysis periods while maintaining existing minimum pedestrian clearance times, as noted in **Table 24** and **Table 26**.

At the future intersection of Lakeshore Road West / Benson Avenue / Proposed Street 'E' a signal timing plan was assumed with the same cycle length as the Lakeshore Road West / Loblaws plaza entrance and Lakeshore Road West / Mississauga Road intersections in order to allow for signal coordination along the corridor. Minimum pedestrian clearance times were calculated based on the concept intersection design illustrated within the functional road plan included in **Appendix B** and a pedestrian walking speed of 1.2 m/s.

Pedestrian Volumes
Pedestrian and bicycle volumes at the study area intersections have been derived from the existing turning movement counts for the existing and future background traffic scenarios.

In the future total traffic scenarios, at the intersections along Lakeshore Road West and Mississauga Road South, 100 pedestrians crossing each approach were assumed (with the exception of the western leg at the Lakeshore Road West / Benson Avenue intersection, where it was assumed that no pedestrian crosswalk will be provided) during both the weekday morning and afternoon peak hour analysis periods. It was also assumed that 50 pedestrians cross each approach for all intersections internal to the site during both analysis periods.

Other Parameters
- Heavy vehicle percentages as derived from existing traffic counts;
- Peak hour factors as derived from existing traffic counts;
- Lost time adjust value of -1.0; and
- Synchro defaults for all other parameters.

11.4.3 Analysis Scenarios

Traffic operations of the area signalized and unsignalized intersections have been assessed under existing, future background, and future total conditions for the weekday morning and afternoon peak hour periods. These time periods typically reflect the busiest periods of activity on the area road network and are adopted as an appropriate basis for the analyses outlined herein.

Based on the collected data, the analyzed peak hours are representative of the following time periods:
- weekday morning peak hour – 7:45 a.m. to 8:45 a.m.
- weekday afternoon peak hour – 4:45 p.m. to 5:45 p.m.

An additional scenario that considered a 5% mode shift from automobile driver to transit was also analyzed in order to gain understanding of future traffic operations on the local road network due to a modal shift away from personal automobiles to transit. As noted previously, the assumption of a 5% modal shift was a result of direction from City staff.

The results of the traffic analysis are presented in the following sections.

11.4.4 Key Findings

Capacity analysis results summaries for each intersection within the study area are provided in **Table 24** to **Table 27**. Detailed Synchro HCM analysis output sheets are included in **Appendix A**.

11.4.4.1 Lakeshore Road West / Mississauga Road Intersection Operations

Based on the capacity analysis performed as part of this study, the following improvements are required at the Lakeshore Road West / Mississauga Road intersection in order to accommodate future traffic volumes:

- the reconfiguration of the northbound intersection approach from an exclusive left-turn lane and shared through/right-turn lane (2 lanes) to an exclusive left-turn lane, through lane and exclusive right-turn lane (3 lanes); and
- the reconfiguration of the southbound approach from 'static' dual left-turn lanes and a shared though/right-turn lane (3 lanes), to
    - dual left-turn lanes and a shared through/right-turn lane during the weekday morning peak period (3 lanes), and
    - a single exclusive left-turn lane, through lane and exclusive right-turn lane during the afternoon peak period (3 lanes).

The improvements to the northbound approach to the intersection are accommodated via land conveyed from the site to the Mississauga Road South public right-of-way, as conceptually illustrated in the functional road plan included in **Appendix B**.

The 'dynamic' lane configuration of the southbound approach to the intersection is intended to be accommodated using overhead signage indicating the time-of-day configuration of the centre and curb lanes. A detailed intersection functional and signage plan, as well as a signal timing plan, will be provided subsequent to the submission of this revised traffic study.

It is also noted that acceptable future traffic operations at the intersection utilizing the proposed configuration will be confirmed through the use of a VISSIM micro-simulation model as part of a subsequent (Phase 2) traffic study related to the proposed development.

11.4.5 Traffic Analysis Conclusions

Based on this analysis, new vehicular traffic volumes generated by the Master Plan concept can be appropriately accommodated on the immediate local area network, assuming on the configuration illustrated in **Figure 24**, and the aforementioned improvements to the Lakeshore Road West / Mississauga Road intersection in both the existing travel mode split and increased transit mode split scenarios.

Traffic operations on the new internal public road network envisioned by the Master Plan will also be acceptable without a significant amount of vehicular delay or queuing.

As previously mentioned, analysis of the impacts of the Master Plan on the broader area road network will be provided as part of the Phase 2 Transportation study.

TABLE 24 LAKESHORE ROAD WEST / MISSISSAUGA ROAD SIGNALIZED INTERSECTION CAPACITY ANALYSIS RESULTS SUMMARY

Movement	Existing Traffic	Future Background Traffic	Future Total Traffic	Future Total Traffic Conditions (5% Mode Shift to Transit)
EBL[5]	0.68 (0.56)	0.80 (0.56)	0.96 (0.97)	0.95 (0.97)
EBTR[2]	0.89 (0.48)	0.91 (0.54)	0.96 (0.79)	0.94 (0.77)
WBL[6]	- (0.08)	- (0.09)	0.97 (0.92)	0.90 (0.88)
WBT[4]	0.62 (0.91)	0.80 (0.98)	0.90 (0.97)	0.88 (0.95)
WBR	0.28 (0.38)	0.37 (0.40)	0.52 (0.51)	0.52 (0.50)
NBL[7]	0.09 (0.21)	0.10 (0.21)	0.53 (0.60)	0.53 (0.57)
NBT	-	-	0.70 (0.53)	0.68 (0.50)
NBTR	0.13 (0.13)	0.14 (0.13)	-	-
NBR	-	-	0.65 (0.31)	0.60 (0.26)
SBL[3]	0.80 (0.72)	0.81 (0.92)	0.96 (0.99)	0.95 (0.93)
SBT	-	-	- (0.39)	- (0.38)
SBTR	0.17 (0.22)	0.18 (0.29)	0.59 (-)	0.57 (-)
SBR	-	-	- (0.64)	- (0.58)
Overall	**0.66 (0.69)**	**0.69 (0.75)**	**0.92 (0.90)**	**0.90 (0.88)**

Notes:
1. 0.00 (0.00) – Weekday morning peak hour (Weekday afternoon peak hour)
2. EBT Lane Utilization Factor increased to 1.00 during the weekday morning peak hour analysis period in the Future Total traffic scenario. This was done to account for the increased saturation flow that is likely to occur as the movement approaches its theoretical capacity.
3. SBL Protected Left-turn Factor increased to 1.00 during the weekday morning peak hour analysis period in the Future Total traffic scenario. This was done to account for the increased saturation flow that is likely to occur as the movement approaches its theoretical capacity
4. WBT Lane Utilization Factor increased to 1.00 during the weekday afternoon peak hour analysis period in the Future Total traffic scenario. This was done to account for the increased saturation flow that is likely to occur as the movement approaches its theoretical capacity.
5. EBL Protected Left-turn Factor increased to 1.00 during the weekday afternoon peak hour analysis period in the Future Total traffic scenario. This was done to account for the increased saturation flow that is likely to occur as the movement approaches its theoretical capacity.
6. A WBL protected phase has been added during both peak hour analysis periods in the Future Total traffic scenario.
7. A NBL protected phase has been added during the weekday afternoon peak hour analysis period in the Future Total traffic scenario.
8. In the Future Background and Future Total traffic scenarios, the signal timing plan has been optimized (with the inclusion of the abovementioned phasing additions) at a cycle length of 140 seconds during both analysis periods while maintaining minimum pedestrian clearance times.

TABLE 25 LAKESHORE ROAD WEST / BENSON AVENUE / STREET E SIGNALIZED INTERSECTION CAPACITY ANALYSIS RESULTS SUMMARY

Movement	Existing Traffic	Future Background Traffic	Future Total Traffic	Future Total Traffic Conditions (5% Mode Shift to Transit)
EBLT	-	0.55 (0.58)	-	-
EBLTR	-	-	0.82 (0.95)	0.81 (0.97)
WBLTR	-	-	0.66 (0.96)	0.62 (0.96)
WBTR	-	0.30 (0.53)	-	-
NBL	-	-	0.49 (0.35)	0.47 (0.34)
NBR	-	-	0.03 (0.02)	0.03 (0.01)
SBL	-	0.56 (0.39)	0.66 (0.64)	0.66 (0.64)
SBR	-	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Overall	**-**	**0.55 (0.56)**	**0.76 (0.85)**	**0.74 (0.87)**

Notes:
1. 0.00 (0.00) – Weekday morning peak hour (Weekday afternoon peak hour)
2. EBT and WBT Lane Utilization Factor increased to 1.00 during the weekday afternoon peak hour analysis period in the Future Total traffic scenario. This was done to account for the increased saturation flow that is likely to occur as the movement approaches its theoretical capacity.
3. A signal timing plan with a cycle length of 140 seconds was assumed at this future intersection during both analysis periods in order to accommodate intersection coordination with the Mississauga Road and Loblaws plaza entrance signals along Lakeshore Road West.

TABLE 26 LAKESHORE ROAD WEST / LOBLAWS RETAIL PLAZA ACCESS / STREET B SIGNALIZED INTERSECTION CAPACITY ANALYSIS RESULTS SUMMARY

Movement	Existing Traffic	Future Background Traffic	Future Total Traffic	Future Total Traffic Conditions (5% Mode Shift to Transit)
EBL	0.08 (0.42)	0.09 (0.50)	0.15 (0.68)	0.15 (0.65)
EBTR	0.51 (0.43)	0.54 (0.50)	0.92 (0.99)	0.90 (0.93)
WBL[2]	-	-	0.88 (0.96)	0.85 (0.97)
WBT	0.24 (0.50)	0.29 (0.55)	0.37 (0.57)	0.37 (0.57)
WBR	0.08 (0.16)	0.08 (0.16)	0.11 (0.22)	0.11 (0.21)
NBL	-	-	0.42 (0.95)	0.39 (0.93)
NBTR	-	-	0.03 (0.04)	0.03 (0.04)
SBL	0.47 (0.63)	0.47 (0.63)	-	-
SBLT	-	-	0.28 (0.82)	0.28 (0.84)
SBR	0.02 (0.26)	0.02 (0.31)	0.03 (0.28)	0.03 (0.29)
Overall	**0.50 (0.52)**	**0.54 (0.56)**	**0.81 (0.98)**	**0.79 (0.98)**

Notes:
1. 0.00 (0.00) – Weekday morning peak hour (Weekday afternoon peak hour)
2. A WBL protected phase was added under the Future Total traffic scenario.
3. In the Future Background and Future Total traffic scenarios, the signal timing plan has been optimized (with the inclusion of the abovementioned phasing additions) at a cycle length of 140 seconds during both analysis periods while maintaining minimum pedestrian clearance times.

TABLE 27 UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection / Movement	Existing Traffic		Future Background Traffic		Future Total Traffic		Future Total Traffic Conditions (5% Mode Shift to Transit)	
	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)
Lakeshore Rd W / Benson Ave								
EBLT	A (A)	0.2 (1.0)	-	-	-	-	-	-
SBLR	E (F)	40.1 (92.9)	-	-	-	-	-	-
Mississauga Rd / Lake St / Street A								
EBLTR	-	-	-	-	B (B)	10.8 (12.0)	B (B)	10.5 (11.3)
WBLTR	-	-	-	-	A (A)	8.0 (7.3)	A (A)	7.9 (7.3)
WBLR	A (A)	9.0 (8.3)	A (A)	9.0 (8.3)	-	-	-	-
NBLTR	-	-	-	-	A (A)	9.2 (8.1)	A (A)	9.1 (8.0)
NBTR	A (A)	9.8 (8.9)	A (A)	9.8 (8.9)	-	-	-	-
SBLT	A (-)	2.2 (-)	A (-)	2.2 (-)	-	-	-	-
SBLTR	-	-	-	-	A (A)	8.9 (9.0)	A (A)	8.8 (8.8)
Mississauga Rd / Port St W / Street C								
EBLTR	-	-	-	-	C (A)	15.1 (9.8)	B (A)	13.9 (9.6)
WBLTR	-	-	-	-	B (A)	10.0 (8.6)	A (A)	9.7 (8.4)
WBLR	A (A)	9.0 (8.8)	A (A)	9.0 (8.8)	-	-	-	-
NBLTR	-	-	-	-	C (B)	15.4 (10.8)	B (B)	14.2 (10.4)
SBLT	A (A)	4.1 (5.1)	A (A)	4.1 (5.1)	-	-	-	-
SBLTR	-	-	-	-	C (B)	16.1 (11.4)	B (B)	14.8 (10.9)
Lakeshore Rd W / East Private Rd								
NBR	-	-	-	-	B (B)	14.1 (13.7)	B (B)	13.4 (13.2)
Street A / Street D								
SBLR	-	-	-	-	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
Table continued on next page...								

Notes:
1. 0.0 (0.0) – Weekday morning peak hour (Weekday afternoon peak hour)

TABLE 27 UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY (CONTINUED FROM PREVIOUS PAGE)

Intersection / Movement	Existing Traffic		Future Background Traffic		Future Total Traffic		Future Total Traffic Conditions (5% Mode Shift to Transit)	
	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)
Street C / Street D / East Private Rd								
EBLTR	-	-	-	-	A (A)	8.3 (8.6)	A (A)	8.1 (8.5)
WBLTR	-	-	-	-	A (A)	7.1 (7.9)	A (A)	7.0 (7.8)
NBLTR	-	-	-	-	A (A)	7.2 (7.2)	A (A)	7.2 (7.2)
SBLTR	-	-	-	-	A (A)	7.0 (7.7)	A (A)	7.0 (7.6)
Street A / Street B / Driveway								
EBLTR	-	-	-	-	A (A)	7.0 (7.2)	A (A)	7.0 (7.1)
WBLTR	-	-	-	-	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
NBLTR	-	-	-	-	A (A)	7.4 (7.6)	A (A)	7.4 (7.5)
SBLTR	-	-	-	-	A (A)	8.0 (8.2)	A (A)	7.9 (8.1)
Street B / Street C								
EBLTR	-	-	-	-	A (A)	8.5 (8.7)	A (A)	8.3 (8.6)
WBLTR	-	-	-	-	A (A)	7.3 (8.4)	A (A)	7.2 (8.3)
NBLTR	-	-	-	-	A (A)	7.8 (8.3)	A (A)	7.7 (8.2)
SBLTR	-	-	-	-	A (B)	8.7 (11.8)	A (B)	8.5 (11.2)
Lakeshore Rd W / West Private Rd								
NBR	-	-	-	-	B (B)	13.7 (12.3)	B (B)	13.3 (11.8)
Street C / Street F / Driveway								
EBLTR	-	-	-	-	A (A)	8.3 (8.3)	A (A)	8.2 (8.2)
WBLTR	-	-	-	-	A (A)	8.2 (9.0)	A (A)	8.1 (8.8)
NBLTR	-	-	-	-	A (A)	9.1 (8.3)	A (A)	8.8 (8.1)
SBLTR	-	-	-	-	A (A)	8.0 (9.5)	A (A)	7.9 (9.2)

Table continued on next page...

Notes:
1. 0.0 (0.0) – Weekday morning peak hour (Weekday afternoon peak hour)

TABLE 27 UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY (CONTINUED FROM PREVIOUS PAGE)

Intersection / Movement	Existing Traffic		Future Background Traffic		Future Total Traffic		Future Total Traffic Conditions (5% Mode Shift to Transit)	
	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)
Street B / Street E								
EBLR	-	-	-	-	A (A)	8.2 (9.0)	A (A)	8.1 (8.8)
NBLT	-	-	-	-	A (A)	7.8 (9.0)	A (A)	7.7 (8.8)
SBTR	-	-	-	-	A (B)	8.7 (14.9)	A (B)	8.4 (13.6)
Street E / Street F / West Private Rd								
WBLTR	-	-	-	-	A (A)	2.4 (5.5)	A (A)	2.6 (5.5)
NBLTR	-	-	-	-	B (C)	13.8 (15.8)	B (B)	13.3 (14.9)
SBLTR	-	-	-	-	B (B)	11.2 (14.7)	B (B)	11.1 (14.1)
Mississauga Rd / Private Rd								
EBLR	-	-	-	-	C (E)	24.1 (48.3)	C (E)	22.6 (39.2)

Notes:
1. 0.0 (0.0) – Weekday morning peak hour (Weekday afternoon peak hour)

12.0 SUMMARY AND CONCLUSIONS

BA Group is retained by the Port Credit West Village Partnership ("the WVP") to provide urban transportation advisory services in relation to the property located at 70 Mississauga Road South and 181 Lakeshore Road West in the City of Mississauga. The site is a 72-acre plot of land on the Port Credit waterfront, generally bounded by Mississauga Road South to the east, an existing residential neighbourhood to the west, Lakeshore Road West to the north, and to the south a strip of waterfront land that is not subject to this application.

The parcel of land considered for development in this report is an unoccupied brownfield site that is fenced to prevent access, and so has no existing driveways or in-use circulation systems, with the exception of a portion of the Waterfront Trail that extends across the sites southern frontage along the Lake Ontario shoreline. A fenced vehicle access to the site exists on Mississauga Road South, generally in line with Port Street West. Site remediation activities commenced in early 2018, with controlled site access to and from Mississauga Road South and Lakeshore Road West for vehicles engaged in site remediation work.

The WVP is seeking an OPA, ZBA and Draft Plan of Subdivision to permit development of a mixed-use community on the subject lands. An initial OPA and ZBA application (OZ/OPA 17 12) as well as a Draft Plan of Subdivision for the site was submitted in August of 2017. The submission included a transportation study prepared by BA Group (*70 Mississauga Road South & 181 Lakeshore Road West Urban Transportation Considerations for OPA, ZBA and Draft Plan of Subdivision*, August 25, 2017).

A revised development application is now being submitted that reflects an updated site Master Plan, which envisages approximately 2,969 residential units in the form of apartment condominiums and townhouses, along with approximately 22,412 m^2 of commercial space (including community centre/institutional uses), approximately 14,525 m^2 of retail space and a significant portion of park land and open space. Compared to the previously submitted Master Plan, the revised plan represents an increase of 469 residential units, a decrease of 333 m^2 of commercial space and an increase of 705 m^2 of retail space.

Additionally, the configuration and alignment of the internal public and private road network has been revised in response to staff comments and through the progression and refinement of the site design.

As was the case with the previously submitted plan, the revised Master Plan was informed by the Inspiration Port Credit document, and shows how a mixed-use development could be realized on site with consideration of good planning and urban design principles. Key consideration is given for transportation items including the illustration of a mobility network that will support the site with pedestrian and cycling connections, and connections to existing and planned transit

This revised transportation report has been prepared to provide an update on the development programme and arrangements of transportation-related site elements since the August 2017 submission, as well as to respond directly to the December 2017 staff comments regarding the previously submitted transportation study.

A summary of BA Group's review of the urban transportation elements of the proposed mixed-use development is provided below.

Existing Area Transportation Context

- Currently, between 65% and 70% of home-based trips to and from the local area during the peak periods are via private car and between 15% and 17% are via public transit.

- From a road connectivity perspective, the site is well-served by four major corridors – Lakeshore Road, Mississauga Road, the Queen Elizabeth Way (Q.E.W.) and Hurontario Street.

- Under existing conditions, with the exception of the Waterfront Trail, there is limited cycling-specific infrastructure in place within the area of the site. However, the City of Mississauga is planning significant improvements to cycling and pedestrian infrastructure in the Port Credit area. In particular, Lakeshore Road is identified as a primary on-road cycling route in the City's Cycling Master Plan, and in the Official Plan.

- The site is currently served by a number of bus routes providing transit connections to employment and education areas within Mississauga as well as to the nearest regional transit station (Port Credit GO Station), which provides broader transit connections. The Port Credit GO Station located west of Hurontario Street, which is an approximately 1.2-kilometre walk from the eastern boundary of the site.

- There are a number of planned transit infrastructure improvements for the Port Credit are including increase service on GO Transit lines including the Port Credit GO Station and the Hurontario-Main Light Rail Transit line, which will connect the Port Credit GO Station to Brampton's Gateway Terminal in the north.

The Master Plan

- In total the Master Plan includes 2,969 new residential units, 14,525 m^2 of retail gross floor area (GFA), and 22,412 m^2 of commercial and community/institutional GFA. The residential units include traditional townhomes, stacked and back to back townhomes, and apartments units. The development will include five different precincts within the site, each with a different character ranging from retail and commercial uses to community space and residential uses. A concept site Master Plan is illustrated in **Figure 5**.

- The proposed development will be phased to respond to site remediation needs, as well as market absorption for the various proposed land uses. It is anticipated that the full build-out of the Master Plan may take 8-10 years from commencement of work on the site to final occupancy of the last phase.

- The proposed development plan provides a fine-grained network of streets and blocks, facilitating access by all modes of transportation by generally replicating the existing street network pattern. The network includes both municipal streets and private condominium roads to ensure a range of facilities are provided to accommodate the different needs of various parts of the site. The proposed internal road network is illustrated in **Figure 6**.

- It is intended that Port Street West and Lake Street will be extended as municipal streets into the subject site – as Street 'C' and Street 'A', respectively – with a non-automobile connection bisecting

the site in an east-west direction along the alignment of Bay Street. The main site access will be on Lakeshore Road West at the location of the existing traffic control signal that serves the existing retail plaza on the north side of the street. A secondary signalized vehicle access point will be provided at Benson Avenue, taking advantage of the already planned traffic signal that will be implemented as part of another development on the north side of Lakeshore Road West. Furthermore, secondary vehicle access points will be provided on Lakeshore Road West, east and west of the main signalized intersection. The proposed concept functional road plan is provided in **Appendix B**.

- An internal cycling network is proposed comprising two main components: a) the off-road two-way route running along the western edge of the site, Street 'F', an east-west midblock cycling link and along Mississauga Road between Lakeshore Road West and the existing Waterfront trail; and b) the on-street cycle lanes on Street 'A', Street 'C' and Street 'E'.

- The off-road two-way cycling lane will function primarily as a recreational route connecting to the Waterfront area and throughout the site. The on-street cycle lanes will provide cycling connectivity throughout the site and to the east via Port Street West, on which a shared-lane cycling route is proposed as part of the development plan.

- In general, pedestrian sidewalks and/or paths are provided along all public and private roads within the Master Plan lands. Additional pedestrian-focused elements are proposed including: a natural trail connecting to the Waterfront area, a 'linear park' central to the site, pedestrian plazas at the north and south end of the site, an east-west pedestrian connection through the site aligning with Bay Street, a significant amount of park space throughout site, and a 'woonerf'-style connection to the Waterfront.

- The Master Plan has been developed with the intention of accommodating a potential future transit route through the site via the proposed new public road connections. This potential route could loop through the site between Lakeshore Road West and Mississauga Road South along the proposed Street 'A', Street 'B' and Street 'E'. In the short-term horizon, this will likely be a bus transit route – either MiWay, GO Bus or private shuttle bus to/from the Port Credit GO Station. In the long-term horizon, the route may utilize higher-order transit, subject to the findings of the ongoing Lakeshore Connecting Communities study.

- It is noted that portion of the internal public road network comprising Street 'B' (north of Street 'C') and Street 'E' has been designed to accommodate a future high-order transit turnaround loop, as illustrated within the concept functional road plan included in **Appendix B**.

- Pedestrian realm improvements to Mississauga Road South and Lakeshore Road West along the frontage of the site are also proposed as part of the Master Plan, including wider boulevard areas (compared to existing conditions) and a multi-use path on Mississauga Road.

Parking and Loading

- It is proposed that reduced non-residential vehicle parking standards recommended in the *City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview* report be adopted for the site. These parking standards are summarized as follows:
    - 3.0 spaces per hundred square metres GFA for retail, personal service, repair establishments, art galleries and museums;
    - 4.85 spaces per hundred square metres GFA for financial institutions, real estate offices, medical offices and take-out restaurants; and
    - 3.0 spaces per hundred square metres GFA for office uses.

- Reduced and transit-supportive minimum parking requirement rates for the residential component of the site are proposed as follows:
    - 1.0 resident spaces per unit for apartment units, multi-unit condo buildings and townhouses without exclusive-use garages;
    - 0.15 visitor spaces per unit for apartment units, multi-unit condo buildings and all townhouses;
    - 2.0 resident parking spaces for townhouse units with exclusive-use garages; and
    - 0.3 parking spaces per unit for Retirement Home and Long-Term Dwelling units.

- On-street parking spaces are proposed where feasible along the new municipal streets, namely Street 'B' and Street 'C', to support the need for short-term visitor parking within the development.

- The bicycle parking standards recommended by the City of Mississauga's Transportation and Works section are proposed for the site. These standards are summarized below:

Use	Bicycle Parking Requirement
Office Uses	0.15 spaces per 100 m² GFA for staff plus 0.10 spaces per 100 m² GFA for visitors
Retail Uses	0.10 spaces per 100 m² GFA for staff plus 0.25 spaces per 100 m² GFA for visitors
School Uses (College/University)	0.60 spaces per 100 m² GFA for staff/students plus 0.18 spaces per 100 m² GFA for visitors
All other non-residential uses	4% for staff and 4% for visitors
Residential Apartments & Townhomes[1]	0.70 resident spaces per unit 0.08 visitor spaces per unit

Notes:
1. Residential requirement applies to apartments and townhouses that do not have an exclusive garage.

- It is proposed that loading facilities for the site be provided in accordance with the requirements of the prevailing City of Mississauga Zoning By-law 0225-2007, with additional provisions made to permit the sharing of loading spaces between uses located within the same development block in order to facilitate the design of efficient, pedestrian-oriented buildings and spaces while still meeting the functional servicing requirements of the multiple uses on the site.

- The Master Plan lands are sufficiently large enough to appropriately accommodate these proposed parking and loading requirements, which will likely be provided within surface parking lots and underground garage structures.

Transportation Demand Management Strategy

- A Transportation Demand Management (TDM) strategy for the site has been envisioned which includes several measures aimed at reducing the number of single-occupant vehicle trips made to and from the site.

- The measures being investigated for inclusion include, among others, a potential shuttle service to/from the Port Credit GO Station, the provision of pre-loaded PRESTO cards for new residents, the installation of transit information screens that provide real-time transit information and the incorporation of car-share services such as ZipCar and Car2Go into the site.

Master Plan Impacts to Local Area Transportation Infrastructure

- In total, the proposed 70 Mississauga Road South site as a whole is anticipated to generate approximately 2,297 and 3,190 new person trips during the critical weekday morning and afternoon peak hour periods, respectively. Of these trips, 1,654 and 2,020 are net new vehicle trips (i.e. new vehicles on the local road network) during the weekday morning and afternoon peak hour periods, respectively.

- Assuming a 5% modal shift to transit from auto drivers to account for future transit infrastructure improvements in the area, the total number of net new vehicle trips on the local road network is reduced to approximately 1,539 and 1,861 during the weekday morning and afternoon peak hour periods, respectively. In the future, with rapid transit on Lakeshore Road, the shift to transit is expected to be higher and the impacts of higher transit mode shares will be assessed in the Phase 2 transportation report.

- Based on the capacity analysis performed as part of this study, the following improvements are required at the Lakeshore Road West / Mississauga Road intersection in order to accommodate future traffic volumes:
    - the reconfiguration of the northbound intersection approach from an exclusive left-turn lane and shared through/right-turn lane (2 lanes) to an exclusive left-turn lane, through lane and exclusive right-turn lane (3 lanes); and
    - the reconfiguration of the southbound approach from ‘static’ dual left-turn lanes and a shared though/right-turn lane (3 lanes), to
        i. dual left-turn lanes and a shared through/right-turn lane during the weekday morning peak period (3 lanes), and
        ii. a single exclusive left-turn lane, through lane and exclusive right-turn lane during the afternoon peak period (3 lanes).

- The improvements to the northbound approach to the intersection are accommodated via land conveyed from the site to the Mississauga Road South public right-of-way, as conceptually illustrated in the functional road plan included in **Appendix B**.

- The ‘dynamic’ lane configuration of the southbound approach to the intersection is intended to be accommodated using overhead signage indicating the time-of-day configuration of the centre and curb lanes. A detailed intersection functional and signage plan, as well as a signal timing plan, will be provided subsequent to the submission of this revised traffic study.

- Based on this analysis, new vehicular traffic volumes generated by the Master Plan concept can be appropriately accommodated on the immediate local area network, assuming the future road configuration illustrated in **Figure 24**, and the aforementioned improvements to the Lakeshore Road West / Mississauga Road intersection in both the existing travel mode split and increased transit mode split scenarios.

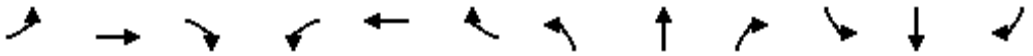
- Traffic operations on the new internal public road network envisioned by the Master Plan will also be acceptable without a significant amount of vehicular delay or queuing.

- Analysis of the impacts of the Master Plan on the broader area road network will be provided as part of a subsequent study.

Appropriateness of the Proposed Master Plan from a Planning Perspective

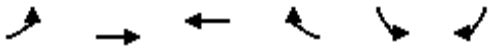
- Urban transportation policies and direction from the Provincial Policy Statement (2014), the Growth Plan for the Golden Horseshoe (2006), the City of Mississauga Official Plan (2015), and Moving Mississauga (2011) support the proposed Master Plan and supporting Official Plan Amendment.

APPENDIX A: Synchro Analysis Output Sheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	1195	20	0	580	205	25	50	20	485	65	90
Future Volume (vph)	200	1195	20	0	580	205	25	50	20	485	65	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0			5.0	5.0	6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85	1.00	0.96		1.00	0.91	
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1730	3503			3380	1467	1589	1778		3362	1586	
Flt Permitted	0.23	1.00			1.00	1.00	0.65	1.00		0.95	1.00	
Satd. Flow (perm)	423	3503			3380	1467	1088	1778		3362	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1299	22	0	630	223	27	54	22	527	71	98
RTOR Reduction (vph)	0	1	0	0	0	99	0	10	0	0	35	0
Lane Group Flow (vph)	217	1320	0	0	630	124	27	66	0	527	135	0
Confl. Peds. (#/hr)	21		11	11		21	6		4	4		6
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	3%	3%	5%	0%	8%	2%	12%	4%	0%	3%	18%	2%
Bus Blockages (#/hr)	0	4	4	0	0	3	0	0	0	0	2	2
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	58.0	58.0			40.8	40.8	37.6	37.6		26.4	69.0	
Effective Green, g (s)	59.0	59.0			41.8	41.8	38.6	38.6		27.4	70.0	
Actuated g/C Ratio	0.42	0.42			0.30	0.30	0.28	0.28		0.20	0.50	
Clearance Time (s)	3.0	6.0			6.0	6.0	7.0	7.0		5.0	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)	320	1476			1009	438	299	490		657	793	
v/s Ratio Prot	0.07	c0.38			0.19			0.04		c0.16	c0.08	
v/s Ratio Perm	0.21					0.08	0.02					
v/c Ratio	0.68	0.89			0.62	0.28	0.09	0.13		0.80	0.17	
Uniform Delay, d1	28.6	37.6			42.3	37.6	37.7	38.1		53.7	19.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	7.4			1.2	0.4	0.6	0.6		7.0	0.1	
Delay (s)	34.3	45.0			43.5	38.0	38.3	38.7		60.7	19.2	
Level of Service	C	D			D	D	D	D		E	B	
Approach Delay (s)		43.5			42.1			38.6			50.6	
Approach LOS		D			D			D			D	

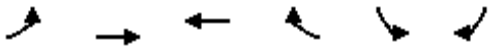
Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	1385	650	20	30	5
Future Volume (Veh/h)	5	1385	650	20	30	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	1473	691	21	32	5
Pedestrians					8	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		223	237			
pX, platoon unblocked	0.99				0.99	0.99
vC, conflicting volume	720				1456	364
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	689				1435	328
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.5				3.5	3.3
p0 queue free %	99				74	99
cM capacity (veh/h)	748				124	660

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	496	982	461	251	37
Volume Left	5	0	0	0	32
Volume Right	0	0	0	21	5
cSH	748	1700	1700	1700	139
Volume to Capacity	0.01	0.58	0.27	0.15	0.27
Queue Length 95th (m)	0.2	0.0	0.0	0.0	8.1
Control Delay (s)	0.2	0.0	0.0	0.0	40.1
Lane LOS	A				E
Approach Delay (s)	0.1		0.0		40.1
Approach LOS					E

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	5	5	5	10	25
Future Volume (Veh/h)	35	5	5	5	10	25
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	53	8	8	8	15	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)					360	
pX, platoon unblocked						
vC, conflicting volume	61	49	68	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	49	68	0	0	
tC, single (s)	7.6	6.5	6.5	6.4	4.5	
tC, 2 stage (s)						
tF (s)	4.0	4.0	4.0	3.5	2.5	
p0 queue free %	93	99	99	99	99	
cM capacity (veh/h)	809	837	818	1043	1416	

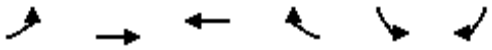
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	61	16	53
Volume Left	53	0	15
Volume Right	0	8	38
cSH	813	917	1416
Volume to Capacity	0.08	0.02	0.01
Queue Length 95th (m)	1.9	0.4	0.3
Control Delay (s)	9.8	9.0	2.2
Lane LOS	A	A	A
Approach Delay (s)	9.8	9.0	2.2
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	50	45	5	45	40
Future Volume (Veh/h)	0	50	45	5	45	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	68	62	7	62	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						135
pX, platoon unblocked						
vC, conflicting volume	244	66			69	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	66			69	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	100	93			96	
cM capacity (veh/h)	717	976			1501	

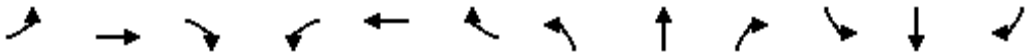
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	68	69	117
Volume Left	0	0	62
Volume Right	68	7	0
cSH	976	1700	1501
Volume to Capacity	0.07	0.04	0.04
Queue Length 95th (m)	1.8	0.0	1.0
Control Delay (s)	9.0	0.0	4.1
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	4.1
Approach LOS	A		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	1370	635	105	50	35
Future Volume (vph)	45	1370	635	105	50	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1750	3515	3444	1532	1684	1551
Flt Permitted	0.39	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	711	3515	3444	1532	1684	1551
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	1505	698	115	55	38
RTOR Reduction (vph)	0	0	0	18	0	35
Lane Group Flow (vph)	49	1505	698	97	55	3
Heavy Vehicles (%)	2%	3%	6%	3%	6%	3%
Bus Blockages (#/hr)	0	4	0	3	0	0
Turn Type	Perm	NA	NA	Perm	Prot	Prot
Protected Phases		4	8		1	1
Permitted Phases	4			8		
Actuated Green, G (s)	117.3	117.3	117.3	117.3	8.7	8.7
Effective Green, g (s)	118.3	118.3	118.3	118.3	9.7	9.7
Actuated g/C Ratio	0.84	0.84	0.84	0.84	0.07	0.07
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	600	2970	2910	1294	116	107
v/s Ratio Prot		c0.43	0.20		c0.03	0.00
v/s Ratio Perm	0.07			0.06		
v/c Ratio	0.08	0.51	0.24	0.08	0.47	0.02
Uniform Delay, d1	1.8	2.9	2.1	1.8	62.7	60.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	0.2	0.1	3.0	0.1
Delay (s)	2.1	3.6	2.3	1.9	65.7	60.8
Level of Service	A	A	A	A	E	E
Approach Delay (s)		3.5	2.2		63.7	
Approach LOS		A	A		E	

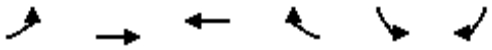
Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	935	40	15	1200	280	30	30	10	255	40	200
Future Volume (vph)	225	935	40	15	1200	280	30	30	10	255	40	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		5.0	5.0	5.0	6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3528		1784	3614	1479	1732	1841		3429	1636	
Flt Permitted	0.10	1.00		0.28	1.00	1.00	0.60	1.00		0.95	1.00	
Satd. Flow (perm)	181	3528		525	3614	1479	1098	1841		3429	1636	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	984	42	16	1263	295	32	32	11	268	42	211
RTOR Reduction (vph)	0	2	0	0	0	80	0	10	0	0	149	0
Lane Group Flow (vph)	237	1024	0	16	1263	215	32	33	0	268	104	0
Confl. Peds. (#/hr)	18		1	1		18	1		1	1		1
Heavy Vehicles (%)	2%	2%	0%	0%	1%	1%	3%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	4	4	0	0	4	0	0	0	0	2	2
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	59.5	59.5		37.6	37.6	37.6	12.6	12.6		9.9	27.5	
Effective Green, g (s)	60.5	60.5		38.6	38.6	38.6	13.6	13.6		10.9	28.5	
Actuated g/C Ratio	0.60	0.60		0.39	0.39	0.39	0.14	0.14		0.11	0.28	
Clearance Time (s)	3.0	6.0		6.0	6.0	6.0	7.0	7.0		5.0	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)	421	2134		202	1395	570	149	250		373	466	
v/s Ratio Prot	c0.11	0.29			c0.35			0.02		c0.08	c0.06	
v/s Ratio Perm	0.23			0.03		0.15	0.03					
v/c Ratio	0.56	0.48		0.08	0.91	0.38	0.21	0.13		0.72	0.22	
Uniform Delay, d1	20.5	11.0		19.4	29.0	22.1	38.4	38.0		43.1	27.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		0.2	8.6	0.4	3.3	1.1		6.5	0.2	
Delay (s)	22.2	11.2		19.6	37.6	22.5	41.7	39.1		49.6	27.5	
Level of Service	C	B		B	D	C	D	D		D	C	
Approach Delay (s)		13.2			34.6			40.2			38.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

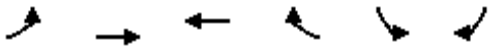
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	1145	1320	55	25	15
Future Volume (Veh/h)	15	1145	1320	55	25	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	1193	1375	57	26	16
Pedestrians					11	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		223	237			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	1443				2043	727
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1116				1842	249
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	97				50	97
cM capacity (veh/h)	491				52	620

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	414	795	917	515	42
Volume Left	16	0	0	0	26
Volume Right	0	0	0	57	16
cSH	491	1700	1700	1700	79
Volume to Capacity	0.03	0.47	0.54	0.30	0.53
Queue Length 95th (m)	0.8	0.0	0.0	0.0	18.2
Control Delay (s)	1.0	0.0	0.0	0.0	92.9
Lane LOS	A				F
Approach Delay (s)	0.3		0.0		92.9
Approach LOS					F

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	5	0	5	0	25
Future Volume (Veh/h)	10	5	0	5	0	25
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	15	8	0	8	0	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)					376	
pX, platoon unblocked						
vC, conflicting volume	27	19	38	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27	19	38	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	98	99	100	99	100	
cM capacity (veh/h)	981	879	858	1091	1636	

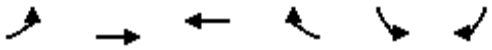
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	8	38
Volume Left	15	0	0
Volume Right	0	8	38
cSH	943	1091	1636
Volume to Capacity	0.02	0.01	0.00
Queue Length 95th (m)	0.6	0.2	0.0
Control Delay (s)	8.9	8.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	8.3	0.0
Approach LOS	A	A	

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	45	25	0	65	30
Future Volume (Veh/h)	5	45	25	0	65	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	49	27	0	71	33
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						135
pX, platoon unblocked						
vC, conflicting volume	204	29			29	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	29			29	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	95			96	
cM capacity (veh/h)	753	1044			1595	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	54	27	104
Volume Left	5	0	71
Volume Right	49	0	0
cSH	1008	1700	1595
Volume to Capacity	0.05	0.02	0.04
Queue Length 95th (m)	1.4	0.0	1.1
Control Delay (s)	8.8	0.0	5.1
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	5.1
Approach LOS	A		

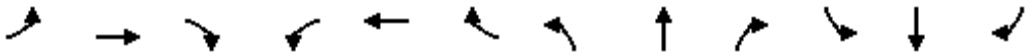
Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	100	1070	1255	205	185	120
Future Volume (vph)	100	1070	1255	205	185	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1784	3550	3614	1532	1785	1597
Flt Permitted	0.18	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	342	3550	3614	1532	1785	1597
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	1092	1281	209	189	122
RTOR Reduction (vph)	0	0	0	34	0	53
Lane Group Flow (vph)	102	1092	1281	175	189	69
Confl. Peds. (#/hr)	6			6		8
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	4	0	4	0	0
Turn Type	Perm	NA	NA	Perm	Prot	Prot
Protected Phases		4	8		1	1
Permitted Phases	4			8		
Actuated Green, G (s)	70.1	70.1	70.1	70.1	15.9	15.9
Effective Green, g (s)	71.1	71.1	71.1	71.1	16.9	16.9
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	243	2524	2569	1089	301	269
v/s Ratio Prot		0.31	c0.35		c0.11	0.04
v/s Ratio Perm	0.30			0.11		
v/c Ratio	0.42	0.43	0.50	0.16	0.63	0.26
Uniform Delay, d1	6.0	6.0	6.5	4.7	38.6	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	0.5	0.7	0.3	4.1	0.5
Delay (s)	11.2	6.6	7.2	5.0	42.7	36.6
Level of Service	B	A	A	A	D	D
Approach Delay (s)		7.0	6.9		40.3	
Approach LOS		A	A		D	

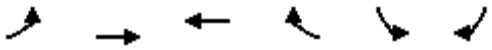
Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	1260	20	0	705	225	25	50	20	490	65	95
Future Volume (vph)	230	1260	20	0	705	225	25	50	20	490	65	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0			5.0	5.0	6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85	1.00	0.96		1.00	0.91	
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	3504			3380	1467	1589	1778		3362	1585	
Flt Permitted	0.14	1.00			1.00	1.00	0.65	1.00		0.95	1.00	
Satd. Flow (perm)	249	3504			3380	1467	1083	1778		3362	1585	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	1370	22	0	766	245	27	54	22	533	71	103
RTOR Reduction (vph)	0	1	0	0	0	92	0	10	0	0	37	0
Lane Group Flow (vph)	250	1391	0	0	766	153	27	66	0	533	137	0
Confl. Peds. (#/hr)	21		11	11		21	6		4	4		6
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	3%	3%	5%	0%	8%	2%	12%	4%	0%	3%	18%	2%
Bus Blockages (#/hr)	0	4	4	0	0	3	0	0	0	0	2	2
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	59.9	59.9			38.7	38.7	35.5	35.5		26.6	67.1	
Effective Green, g (s)	60.9	60.9			39.7	39.7	36.5	36.5		27.6	68.1	
Actuated g/C Ratio	0.43	0.43			0.28	0.28	0.26	0.26		0.20	0.49	
Clearance Time (s)	3.0	6.0			6.0	6.0	7.0	7.0		5.0	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)	311	1524			958	415	282	463		662	770	
v/s Ratio Prot	0.11	c0.40			0.23			0.04		c0.16	c0.09	
v/s Ratio Perm	0.24					0.10	0.02					
v/c Ratio	0.80	0.91			0.80	0.37	0.10	0.14		0.81	0.18	
Uniform Delay, d1	30.1	37.1			46.5	40.1	39.2	39.7		53.6	20.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.9	8.7			4.7	0.6	0.7	0.6		7.1	0.1	
Delay (s)	44.1	45.8			51.2	40.7	39.9	40.4		60.7	20.3	
Level of Service	D	D			D	D	D	D		E	C	
Approach Delay (s)		45.5			48.7			40.2			50.8	
Approach LOS		D			D			D			D	

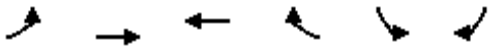
Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	1415	770	30	95	20
Future Volume (vph)	10	1415	770	30	95	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)		6.0	6.0		3.5	3.5
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3509	3389		1785	1597
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3322	3389		1785	1597
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1505	819	32	101	21
RTOR Reduction (vph)	0	0	2	0	0	19
Lane Group Flow (vph)	0	1516	849	0	101	2
Confl. Peds. (#/hr)	8			8		
Heavy Vehicles (%)	25%	3%	7%	5%	0%	0%
Bus Blockages (#/hr)	0	4	0	3	0	0
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		1	
Permitted Phases	4					1
Actuated Green, G (s)		115.3	115.3		13.2	13.2
Effective Green, g (s)		116.3	116.3		14.2	14.2
Actuated g/C Ratio		0.83	0.83		0.10	0.10
Clearance Time (s)		7.0	7.0		4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2759	2815		181	161
v/s Ratio Prot			0.25		c0.06	
v/s Ratio Perm		c0.46				0.00
v/c Ratio		0.55	0.30		0.56	0.01
Uniform Delay, d1		3.7	2.7		59.9	56.6
Progression Factor		1.00	0.99		1.00	1.00
Incremental Delay, d2		0.8	0.3		3.7	0.0
Delay (s)		4.5	2.9		63.6	56.6
Level of Service		A	A		E	E
Approach Delay (s)		4.5	2.9		62.4	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	5	5	5	10	25
Future Volume (Veh/h)	35	5	5	5	10	25
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	53	8	8	8	15	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)					360	
pX, platoon unblocked						
vC, conflicting volume	61	49	68	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	49	68	0	0	
tC, single (s)	7.6	6.5	6.5	6.4	4.5	
tC, 2 stage (s)						
tF (s)	4.0	4.0	4.0	3.5	2.5	
p0 queue free %	93	99	99	99	99	
cM capacity (veh/h)	809	837	818	1043	1416	

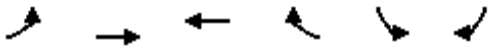
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	61	16	53
Volume Left	53	0	15
Volume Right	0	8	38
cSH	813	917	1416
Volume to Capacity	0.08	0.02	0.01
Queue Length 95th (m)	1.9	0.4	0.3
Control Delay (s)	9.8	9.0	2.2
Lane LOS	A	A	A
Approach Delay (s)	9.8	9.0	2.2
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	50	45	5	45	40
Future Volume (Veh/h)	0	50	45	5	45	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	68	62	7	62	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						135
pX, platoon unblocked						
vC, conflicting volume	244	66			69	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	66			69	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	100	93			96	
cM capacity (veh/h)	717	976			1501	

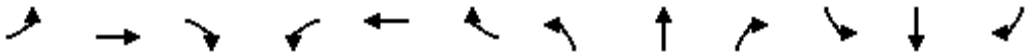
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	68	69	117
Volume Left	0	0	62
Volume Right	68	7	0
cSH	976	1700	1501
Volume to Capacity	0.07	0.04	0.04
Queue Length 95th (m)	1.8	0.0	1.0
Control Delay (s)	9.0	0.0	4.1
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	4.1
Approach LOS	A		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	1465	765	105	50	35
Future Volume (vph)	45	1465	765	105	50	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1750	3515	3444	1532	1684	1551
Flt Permitted	0.33	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	612	3515	3444	1532	1684	1551
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	1610	841	115	55	38
RTOR Reduction (vph)	0	0	0	15	0	35
Lane Group Flow (vph)	49	1610	841	100	55	3
Heavy Vehicles (%)	2%	3%	6%	3%	6%	3%
Bus Blockages (#/hr)	0	4	0	3	0	0
Turn Type	Perm	NA	NA	Perm	Prot	Prot
Protected Phases		4	8		1	1
Permitted Phases	4			8		
Actuated Green, G (s)	117.3	117.3	117.3	117.3	8.7	8.7
Effective Green, g (s)	118.3	118.3	118.3	118.3	9.7	9.7
Actuated g/C Ratio	0.84	0.84	0.84	0.84	0.07	0.07
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	517	2970	2910	1294	116	107
v/s Ratio Prot		c0.46	0.24		c0.03	0.00
v/s Ratio Perm	0.08			0.07		
v/c Ratio	0.09	0.54	0.29	0.08	0.47	0.02
Uniform Delay, d1	1.8	3.1	2.2	1.8	62.7	60.7
Progression Factor	0.91	1.55	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	0.3	0.1	3.0	0.1
Delay (s)	2.0	5.4	2.5	1.9	65.7	60.8
Level of Service	A	A	A	A	E	E
Approach Delay (s)		5.3	2.4		63.7	
Approach LOS		A	A		E	

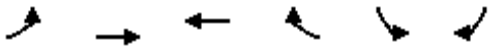
Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	1090	40	15	1295	290	30	30	10	270	40	225
Future Volume (vph)	240	1090	40	15	1295	290	30	30	10	270	40	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		5.0	5.0	5.0	6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3531		1785	3614	1479	1732	1841		3429	1631	
Flt Permitted	0.10	1.00		0.24	1.00	1.00	0.59	1.00		0.95	1.00	
Satd. Flow (perm)	182	3531		446	3614	1479	1073	1841		3429	1631	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	1147	42	16	1363	305	32	32	11	284	42	237
RTOR Reduction (vph)	0	2	0	0	0	81	0	9	0	0	152	0
Lane Group Flow (vph)	253	1187	0	16	1363	224	32	34	0	284	127	0
Confl. Peds. (#/hr)	18		1	1		18	1		1	1		1
Heavy Vehicles (%)	2%	2%	0%	0%	1%	1%	3%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	4	4	0	0	4	0	0	0	0	2	2
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	61.1	61.1		37.4	37.4	37.4	12.9	12.9		8.0	25.9	
Effective Green, g (s)	62.1	62.1		38.4	38.4	38.4	13.9	13.9		9.0	26.9	
Actuated g/C Ratio	0.62	0.62		0.38	0.38	0.38	0.14	0.14		0.09	0.27	
Clearance Time (s)	3.0	6.0		6.0	6.0	6.0	7.0	7.0		5.0	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)	453	2192		171	1387	567	149	255		308	438	
v/s Ratio Prot	c0.12	0.34			c0.38			0.02		c0.08	c0.08	
v/s Ratio Perm	0.23			0.04		0.15	0.03					
v/c Ratio	0.56	0.54		0.09	0.98	0.40	0.21	0.13		0.92	0.29	
Uniform Delay, d1	21.1	10.8		19.7	30.5	22.4	38.2	37.8		45.2	29.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.3		1.1	20.4	2.1	3.3	1.1		31.7	0.4	
Delay (s)	22.6	11.1		20.8	50.8	24.4	41.5	38.8		76.8	29.3	
Level of Service	C	B		C	D	C	D	D		E	C	
Approach Delay (s)		13.1			45.8			40.0			53.3	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

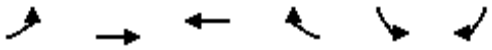
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	1285	1385	110	55	20
Future Volume (vph)	40	1285	1385	110	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)		6.0	6.0		3.5	3.5
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3540	3561		1716	1597
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2932	3561		1716	1597
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	1339	1443	115	57	21
RTOR Reduction (vph)	0	0	5	0	0	19
Lane Group Flow (vph)	0	1381	1553	0	57	2
Confl. Peds. (#/hr)	11			11		
Heavy Vehicles (%)	6%	2%	1%	2%	4%	0%
Bus Blockages (#/hr)	0	4	0	4	0	0
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		1	
Permitted Phases	4					1
Actuated Green, G (s)		80.9	80.9		7.6	7.6
Effective Green, g (s)		81.9	81.9		8.6	8.6
Actuated g/C Ratio		0.82	0.82		0.09	0.09
Clearance Time (s)		7.0	7.0		4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2401	2916		147	137
v/s Ratio Prot			0.44		c0.03	
v/s Ratio Perm		c0.47				0.00
v/c Ratio		0.58	0.53		0.39	0.01
Uniform Delay, d1		3.1	2.9		43.2	41.8
Progression Factor		1.00	0.91		1.00	1.00
Incremental Delay, d2		1.0	0.6		1.7	0.0
Delay (s)		4.1	3.3		44.9	41.9
Level of Service		A	A		D	D
Approach Delay (s)		4.1	3.3		44.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	5	0	5	0	25
Future Volume (Veh/h)	10	5	0	5	0	25
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	15	8	0	8	0	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)					376	
pX, platoon unblocked						
vC, conflicting volume	27	19	38	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27	19	38	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	98	99	100	99	100	
cM capacity (veh/h)	981	879	858	1091	1636	

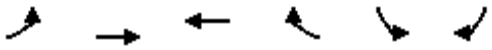
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	8	38
Volume Left	15	0	0
Volume Right	0	8	38
cSH	943	1091	1636
Volume to Capacity	0.02	0.01	0.00
Queue Length 95th (m)	0.6	0.2	0.0
Control Delay (s)	8.9	8.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	8.3	0.0
Approach LOS	A	A	

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	45	25	0	65	30
Future Volume (Veh/h)	5	45	25	0	65	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	49	27	0	71	33
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						135
pX, platoon unblocked						
vC, conflicting volume	204	29			29	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	29			29	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	95			96	
cM capacity (veh/h)	753	1044			1595	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	54	27	104
Volume Left	5	0	71
Volume Right	49	0	0
cSH	1008	1700	1595
Volume to Capacity	0.05	0.02	0.04
Queue Length 95th (m)	1.4	0.0	1.1
Control Delay (s)	8.8	0.0	5.1
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	5.1
Approach LOS	A		

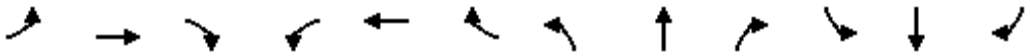
Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	100	1240	1375	205	185	120
Future Volume (vph)	100	1240	1375	205	185	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1784	3550	3614	1532	1785	1597
Flt Permitted	0.15	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	288	3550	3614	1532	1785	1597
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	1265	1403	209	189	122
RTOR Reduction (vph)	0	0	0	31	0	40
Lane Group Flow (vph)	102	1265	1403	178	189	82
Confl. Peds. (#/hr)	6			6		8
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	4	0	4	0	0
Turn Type	Perm	NA	NA	Perm	Prot	Prot
Protected Phases		4	8		1	1
Permitted Phases	4			8		
Actuated Green, G (s)	70.1	70.1	70.1	70.1	15.9	15.9
Effective Green, g (s)	71.1	71.1	71.1	71.1	16.9	16.9
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	2524	2569	1089	301	269
v/s Ratio Prot		0.36	c0.39		c0.11	0.05
v/s Ratio Perm	0.35			0.12		
v/c Ratio	0.50	0.50	0.55	0.16	0.63	0.31
Uniform Delay, d1	6.5	6.5	6.8	4.7	38.6	36.4
Progression Factor	0.84	0.77	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	0.6	0.8	0.3	4.1	0.6
Delay (s)	12.7	5.6	7.7	5.0	42.7	37.1
Level of Service	B	A	A	A	D	D
Approach Delay (s)		6.1	7.3		40.5	
Approach LOS		A	A		D	

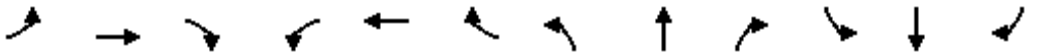
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	390	1425	45	155	835	225	80	235	240	490	155	180
Future Volume (vph)	390	1425	45	155	835	225	80	235	240	490	155	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		2.0	5.0	5.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	*1.00		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.68	1.00	1.00	0.85	1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1733	3645		1785	3380	1053	1454	1847	1351	3539	1469	
Flt Permitted	0.09	1.00		0.10	1.00	1.00	0.54	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	166	3645		179	3380	1053	833	1847	1351	3539	1469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	1549	49	168	908	245	87	255	261	533	168	196
RTOR Reduction (vph)	0	2	0	0	0	82	0	0	88	0	30	0
Lane Group Flow (vph)	424	1596	0	168	908	163	87	255	173	533	334	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	3%	3%	5%	0%	8%	2%	12%	4%	0%	3%	18%	2%
Bus Blockages (#/hr)	0	4	4	0	0	3	0	0	0	0	2	2
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	74.5	63.0		49.4	40.9	40.9	26.5	26.5	26.5	21.0	52.5	
Effective Green, g (s)	75.5	64.0		51.4	41.9	41.9	27.5	27.5	27.5	22.0	53.5	
Actuated g/C Ratio	0.54	0.46		0.37	0.30	0.30	0.20	0.20	0.20	0.16	0.38	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	7.0	7.0	7.0	5.0	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)	443	1666		174	1011	315	163	362	265	556	561	
v/s Ratio Prot	c0.22	c0.44		c0.07	0.27			c0.14		c0.15	0.23	
v/s Ratio Perm	0.30			0.29		0.15	0.10		0.13			
v/c Ratio	0.96	0.96		0.97	0.90	0.52	0.53	0.70	0.65	0.96	0.59	
Uniform Delay, d1	43.0	36.7		35.9	47.0	40.7	50.5	52.5	51.9	58.5	34.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	31.6	14.1		57.6	12.4	6.0	3.3	6.1	5.7	27.7	1.7	
Delay (s)	74.6	50.8		93.5	59.4	46.6	53.8	58.6	57.6	86.3	36.3	
Level of Service	E	D		F	E	D	D	E	E	F	D	
Approach Delay (s)		55.8			61.3			57.5			66.0	
Approach LOS		E			E			E			E	

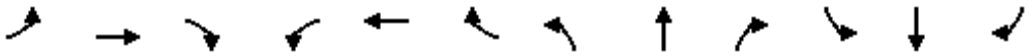
Intersection Summary			
HCM 2000 Control Delay	59.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1555	90	35	900	30	105	0	35	95	0	20
Future Volume (vph)	10	1555	90	35	900	30	105	0	35	95	0	20
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)		6.0			6.0		6.0		7.0	6.0		7.0
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes		0.99			0.99		1.00		0.80	1.00		1.00
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00		1.00
Frt		0.99			1.00		1.00		0.85	1.00		0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)		3461			3370		1750		1254	1785		1597
Flt Permitted		0.95			0.70		0.95		1.00	0.95		1.00
Satd. Flow (perm)		3272			2378		1750		1254	1785		1597
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1654	96	37	957	32	112	0	37	101	0	21
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	32	0	0	19
Lane Group Flow (vph)	0	1758	0	0	1025	0	112	0	5	101	0	2
Confl. Peds. (#/hr)	100		100	100		100			100	100		
Heavy Vehicles (%)	25%	3%	2%	2%	7%	5%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	4	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Prot		Perm
Protected Phases		4			8		2			6		
Permitted Phases	4			8					2			6
Actuated Green, G (s)		90.5			90.5		17.4		17.4	11.1		11.1
Effective Green, g (s)		91.5			91.5		18.4		17.4	12.1		11.1
Actuated g/C Ratio		0.65			0.65		0.13		0.12	0.09		0.08
Clearance Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Vehicle Extension (s)		3.0			3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)		2138			1554		230		155	154		126
v/s Ratio Prot							c0.06			c0.06		
v/s Ratio Perm		c0.54			0.43				0.00			0.00
v/c Ratio		0.82			0.66		0.49		0.03	0.66		0.01
Uniform Delay, d1		18.2			14.8		56.4		53.9	61.9		59.4
Progression Factor		1.00			0.81		1.00		1.00	1.00		1.00
Incremental Delay, d2		3.7			2.1		1.6		0.1	9.6		0.0
Delay (s)		21.9			14.0		58.0		54.0	71.6		59.4
Level of Service		C			B		E		D	E		E
Approach Delay (s)		21.9			14.0			57.0			69.5	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	22.9	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)	18.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

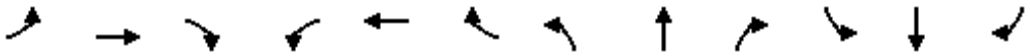
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	195	0	0	5	0	5	0	35	5	10	25	95
Future Volume (vph)	195	0	0	5	0	5	0	35	5	10	25	95
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	295	0	0	8	0	8	0	53	8	15	38	144

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	295	16	61	197
Volume Left (vph)	295	8	0	15
Volume Right (vph)	0	8	8	144
Hadj (s)	0.20	-0.06	0.66	-0.30
Departure Headway (s)	4.8	4.9	5.6	4.5
Degree Utilization, x	0.39	0.02	0.09	0.24
Capacity (veh/h)	721	674	597	750
Control Delay (s)	10.8	8.0	9.2	8.9
Approach Delay (s)	10.8	8.0	9.2	8.9
Approach LOS	B	A	A	A

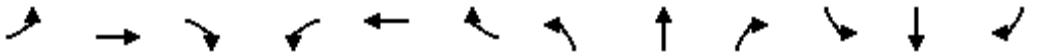
Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	205	0	0	0	0	50	0	240	5	45	135	80
Future Volume (vph)	205	0	0	0	0	50	0	240	5	45	135	80
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	281	0	0	0	0	68	0	329	7	62	185	110

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	281	68	336	357
Volume Left (vph)	281	0	0	62
Volume Right (vph)	0	68	7	110
Hadj (s)	0.23	-0.43	0.09	0.10
Departure Headway (s)	6.3	6.2	5.8	5.8
Degree Utilization, x	0.49	0.12	0.54	0.57
Capacity (veh/h)	524	466	587	596
Control Delay (s)	15.1	10.0	15.4	16.1
Approach Delay (s)	15.1	10.0	15.4	16.1
Approach LOS	C	B	C	C

Intersection Summary				
Delay	15.2			
Level of Service	C			
Intersection Capacity Utilization	57.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1750	70	180	855	105	75	0	40	50	0	35
Future Volume (vph)	45	1750	70	180	855	105	75	0	40	50	0	35
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)	6.0	6.0		2.0	6.0	6.0	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	0.99		1.00	1.00	0.74	1.00	0.84			1.00	0.84
Flpb, ped/bikes	0.93	1.00		1.00	1.00	1.00	0.86	1.00			0.85	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)	1635	3462		1750	3444	1139	1498	1338			1470	1296
Flt Permitted	0.30	1.00		0.04	1.00	1.00	0.72	1.00			0.73	1.00
Satd. Flow (perm)	524	3462		82	3444	1139	1137	1338			1127	1296
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	1923	77	198	940	115	82	0	44	55	0	38
RTOR Reduction (vph)	0	2	0	0	0	22	0	36	0	0	0	31
Lane Group Flow (vph)	49	1998	0	198	940	93	82	8	0	0	55	7
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	2%	3%	2%	2%	6%	3%	2%	2%	2%	6%	2%	3%
Bus Blockages (#/hr)	0	4	0	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	87.0	87.0		102.8	102.8	102.8	23.2	23.2			23.2	23.2
Effective Green, g (s)	88.0	88.0		103.8	103.8	103.8	24.2	24.2			24.2	24.2
Actuated g/C Ratio	0.63	0.63		0.74	0.74	0.74	0.17	0.17			0.17	0.17
Clearance Time (s)	7.0	7.0		3.0	7.0	7.0	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)	329	2176		225	2553	844	196	231			194	224
v/s Ratio Prot		c0.58		c0.09	0.27			0.01				
v/s Ratio Perm	0.09			0.57		0.08	c0.07				0.05	0.01
v/c Ratio	0.15	0.92		0.88	0.37	0.11	0.42	0.03			0.28	0.03
Uniform Delay, d1	10.7	22.8		48.1	6.4	5.1	51.6	48.2			50.4	48.1
Progression Factor	0.68	0.53		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.7	5.8		30.3	0.4	0.3	1.4	0.1			0.8	0.1
Delay (s)	7.9	18.0		78.5	6.8	5.4	53.1	48.2			51.2	48.2
Level of Service	A	B		E	A	A	D	D			D	D
Approach Delay (s)		17.7			18.0			51.4			49.9	
Approach LOS		B			B			D			D	

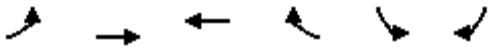
Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1820	25	0	1125	0	50
Future Volume (Veh/h)	1820	25	0	1125	0	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1978	27	0	1223	0	54
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	138			132		
pX, platoon unblocked			0.45		0.45	0.45
vC, conflicting volume			2105		2703	1102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1023		2344	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			281		13	451

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1319	686	612	612	54
Volume Left	0	0	0	0	0
Volume Right	0	27	0	0	54
cSH	1700	1700	1700	1700	451
Volume to Capacity	0.78	0.40	0.36	0.36	0.12
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.2
Control Delay (s)	0.0	0.0	0.0	0.0	14.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.1
Approach LOS					B

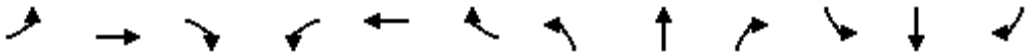
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	195	95	0	0	0
Future Volume (Veh/h)	0	195	95	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	212	103	0	0	0
Pedestrians					50	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	153				365	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153				365	153
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1370				609	857

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	212	103	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1370	1700	1700
Volume to Capacity	0.00	0.06	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

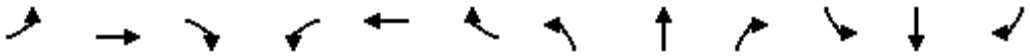
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	175	0	5	10	65	5	0	30	0	0	15
Future Volume (vph)	0	175	0	5	10	65	5	0	30	0	0	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	190	0	5	11	71	5	0	33	0	0	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	190	87	38	16
Volume Left (vph)	0	5	5	0
Volume Right (vph)	0	71	33	16
Hadj (s)	0.03	-0.44	-0.46	-0.57
Departure Headway (s)	4.1	3.8	4.0	4.0
Degree Utilization, x	0.22	0.09	0.04	0.02
Capacity (veh/h)	855	933	827	834
Control Delay (s)	8.3	7.1	7.2	7.0
Approach Delay (s)	8.3	7.1	7.2	7.0
Approach LOS	A	A	A	A

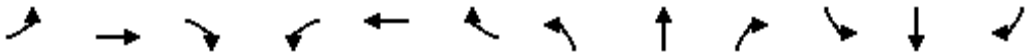
Intersection Summary				
Delay	7.8			
Level of Service	A			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	55	0	0	0	0	35	0	0	145	5
Future Volume (vph)	0	0	55	0	0	0	0	35	0	0	145	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	60	0	0	0	0	38	0	0	158	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	60	0	38	163
Volume Left (vph)	0	0	0	0
Volume Right (vph)	60	0	0	5
Hadj (s)	-0.57	0.00	0.03	0.02
Departure Headway (s)	3.8	4.4	4.2	4.1
Degree Utilization, x	0.06	0.00	0.04	0.18
Capacity (veh/h)	905	787	826	867
Control Delay (s)	7.0	7.4	7.4	8.0
Approach Delay (s)	7.0	0.0	7.4	8.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.7			
Level of Service	A			
Intersection Capacity Utilization	31.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	125	0	0	0	40	0	35	0	15	150	20
Future Volume (vph)	0	125	0	0	0	40	0	35	0	15	150	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	136	0	0	0	43	0	38	0	16	163	22

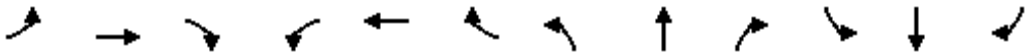
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	136	43	38	201
Volume Left (vph)	0	0	0	16
Volume Right (vph)	0	43	0	22
Hadj (s)	0.03	-0.57	0.03	-0.02
Departure Headway (s)	4.5	4.0	4.6	4.3
Degree Utilization, x	0.17	0.05	0.05	0.24
Capacity (veh/h)	746	819	740	789
Control Delay (s)	8.5	7.3	7.8	8.7
Approach Delay (s)	8.5	7.3	7.8	8.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.4			
Level of Service	A			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1665	20	0	965	0	200
Future Volume (Veh/h)	1665	20	0	965	0	200
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1810	22	0	1049	0	217
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	105			131		
pX, platoon unblocked			0.63		0.68	0.63
vC, conflicting volume			1932		2446	1016
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1309		1549	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	66
cM capacity (veh/h)			304		65	629

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1207	625	524	524	217
Volume Left	0	0	0	0	0
Volume Right	0	22	0	0	217
cSH	1700	1700	1700	1700	629
Volume to Capacity	0.71	0.37	0.31	0.31	0.34
Queue Length 95th (m)	0.0	0.0	0.0	0.0	12.3
Control Delay (s)	0.0	0.0	0.0	0.0	13.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.7
Approach LOS					B

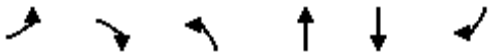
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	25	0	0	15	5	0	0	175	125	0	95	0
Future Volume (vph)	25	0	0	15	5	0	0	175	125	0	95	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	0	0	16	5	0	0	190	136	0	103	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	27	21	326	103
Volume Left (vph)	27	16	0	0
Volume Right (vph)	0	0	136	0
Hadj (s)	0.23	0.19	-0.22	0.03
Departure Headway (s)	5.1	5.0	3.9	4.4
Degree Utilization, x	0.04	0.03	0.35	0.12
Capacity (veh/h)	646	650	900	793
Control Delay (s)	8.3	8.2	9.1	8.0
Approach Delay (s)	8.3	8.2	9.1	8.0
Approach LOS	A	A	A	A

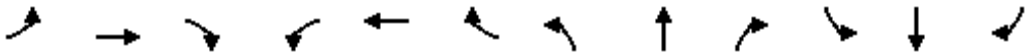
Intersection Summary				
Delay	8.7			
Level of Service	A			
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	40	0	0	75	185	65
Future Volume (vph)	40	0	0	75	185	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	0	0	82	201	71

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	43	82	272
Volume Left (vph)	43	0	0
Volume Right (vph)	0	0	71
Hadj (s)	0.23	0.03	-0.12
Departure Headway (s)	4.9	4.3	4.0
Degree Utilization, x	0.06	0.10	0.30
Capacity (veh/h)	680	810	893
Control Delay (s)	8.2	7.8	8.7
Approach Delay (s)	8.2	7.8	8.7
Approach LOS	A	A	A

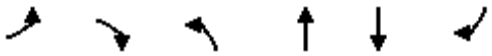
Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	65	20	10	35	55	145	0	0	10	0
Future Volume (Veh/h)	0	5	65	20	10	35	55	145	0	0	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	71	22	11	38	60	158	0	0	11	0
Pedestrians								50			50	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								4			4	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		192										
pX, platoon unblocked												
vC, conflicting volume	99			126			170	234	90	244	250	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			126			170	234	90	244	250	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			91	74	100	100	98	100
cM capacity (veh/h)	1430			1398			693	601	926	503	589	938

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	71	218	11
Volume Left	0	22	60	0
Volume Right	71	38	0	0
cSH	1430	1398	624	589
Volume to Capacity	0.00	0.02	0.35	0.02
Queue Length 95th (m)	0.0	0.4	12.5	0.5
Control Delay (s)	0.0	2.4	13.8	11.2
Lane LOS		A	B	B
Approach Delay (s)	0.0	2.4	13.8	11.2
Approach LOS			B	B

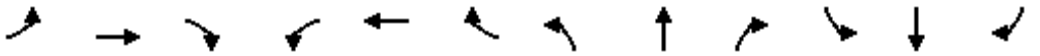
Intersection Summary				
Average Delay	8.8			
Intersection Capacity Utilization	37.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	0	0	495	260	95
Future Volume (Veh/h)	60	0	0	495	260	95
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	0	0	538	283	103
Pedestrians	100					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	8					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					66	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	972	434	486			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	932	353	409			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	100	100			
cM capacity (veh/h)	253	590	982			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	538	386
Volume Left	65	0	0
Volume Right	0	0	103
cSH	253	982	1700
Volume to Capacity	0.26	0.00	0.23
Queue Length 95th (m)	8.0	0.0	0.0
Control Delay (s)	24.1	0.0	0.0
Lane LOS	C		
Approach Delay (s)	24.1	0.0	0.0
Approach LOS	C		

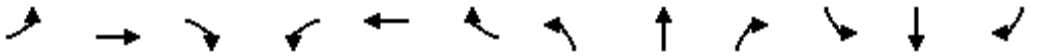
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	1225	80	250	1525	290	160	185	215	270	160	380
Future Volume (vph)	365	1225	80	250	1525	290	160	185	215	270	160	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		2.0	5.0	5.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.68	1.00	1.00	0.85	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.93	1.00	1.00	0.96	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1842	3453		1785	3804	1061	1608	1921	1351	1704	1906	1327
Flt Permitted	0.06	1.00		0.09	1.00	1.00	0.65	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	117	3453		177	3804	1061	1096	1921	1351	753	1906	1327
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	384	1289	84	263	1605	305	168	195	226	284	168	400
RTOR Reduction (vph)	0	3	0	0	0	71	0	0	146	0	0	209
Lane Group Flow (vph)	384	1370	0	263	1605	234	168	195	80	284	168	191
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	2%	2%	0%	0%	1%	1%	3%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	4	4	0	0	4	0	0	0	0	2	2
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	88.2	69.7		75.5	60.0	60.0	30.8	25.8	25.8	38.8	30.8	30.8
Effective Green, g (s)	89.2	70.7		77.5	61.0	61.0	32.8	26.8	26.8	39.8	31.8	31.8
Actuated g/C Ratio	0.64	0.51		0.55	0.44	0.44	0.23	0.19	0.19	0.28	0.23	0.23
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	397	1743		287	1657	462	278	367	258	288	432	301
v/s Ratio Prot	c0.18	0.40		0.11	c0.42		0.03	0.10		c0.08	0.09	
v/s Ratio Perm	0.44			0.40		0.22	0.12		0.06	0.20		c0.14
v/c Ratio	0.97	0.79		0.92	0.97	0.51	0.60	0.53	0.31	0.99	0.39	0.64
Uniform Delay, d1	47.4	28.4		36.0	38.6	28.6	46.6	50.9	48.7	48.6	45.9	48.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.2	3.6		31.9	15.8	3.9	3.7	1.5	0.7	48.8	0.6	4.3
Delay (s)	83.7	32.1		67.8	54.4	32.6	50.3	52.4	49.4	97.4	46.4	53.2
Level of Service	F	C		E	D	C	D	D	D	F	D	D
Approach Delay (s)		43.4			52.9			50.6			66.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	51.7	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)	15.0
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		

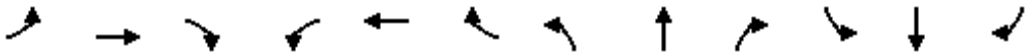
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1510	175	45	1570	110	75	0	20	55	0	20
Future Volume (vph)	40	1510	175	45	1570	110	75	0	20	55	0	20
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)		6.0			6.0		6.0		7.0	6.0		7.0
Lane Util. Factor		*1.00			*1.00		1.00		1.00	1.00		1.00
Frpb, ped/bikes		0.97			0.98		1.00		0.80	1.00		1.00
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00		1.00
Frt		0.98			0.99		1.00		0.85	1.00		0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)		3606			3698		1750		1254	1716		1597
Flt Permitted		0.76			0.73		0.95		1.00	0.95		1.00
Satd. Flow (perm)		2727			2695		1750		1254	1716		1597
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	1573	182	47	1635	115	78	0	21	57	0	21
RTOR Reduction (vph)	0	6	0	0	3	0	0	0	19	0	0	20
Lane Group Flow (vph)	0	1791	0	0	1794	0	78	0	2	57	0	1
Confl. Peds. (#/hr)	100		100	100		100			100	100		
Heavy Vehicles (%)	6%	2%	2%	2%	1%	2%	2%	2%	2%	4%	2%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Prot		Perm
Protected Phases		4			8		2			6		
Permitted Phases	4			8					2			6
Actuated Green, G (s)		96.1			96.1		16.6		16.6	6.3		6.3
Effective Green, g (s)		97.1			97.1		17.6		16.6	7.3		6.3
Actuated g/C Ratio		0.69			0.69		0.13		0.12	0.05		0.04
Clearance Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Vehicle Extension (s)		3.0			3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)		1891			1869		220		148	89		71
v/s Ratio Prot							c0.04			c0.03		
v/s Ratio Perm		0.66			c0.67				0.00			0.00
v/c Ratio		0.95			0.96		0.35		0.02	0.64		0.01
Uniform Delay, d1		19.2			19.7		56.0		54.5	65.1		63.9
Progression Factor		1.00			1.14		1.00		1.00	1.00		1.00
Incremental Delay, d2		11.5			11.7		1.0		0.0	14.7		0.1
Delay (s)		30.7			34.1		57.0		54.5	79.7		64.0
Level of Service		C			C		E		D	E		E
Approach Delay (s)		30.7			34.1			56.5			75.5	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.9	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)	18.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

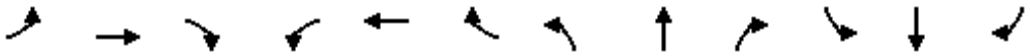
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	245	0	0	0	0	5	0	10	5	0	25	110
Future Volume (vph)	245	0	0	0	0	5	0	10	5	0	25	110
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	377	0	0	0	0	8	0	15	8	0	38	169

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	377	8	23	207
Volume Left (vph)	377	0	0	0
Volume Right (vph)	0	8	8	169
Hadj (s)	0.20	-0.60	-0.21	-0.44
Departure Headway (s)	4.7	4.3	4.9	4.4
Degree Utilization, x	0.49	0.01	0.03	0.26
Capacity (veh/h)	744	760	662	750
Control Delay (s)	12.0	7.3	8.1	9.0
Approach Delay (s)	12.0	7.3	8.1	9.0
Approach LOS	B	A	A	A

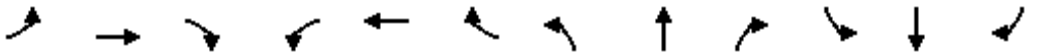
Intersection Summary				
Delay	10.8			
Level of Service	B			
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	90	0	0	5	0	45	0	270	0	65	140	130
Future Volume (vph)	90	0	0	5	0	45	0	270	0	65	140	130
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	99	0	0	5	0	49	0	297	0	71	154	143

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	99	54	297	368
Volume Left (vph)	99	5	0	71
Volume Right (vph)	0	49	0	143
Hadj (s)	0.23	-0.50	0.00	-0.18
Departure Headway (s)	5.8	5.1	4.8	4.5
Degree Utilization, x	0.16	0.08	0.39	0.46
Capacity (veh/h)	553	596	724	764
Control Delay (s)	9.8	8.6	10.8	11.4
Approach Delay (s)	9.8	8.6	10.8	11.4
Approach LOS	A	A	B	B

Intersection Summary				
Delay	10.8			
Level of Service	B			
Intersection Capacity Utilization	58.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1445	130	425	1465	205	140	0	55	185	0	120
Future Volume (vph)	100	1445	130	425	1465	205	140	0	55	185	0	120
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)	6.0	6.0		3.0	6.0	6.0	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	0.98		1.00	1.00	0.74	1.00	0.84			1.00	0.84
Flpb, ped/bikes	0.97	1.00		1.00	1.00	1.00	0.90	1.00			0.86	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)	1731	3431		1750	3614	1168	1569	1338			1562	1334
Flt Permitted	0.17	1.00		0.06	1.00	1.00	0.47	1.00			0.72	1.00
Satd. Flow (perm)	318	3431		107	3614	1168	774	1338			1185	1334
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	1474	133	434	1495	209	143	0	56	189	0	122
RTOR Reduction (vph)	0	5	0	0	0	28	0	45	0	0	0	50
Lane Group Flow (vph)	102	1602	0	434	1495	181	143	11	0	0	189	72
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	4	0	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	64.8	64.8		99.8	99.8	99.8	26.2	26.2			26.2	26.2
Effective Green, g (s)	65.8	65.8		100.8	100.8	100.8	27.2	27.2			27.2	27.2
Actuated g/C Ratio	0.47	0.47		0.72	0.72	0.72	0.19	0.19			0.19	0.19
Clearance Time (s)	7.0	7.0		4.0	7.0	7.0	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)	149	1612		452	2602	840	150	259			230	259
v/s Ratio Prot		0.47		c0.22	0.41			0.01				
v/s Ratio Perm	0.32			c0.47		0.16	c0.18				0.16	0.05
v/c Ratio	0.68	0.99		0.96	0.57	0.22	0.95	0.04			0.82	0.28
Uniform Delay, d1	29.0	36.9		46.3	9.4	6.5	55.8	45.8			54.1	48.0
Progression Factor	0.97	0.91		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	13.3	15.3		32.2	0.9	0.6	59.1	0.1			20.5	0.6
Delay (s)	41.5	48.9		78.5	10.3	7.1	114.9	45.9			74.5	48.6
Level of Service	D	D		E	B	A	F	D			E	D
Approach Delay (s)		48.4			23.8			95.5			64.4	
Approach LOS		D			C			F			E	

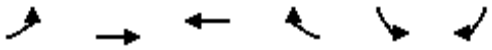
Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1600	80	0	2100	0	120
Future Volume (Veh/h)	1600	80	0	2100	0	120
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1739	87	0	2283	0	130
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	126			144		
pX, platoon unblocked			0.54		0.54	0.54
vC, conflicting volume			1926		3024	1013
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1022		3044	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	76
cM capacity (veh/h)			337		5	541

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1159	667	1142	1142	130
Volume Left	0	0	0	0	0
Volume Right	0	87	0	0	130
cSH	1700	1700	1700	1700	541
Volume to Capacity	0.68	0.39	0.67	0.67	0.24
Queue Length 95th (m)	0.0	0.0	0.0	0.0	7.5
Control Delay (s)	0.0	0.0	0.0	0.0	13.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.7
Approach LOS					B

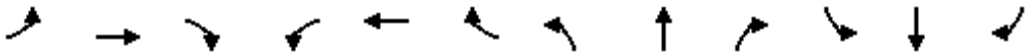
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	245	110	0	0	0
Future Volume (Veh/h)	0	245	110	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	266	120	0	0	0
Pedestrians					50	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	170				436	170
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170				436	170
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1350				554	838

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	266	120	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1350	1700	1700
Volume to Capacity	0.00	0.07	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

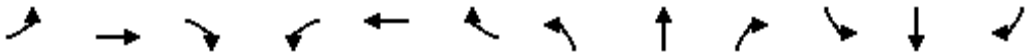
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	70	75	0	25	35	70	0	0	15	0	5	105
Future Volume (vph)	70	75	0	25	35	70	0	0	15	0	5	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	82	0	27	38	76	0	0	16	0	5	114

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	158	141	16	119
Volume Left (vph)	76	27	0	0
Volume Right (vph)	0	76	16	114
Hadj (s)	0.13	-0.25	-0.57	-0.54
Departure Headway (s)	4.5	4.1	4.1	4.0
Degree Utilization, x	0.20	0.16	0.02	0.13
Capacity (veh/h)	777	831	795	823
Control Delay (s)	8.6	7.9	7.2	7.7
Approach Delay (s)	8.6	7.9	7.2	7.7
Approach LOS	A	A	A	A

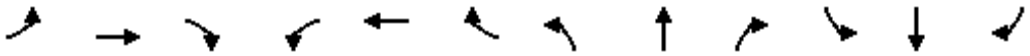
Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	65	0	0	0	0	50	0	0	155	15
Future Volume (vph)	0	0	65	0	0	0	0	50	0	0	155	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	71	0	0	0	0	54	0	0	168	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	0	54	184
Volume Left (vph)	0	0	0	0
Volume Right (vph)	71	0	0	16
Hadj (s)	-0.57	0.00	0.03	-0.02
Departure Headway (s)	3.8	4.5	4.3	4.1
Degree Utilization, x	0.08	0.00	0.06	0.21
Capacity (veh/h)	880	766	815	864
Control Delay (s)	7.2	7.5	7.6	8.2
Approach Delay (s)	7.2	0.0	7.6	8.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.8			
Level of Service	A			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	55	0	0	0	125	0	50	0	105	170	110
Future Volume (vph)	0	55	0	0	0	125	0	50	0	105	170	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	60	0	0	0	136	0	54	0	114	185	120

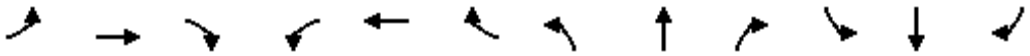
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	60	136	54	419
Volume Left (vph)	0	0	0	114
Volume Right (vph)	0	136	0	120
Hadj (s)	0.03	-0.57	0.03	-0.08
Departure Headway (s)	5.2	4.5	4.9	4.4
Degree Utilization, x	0.09	0.17	0.07	0.51
Capacity (veh/h)	619	718	681	794
Control Delay (s)	8.7	8.4	8.3	11.8
Approach Delay (s)	8.7	8.4	8.3	11.8
Approach LOS	A	A	A	B

Intersection Summary				
Delay	10.6			
Level of Service	B			
Intersection Capacity Utilization	49.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1535	50	0	1725	0	140
Future Volume (Veh/h)	1535	50	0	1725	0	140
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1668	54	0	1875	0	152
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	116			121		
pX, platoon unblocked			0.69		0.79	0.69
vC, conflicting volume			1822		2732	961
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1293		1476	45
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	76
cM capacity (veh/h)			337		85	644

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1112	610	938	938	152
Volume Left	0	0	0	0	0
Volume Right	0	54	0	0	152
cSH	1700	1700	1700	1700	644
Volume to Capacity	0.65	0.36	0.55	0.55	0.24
Queue Length 95th (m)	0.0	0.0	0.0	0.0	7.3
Control Delay (s)	0.0	0.0	0.0	0.0	12.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.3
Approach LOS					B

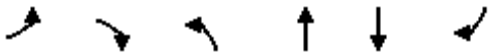
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	0	75	35	0	0	80	55	0	240	0
Future Volume (vph)	10	0	0	75	35	0	0	80	55	0	240	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	0	82	38	0	0	87	60	0	261	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	11	120	147	261
Volume Left (vph)	11	82	0	0
Volume Right (vph)	0	0	60	0
Hadj (s)	0.23	0.17	-0.21	0.03
Departure Headway (s)	5.2	5.0	4.3	4.4
Degree Utilization, x	0.02	0.17	0.18	0.32
Capacity (veh/h)	617	662	793	778
Control Delay (s)	8.3	9.0	8.3	9.5
Approach Delay (s)	8.3	9.0	8.3	9.5
Approach LOS	A	A	A	A

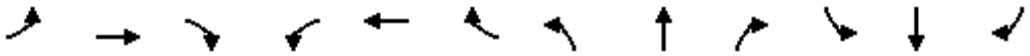
Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	20	0	0	175	385	170
Future Volume (vph)	20	0	0	175	385	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	0	0	190	418	185

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	22	190	603
Volume Left (vph)	22	0	0
Volume Right (vph)	0	0	185
Hadj (s)	0.23	0.03	-0.15
Departure Headway (s)	5.8	4.6	4.0
Degree Utilization, x	0.04	0.24	0.67
Capacity (veh/h)	550	763	882
Control Delay (s)	9.0	9.0	14.9
Approach Delay (s)	9.0	9.0	14.9
Approach LOS	A	A	B

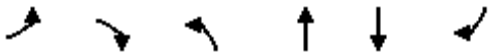
Intersection Summary			
Delay	13.4		
Level of Service	B		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	15	110	100	10	40	25	65	0	0	30	0
Future Volume (Veh/h)	0	15	110	100	10	40	25	65	0	0	30	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	16	120	109	11	43	27	71	0	0	33	0
Pedestrians								50			50	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								4			4	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		200										
pX, platoon unblocked												
vC, conflicting volume	104			186			393	448	126	412	486	82
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			186			393	448	126	412	486	82
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			94	83	100	100	92	100
cM capacity (veh/h)	1424			1329			447	425	885	405	405	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	136	163	98	33
Volume Left	0	109	27	0
Volume Right	120	43	0	0
cSH	1424	1329	431	405
Volume to Capacity	0.00	0.08	0.23	0.08
Queue Length 95th (m)	0.0	2.1	6.9	2.1
Control Delay (s)	0.0	5.5	15.8	14.7
Lane LOS		A	C	B
Approach Delay (s)	0.0	5.5	15.8	14.7
Approach LOS			C	B

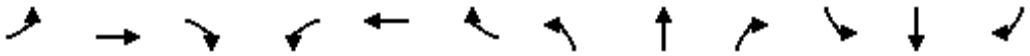
Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	0	0	405	335	155
Future Volume (Veh/h)	155	0	0	405	335	155
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	168	0	0	440	364	168
Pedestrians	100					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	8					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					64	
pX, platoon unblocked	0.83	0.83	0.83			
vC, conflicting volume	988	548	632			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	882	352	453			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	30	100	100			
cM capacity (veh/h)	241	527	844			

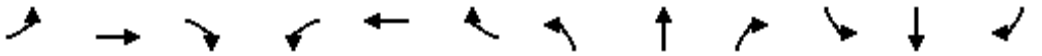
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	168	440	532
Volume Left	168	0	0
Volume Right	0	0	168
cSH	241	844	1700
Volume to Capacity	0.70	0.00	0.31
Queue Length 95th (m)	36.7	0.0	0.0
Control Delay (s)	48.3	0.0	0.0
Lane LOS	E		
Approach Delay (s)	48.3	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	380	1410	45	140	825	225	80	225	225	490	155	170
Future Volume (vph)	380	1410	45	140	825	225	80	225	225	490	155	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		2.0	5.0	5.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	*1.00		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.68	1.00	1.00	0.85	1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1733	3645		1785	3380	1053	1452	1847	1351	3539	1473	
Flt Permitted	0.09	1.00		0.09	1.00	1.00	0.55	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	165	3645		178	3380	1053	840	1847	1351	3539	1473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	1533	49	152	897	245	87	245	245	533	168	185
RTOR Reduction (vph)	0	2	0	0	0	82	0	0	88	0	29	0
Lane Group Flow (vph)	413	1580	0	152	897	163	87	245	157	533	324	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	3%	3%	5%	0%	8%	2%	12%	4%	0%	3%	18%	2%
Bus Blockages (#/hr)	0	4	4	0	0	3	0	0	0	0	2	2
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	74.3	63.3		49.2	41.2	41.2	26.4	26.4	26.4	21.3	52.7	
Effective Green, g (s)	75.3	64.3		51.2	42.2	42.2	27.4	27.4	27.4	22.3	53.7	
Actuated g/C Ratio	0.54	0.46		0.37	0.30	0.30	0.20	0.20	0.20	0.16	0.38	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	7.0	7.0	7.0	5.0	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)	437	1674		168	1018	317	164	361	264	563	565	
v/s Ratio Prot	c0.21	c0.43		0.06	0.27			c0.13		c0.15	0.22	
v/s Ratio Perm	0.30			0.27		0.16	0.10		0.12			
v/c Ratio	0.95	0.94		0.90	0.88	0.52	0.53	0.68	0.60	0.95	0.57	
Uniform Delay, d1	42.7	36.1		35.4	46.5	40.4	50.5	52.2	51.3	58.3	34.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	29.3	12.2		42.8	10.9	5.9	3.3	5.0	3.6	25.1	1.4	
Delay (s)	72.0	48.4		78.2	57.4	46.3	53.8	57.2	54.8	83.4	35.5	
Level of Service	E	D		E	E	D	D	E	D	F	D	
Approach Delay (s)		53.3			57.7			55.7			64.3	
Approach LOS		D			E			E			E	

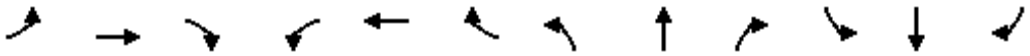
Intersection Summary			
HCM 2000 Control Delay	56.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1545	85	30	895	30	100	0	30	95	0	20
Future Volume (vph)	10	1545	85	30	895	30	100	0	30	95	0	20
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)		6.0			6.0		6.0		7.0	6.0		7.0
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes		0.99			0.99		1.00		0.80	1.00		1.00
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00		1.00
Frt		0.99			1.00		1.00		0.85	1.00		0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)		3465			3369		1750		1254	1785		1597
Flt Permitted		0.95			0.74		0.95		1.00	0.95		1.00
Satd. Flow (perm)		3276			2503		1750		1254	1785		1597
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1644	90	32	952	32	106	0	32	101	0	21
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	28	0	0	19
Lane Group Flow (vph)	0	1743	0	0	1015	0	106	0	4	101	0	2
Confl. Peds. (#/hr)	100		100	100		100			100	100		
Heavy Vehicles (%)	25%	3%	2%	2%	7%	5%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	4	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Prot		Perm
Protected Phases		4			8		2			6		
Permitted Phases	4			8					2			6
Actuated Green, G (s)		90.7			90.7		17.2		17.2	11.1		11.1
Effective Green, g (s)		91.7			91.7		18.2		17.2	12.1		11.1
Actuated g/C Ratio		0.66			0.66		0.13		0.12	0.09		0.08
Clearance Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Vehicle Extension (s)		3.0			3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)		2145			1639		227		154	154		126
v/s Ratio Prot							c0.06			c0.06		
v/s Ratio Perm		c0.53			0.41				0.00			0.00
v/c Ratio		0.81			0.62		0.47		0.03	0.66		0.01
Uniform Delay, d1		17.8			14.0		56.4		54.0	61.9		59.4
Progression Factor		1.00			0.78		1.00		1.00	1.00		1.00
Incremental Delay, d2		3.5			1.7		1.5		0.1	9.6		0.0
Delay (s)		21.3			12.7		57.9		54.1	71.6		59.4
Level of Service		C			B		E		D	E		E
Approach Delay (s)		21.3			12.7			57.0			69.5	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

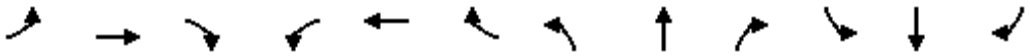
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	0	0	5	0	5	0	35	5	10	25	90
Future Volume (vph)	185	0	0	5	0	5	0	35	5	10	25	90
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	280	0	0	8	0	8	0	53	8	15	38	136

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	280	16	61	189
Volume Left (vph)	280	8	0	15
Volume Right (vph)	0	8	8	136
Hadj (s)	0.20	-0.06	0.66	-0.29
Departure Headway (s)	4.7	4.8	5.5	4.4
Degree Utilization, x	0.37	0.02	0.09	0.23
Capacity (veh/h)	724	683	605	756
Control Delay (s)	10.5	7.9	9.1	8.8
Approach Delay (s)	10.5	7.9	9.1	8.8
Approach LOS	B	A	A	A

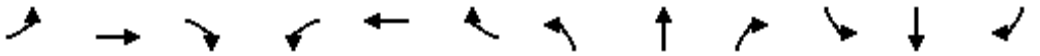
Intersection Summary				
Delay	9.7			
Level of Service	A			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	190	0	0	0	0	50	0	230	5	45	130	75
Future Volume (vph)	190	0	0	0	0	50	0	230	5	45	130	75
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	260	0	0	0	0	68	0	315	7	62	178	103

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	260	68	322	343
Volume Left (vph)	260	0	0	62
Volume Right (vph)	0	68	7	103
Hadj (s)	0.23	-0.43	0.09	0.11
Departure Headway (s)	6.1	6.0	5.6	5.6
Degree Utilization, x	0.44	0.11	0.50	0.53
Capacity (veh/h)	531	491	600	610
Control Delay (s)	13.9	9.7	14.2	14.8
Approach Delay (s)	13.9	9.7	14.2	14.8
Approach LOS	B	A	B	B

Intersection Summary				
Delay	14.0			
Level of Service	B			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1735	65	165	850	105	70	0	35	50	0	35
Future Volume (vph)	45	1735	65	165	850	105	70	0	35	50	0	35
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)	6.0	6.0		2.0	6.0	6.0	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	0.99		1.00	1.00	0.74	1.00	0.84			1.00	0.84
Flpb, ped/bikes	0.93	1.00		1.00	1.00	1.00	0.86	1.00			0.85	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)	1635	3466		1750	3444	1139	1498	1338			1468	1296
Flt Permitted	0.31	1.00		0.04	1.00	1.00	0.72	1.00			0.73	1.00
Satd. Flow (perm)	527	3466		81	3444	1139	1137	1338			1131	1296
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	1907	71	181	934	115	77	0	38	55	0	38
RTOR Reduction (vph)	0	2	0	0	0	22	0	31	0	0	0	31
Lane Group Flow (vph)	49	1976	0	181	934	93	77	7	0	0	55	7
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	2%	3%	2%	2%	6%	3%	2%	2%	2%	6%	2%	3%
Bus Blockages (#/hr)	0	4	0	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	88.0	88.0		102.8	102.8	102.8	23.2	23.2			23.2	23.2
Effective Green, g (s)	89.0	89.0		103.8	103.8	103.8	24.2	24.2			24.2	24.2
Actuated g/C Ratio	0.64	0.64		0.74	0.74	0.74	0.17	0.17			0.17	0.17
Clearance Time (s)	7.0	7.0		3.0	7.0	7.0	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)	335	2203		212	2553	844	196	231			195	224
v/s Ratio Prot		c0.57		c0.08	0.27			0.00				
v/s Ratio Perm	0.09			0.55		0.08	c0.07				0.05	0.01
v/c Ratio	0.15	0.90		0.85	0.37	0.11	0.39	0.03			0.28	0.03
Uniform Delay, d1	10.2	21.6		46.7	6.4	5.1	51.4	48.1			50.3	48.1
Progression Factor	0.64	0.52		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.7	4.7		26.8	0.4	0.3	1.3	0.1			0.8	0.1
Delay (s)	7.3	15.9		73.5	6.8	5.4	52.7	48.2			51.1	48.2
Level of Service	A	B		E	A	A	D	D			D	D
Approach Delay (s)		15.7			16.5			51.2			49.9	
Approach LOS		B			B			D			D	

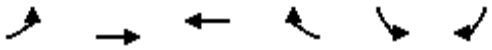
Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1800	25	0	1105	0	45
Future Volume (Veh/h)	1800	25	0	1105	0	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1957	27	0	1201	0	49
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	138			132		
pX, platoon unblocked			0.48		0.48	0.48
vC, conflicting volume			2084		2671	1092
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1091		2314	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			280		14	478

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1305	679	600	600	49
Volume Left	0	0	0	0	0
Volume Right	0	27	0	0	49
cSH	1700	1700	1700	1700	478
Volume to Capacity	0.77	0.40	0.35	0.35	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.7
Control Delay (s)	0.0	0.0	0.0	0.0	13.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.4
Approach LOS					B

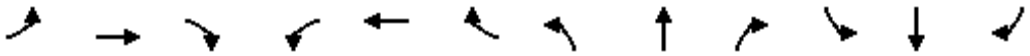
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	185	90	0	0	0
Future Volume (Veh/h)	0	185	90	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	201	98	0	0	0
Pedestrians					50	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	148				349	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	148				349	148
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1376				622	862

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	201	98	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1376	1700	1700
Volume to Capacity	0.00	0.06	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

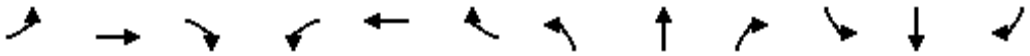
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	160	0	5	5	65	5	0	30	0	0	15
Future Volume (vph)	0	160	0	5	5	65	5	0	30	0	0	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	174	0	5	5	71	5	0	33	0	0	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	174	81	38	16
Volume Left (vph)	0	5	5	0
Volume Right (vph)	0	71	33	16
Hadj (s)	0.03	-0.48	-0.46	-0.57
Departure Headway (s)	4.1	3.7	4.0	3.9
Degree Utilization, x	0.20	0.08	0.04	0.02
Capacity (veh/h)	857	947	841	858
Control Delay (s)	8.1	7.0	7.2	7.0
Approach Delay (s)	8.1	7.0	7.2	7.0
Approach LOS	A	A	A	A

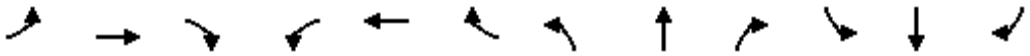
Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	55	0	0	0	0	30	0	0	135	5
Future Volume (vph)	0	0	55	0	0	0	0	30	0	0	135	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	60	0	0	0	0	33	0	0	147	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	60	0	33	152
Volume Left (vph)	0	0	0	0
Volume Right (vph)	60	0	0	5
Hadj (s)	-0.57	0.00	0.03	0.01
Departure Headway (s)	3.7	4.4	4.2	4.1
Degree Utilization, x	0.06	0.00	0.04	0.17
Capacity (veh/h)	916	796	829	869
Control Delay (s)	7.0	7.4	7.4	7.9
Approach Delay (s)	7.0	0.0	7.4	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.6			
Level of Service	A			
Intersection Capacity Utilization	31.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	115	0	0	0	40	0	30	0	10	140	20
Future Volume (vph)	0	115	0	0	0	40	0	30	0	10	140	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	125	0	0	0	43	0	33	0	11	152	22

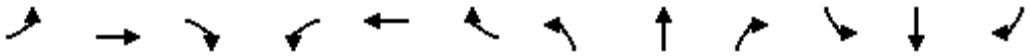
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	125	43	33	185
Volume Left (vph)	0	0	0	11
Volume Right (vph)	0	43	0	22
Hadj (s)	0.03	-0.57	0.03	-0.03
Departure Headway (s)	4.5	4.0	4.5	4.3
Degree Utilization, x	0.16	0.05	0.04	0.22
Capacity (veh/h)	756	838	751	798
Control Delay (s)	8.3	7.2	7.7	8.5
Approach Delay (s)	8.3	7.2	7.7	8.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.2			
Level of Service	A			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1655	15	0	955	0	190
Future Volume (Veh/h)	1655	15	0	955	0	190
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1799	16	0	1038	0	207
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	105			131		
pX, platoon unblocked			0.64		0.69	0.64
vC, conflicting volume			1915		2426	1008
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1305		1544	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	68
cM capacity (veh/h)			310		67	638

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1199	616	519	519	207
Volume Left	0	0	0	0	0
Volume Right	0	16	0	0	207
cSH	1700	1700	1700	1700	638
Volume to Capacity	0.71	0.36	0.31	0.31	0.32
Queue Length 95th (m)	0.0	0.0	0.0	0.0	11.2
Control Delay (s)	0.0	0.0	0.0	0.0	13.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.3
Approach LOS					B

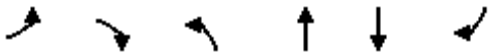
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	25	0	0	15	5	0	0	160	115	0	85	0
Future Volume (vph)	25	0	0	15	5	0	0	160	115	0	85	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	0	0	16	5	0	0	174	125	0	92	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	27	21	299	92
Volume Left (vph)	27	16	0	0
Volume Right (vph)	0	0	125	0
Hadj (s)	0.23	0.19	-0.22	0.03
Departure Headway (s)	5.0	4.9	3.9	4.3
Degree Utilization, x	0.04	0.03	0.32	0.11
Capacity (veh/h)	660	664	903	799
Control Delay (s)	8.2	8.1	8.8	7.9
Approach Delay (s)	8.2	8.1	8.8	7.9
Approach LOS	A	A	A	A

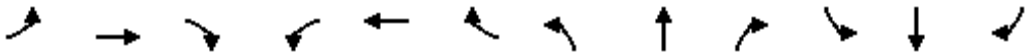
Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	35	0	0	70	170	60
Future Volume (vph)	35	0	0	70	170	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	0	0	76	185	65

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	38	76	250
Volume Left (vph)	38	0	0
Volume Right (vph)	0	0	65
Hadj (s)	0.23	0.03	-0.12
Departure Headway (s)	4.8	4.3	4.0
Degree Utilization, x	0.05	0.09	0.27
Capacity (veh/h)	691	819	898
Control Delay (s)	8.1	7.7	8.4
Approach Delay (s)	8.1	7.7	8.4
Approach LOS	A	A	A

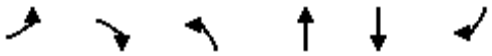
Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	60	20	10	30	50	135	0	0	5	0
Future Volume (Veh/h)	0	5	60	20	10	30	50	135	0	0	5	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	65	22	11	33	54	147	0	0	5	0
Pedestrians								50			50	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								4			4	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		192										
pX, platoon unblocked												
vC, conflicting volume	94			120			162	226	88	232	242	78
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	94			120			162	226	88	232	242	78
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			92	76	100	100	99	100
cM capacity (veh/h)	1436			1405			707	608	929	522	595	941

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	70	66	201	5
Volume Left	0	22	54	0
Volume Right	65	33	0	0
cSH	1436	1405	631	595
Volume to Capacity	0.00	0.02	0.32	0.01
Queue Length 95th (m)	0.0	0.4	10.9	0.2
Control Delay (s)	0.0	2.6	13.3	11.1
Lane LOS		A	B	B
Approach Delay (s)	0.0	2.6	13.3	11.1
Approach LOS			B	B

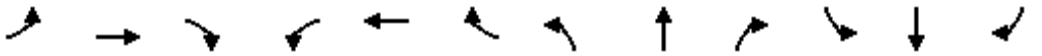
Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	0	0	470	250	90
Future Volume (Veh/h)	60	0	0	470	250	90
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	0	0	511	272	98
Pedestrians	100					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	8					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					66	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	932	421	470			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	894	349	401			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	100	100			
cM capacity (veh/h)	268	598	997			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	511	370
Volume Left	65	0	0
Volume Right	0	0	98
cSH	268	997	1700
Volume to Capacity	0.24	0.00	0.22
Queue Length 95th (m)	7.4	0.0	0.0
Control Delay (s)	22.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	22.6	0.0	0.0
Approach LOS	C		

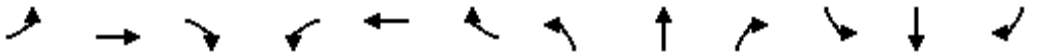
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	1215	75	235	1510	290	155	175	200	270	155	365
Future Volume (vph)	350	1215	75	235	1510	290	155	175	200	270	155	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	5.0		2.0	5.0	5.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.68	1.00	1.00	0.85	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.93	1.00	1.00	0.96	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1842	3458		1785	3804	1061	1606	1921	1351	1698	1906	1327
Flt Permitted	0.06	1.00		0.10	1.00	1.00	0.65	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	116	3458		185	3804	1061	1105	1921	1351	791	1906	1327
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	1279	79	247	1589	305	163	184	211	284	163	384
RTOR Reduction (vph)	0	3	0	0	0	70	0	0	144	0	0	210
Lane Group Flow (vph)	368	1355	0	247	1589	235	163	184	67	284	163	174
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	2%	2%	0%	0%	1%	1%	3%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	4	4	0	0	4	0	0	0	0	2	2
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	87.6	69.9		75.4	60.7	60.7	31.4	25.7	25.7	39.4	30.7	30.7
Effective Green, g (s)	88.6	70.9		77.4	61.7	61.7	33.4	26.7	26.7	40.4	31.7	31.7
Actuated g/C Ratio	0.63	0.51		0.55	0.44	0.44	0.24	0.19	0.19	0.29	0.23	0.23
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	380	1751		281	1676	467	287	366	257	304	431	300
v/s Ratio Prot	c0.17	0.39		0.10	c0.42		0.03	0.10		c0.08	0.09	
v/s Ratio Perm	0.44			0.39		0.22	0.11		0.05	0.19		c0.13
v/c Ratio	0.97	0.77		0.88	0.95	0.50	0.57	0.50	0.26	0.93	0.38	0.58
Uniform Delay, d1	47.7	28.0		33.0	37.6	28.1	45.6	50.7	48.2	47.2	45.8	48.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	37.4	3.4		25.2	12.7	3.8	2.6	1.1	0.5	34.5	0.6	2.9
Delay (s)	85.1	31.4		58.1	50.3	32.0	48.2	51.8	48.8	81.7	46.4	51.1
Level of Service	F	C		E	D	C	D	D	D	F	D	D
Approach Delay (s)		42.9			48.6			49.6			60.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		

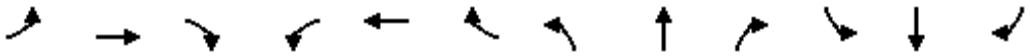
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1490	160	40	1555	110	65	0	15	55	0	20
Future Volume (vph)	40	1490	160	40	1555	110	65	0	15	55	0	20
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)		6.0			6.0		6.0		7.0	6.0		7.0
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes		0.98			0.98		1.00		0.80	1.00		1.00
Flpb, ped/bikes		1.00			1.00		1.00		1.00	1.00		1.00
Frt		0.99			0.99		1.00		0.85	1.00		0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)		3434			3512		1750		1254	1716		1597
Flt Permitted		0.74			0.75		0.95		1.00	0.95		1.00
Satd. Flow (perm)		2557			2631		1750		1254	1716		1597
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	1552	167	42	1620	115	68	0	16	57	0	21
RTOR Reduction (vph)	0	5	0	0	3	0	0	0	14	0	0	20
Lane Group Flow (vph)	0	1756	0	0	1774	0	68	0	2	57	0	1
Confl. Peds. (#/hr)	100		100	100		100			100	100		
Heavy Vehicles (%)	6%	2%	2%	2%	1%	2%	2%	2%	2%	4%	2%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Prot		Perm
Protected Phases		4			8		2			6		
Permitted Phases	4			8					2			6
Actuated Green, G (s)		97.7			97.7		15.0		15.0	6.3		6.3
Effective Green, g (s)		98.7			98.7		16.0		15.0	7.3		6.3
Actuated g/C Ratio		0.71			0.71		0.11		0.11	0.05		0.04
Clearance Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Vehicle Extension (s)		3.0			3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)		1802			1854		200		134	89		71
v/s Ratio Prot							c0.04			c0.03		
v/s Ratio Perm		c0.69			0.67				0.00			0.00
v/c Ratio		0.97			0.96		0.34		0.01	0.64		0.01
Uniform Delay, d1		19.5			18.7		57.1		55.9	65.1		63.9
Progression Factor		1.00			1.14		1.00		1.00	1.00		1.00
Incremental Delay, d2		16.0			11.5		1.0		0.0	14.7		0.1
Delay (s)		35.4			32.8		58.2		55.9	79.7		64.0
Level of Service		D			C		E		E	E		E
Approach Delay (s)		35.4			32.8			57.7			75.5	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	35.5	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)	18.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

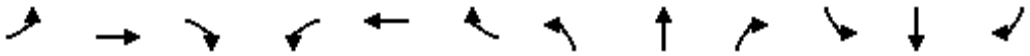
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	225	0	0	0	0	5	0	10	5	0	25	105
Future Volume (vph)	225	0	0	0	0	5	0	10	5	0	25	105
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	346	0	0	0	0	8	0	15	8	0	38	162

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	346	8	23	200
Volume Left (vph)	346	0	0	0
Volume Right (vph)	0	8	8	162
Hadj (s)	0.20	-0.60	-0.21	-0.43
Departure Headway (s)	4.6	4.2	4.8	4.4
Degree Utilization, x	0.45	0.01	0.03	0.24
Capacity (veh/h)	746	774	680	765
Control Delay (s)	11.3	7.3	8.0	8.8
Approach Delay (s)	11.3	7.3	8.0	8.8
Approach LOS	B	A	A	A

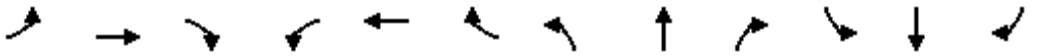
Intersection Summary			
Delay	10.2		
Level of Service	B		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	85	0	0	5	0	45	0	250	0	65	135	120
Future Volume (vph)	85	0	0	5	0	45	0	250	0	65	135	120
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	93	0	0	5	0	49	0	275	0	71	148	132

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	93	54	275	351
Volume Left (vph)	93	5	0	71
Volume Right (vph)	0	49	0	132
Hadj (s)	0.23	-0.50	0.00	-0.17
Departure Headway (s)	5.7	5.0	4.7	4.5
Degree Utilization, x	0.15	0.08	0.36	0.44
Capacity (veh/h)	566	615	731	772
Control Delay (s)	9.6	8.4	10.4	10.9
Approach Delay (s)	9.6	8.4	10.4	10.9
Approach LOS	A	A	B	B

Intersection Summary				
Delay	10.4			
Level of Service	B			
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1420	125	400	1455	205	130	0	50	185	0	120
Future Volume (vph)	100	1420	125	400	1455	205	130	0	50	185	0	120
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)	6.0	6.0		3.0	6.0	6.0	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	0.98		1.00	1.00	0.74	1.00	0.84			1.00	0.84
Flpb, ped/bikes	0.97	1.00		1.00	1.00	1.00	0.90	1.00			0.86	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)	1730	3434		1750	3614	1168	1569	1338			1561	1334
Flt Permitted	0.18	1.00		0.06	1.00	1.00	0.46	1.00			0.72	1.00
Satd. Flow (perm)	321	3434		102	3614	1168	762	1338			1189	1334
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	1449	128	408	1485	209	133	0	51	189	0	122
RTOR Reduction (vph)	0	5	0	0	0	27	0	41	0	0	0	50
Lane Group Flow (vph)	102	1572	0	408	1485	182	133	10	0	0	189	72
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Heavy Vehicles (%)	0%	2%	2%	2%	1%	0%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	4	0	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	68.2	68.2		100.6	100.6	100.6	25.4	25.4			25.4	25.4
Effective Green, g (s)	69.2	69.2		101.6	101.6	101.6	26.4	26.4			26.4	26.4
Actuated g/C Ratio	0.49	0.49		0.73	0.73	0.73	0.19	0.19			0.19	0.19
Clearance Time (s)	7.0	7.0		4.0	7.0	7.0	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)	158	1697		420	2622	847	143	252			224	251
v/s Ratio Prot		0.46		c0.20	0.41			0.01				
v/s Ratio Perm	0.32			c0.50		0.16	c0.17				0.16	0.05
v/c Ratio	0.65	0.93		0.97	0.57	0.21	0.93	0.04			0.84	0.29
Uniform Delay, d1	26.3	33.0		47.1	8.9	6.2	55.9	46.4			54.8	48.7
Progression Factor	0.93	0.89		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	10.3	6.0		36.3	0.9	0.6	54.4	0.1			24.1	0.6
Delay (s)	34.8	35.5		83.4	9.8	6.8	110.3	46.5			78.9	49.3
Level of Service	C	D		F	A	A	F	D			E	D
Approach Delay (s)		35.5			23.8			92.6			67.3	
Approach LOS		D			C			F			E	

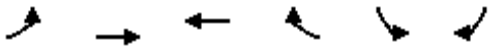
Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1575	75	0	2065	0	115
Future Volume (Veh/h)	1575	75	0	2065	0	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1712	82	0	2245	0	125
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	126			144		
pX, platoon unblocked			0.57		0.57	0.57
vC, conflicting volume			1894		2976	997
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1053		2957	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	78
cM capacity (veh/h)			343		6	566

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1141	653	1122	1122	125
Volume Left	0	0	0	0	0
Volume Right	0	82	0	0	125
cSH	1700	1700	1700	1700	566
Volume to Capacity	0.67	0.38	0.66	0.66	0.22
Queue Length 95th (m)	0.0	0.0	0.0	0.0	6.7
Control Delay (s)	0.0	0.0	0.0	0.0	13.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.2
Approach LOS					B

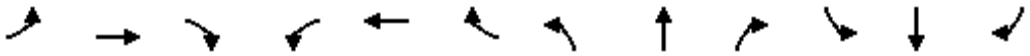
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	225	105	0	0	0
Future Volume (Veh/h)	0	225	105	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	245	114	0	0	0
Pedestrians					50	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164				409	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164				409	164
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1357				574	845

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	245	114	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1357	1700	1700
Volume to Capacity	0.00	0.07	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

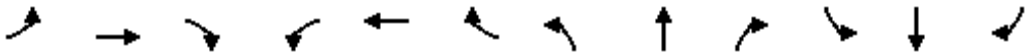
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	70	75	0	25	35	60	0	0	10	0	5	100
Future Volume (vph)	70	75	0	25	35	60	0	0	10	0	5	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	82	0	27	38	65	0	0	11	0	5	109

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	158	130	11	114
Volume Left (vph)	76	27	0	0
Volume Right (vph)	0	65	11	109
Hadj (s)	0.13	-0.22	-0.57	-0.54
Departure Headway (s)	4.4	4.1	4.1	4.0
Degree Utilization, x	0.19	0.15	0.01	0.13
Capacity (veh/h)	786	832	803	830
Control Delay (s)	8.5	7.8	7.2	7.6
Approach Delay (s)	8.5	7.8	7.2	7.6
Approach LOS	A	A	A	A

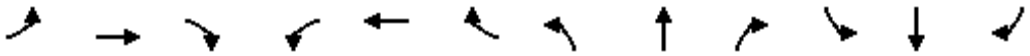
Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	60	0	0	0	0	45	0	0	145	15
Future Volume (vph)	0	0	60	0	0	0	0	45	0	0	145	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	65	0	0	0	0	49	0	0	158	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	65	0	49	174
Volume Left (vph)	0	0	0	0
Volume Right (vph)	65	0	0	16
Hadj (s)	-0.57	0.00	0.03	-0.02
Departure Headway (s)	3.8	4.4	4.2	4.1
Degree Utilization, x	0.07	0.00	0.06	0.20
Capacity (veh/h)	890	775	821	869
Control Delay (s)	7.1	7.4	7.5	8.1
Approach Delay (s)	7.1	0.0	7.5	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	50	0	0	0	120	0	45	0	105	160	100
Future Volume (vph)	0	50	0	0	0	120	0	45	0	105	160	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	0	0	0	130	0	49	0	114	174	109

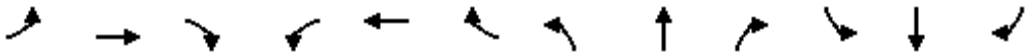
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	54	130	49	397
Volume Left (vph)	0	0	0	114
Volume Right (vph)	0	130	0	109
Hadj (s)	0.03	-0.57	0.03	-0.07
Departure Headway (s)	5.1	4.4	4.8	4.3
Degree Utilization, x	0.08	0.16	0.07	0.48
Capacity (veh/h)	631	735	695	800
Control Delay (s)	8.6	8.3	8.2	11.2
Approach Delay (s)	8.6	8.3	8.2	11.2
Approach LOS	A	A	A	B

Intersection Summary			
Delay	10.2		
Level of Service	B		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1515	45	0	1705	0	130
Future Volume (Veh/h)	1515	45	0	1705	0	130
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1647	49	0	1853	0	141
Pedestrians					100	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	116			121		
pX, platoon unblocked			0.69		0.79	0.69
vC, conflicting volume			1796		2698	948
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1249		1459	16
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			349		87	669

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1098	598	926	926	141
Volume Left	0	0	0	0	0
Volume Right	0	49	0	0	141
cSH	1700	1700	1700	1700	669
Volume to Capacity	0.65	0.35	0.55	0.55	0.21
Queue Length 95th (m)	0.0	0.0	0.0	0.0	6.3
Control Delay (s)	0.0	0.0	0.0	0.0	11.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.8
Approach LOS					B

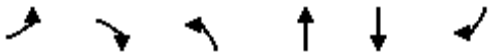
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	0	70	30	0	0	75	50	0	220	0
Future Volume (vph)	10	0	0	70	30	0	0	75	50	0	220	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	0	76	33	0	0	82	54	0	239	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	11	109	136	239
Volume Left (vph)	11	76	0	0
Volume Right (vph)	0	0	54	0
Hadj (s)	0.23	0.17	-0.20	0.03
Departure Headway (s)	5.1	4.9	4.3	4.4
Degree Utilization, x	0.02	0.15	0.16	0.29
Capacity (veh/h)	634	674	805	787
Control Delay (s)	8.2	8.8	8.1	9.2
Approach Delay (s)	8.2	8.8	8.1	9.2
Approach LOS	A	A	A	A

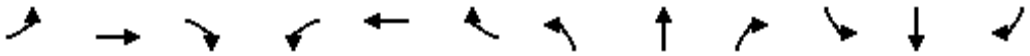
Intersection Summary				
Delay	8.8			
Level of Service	A			
Intersection Capacity Utilization	31.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	0	0	165	365	160
Future Volume (vph)	15	0	0	165	365	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	0	179	397	174

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	16	179	571
Volume Left (vph)	16	0	0
Volume Right (vph)	0	0	174
Hadj (s)	0.23	0.03	-0.15
Departure Headway (s)	5.7	4.5	4.0
Degree Utilization, x	0.03	0.22	0.63
Capacity (veh/h)	554	774	889
Control Delay (s)	8.8	8.8	13.6
Approach Delay (s)	8.8	8.8	13.6
Approach LOS	A	A	B

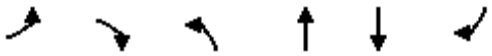
Intersection Summary			
Delay	12.4		
Level of Service	B		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	15	100	90	10	35	25	60	0	0	30	0
Future Volume (Veh/h)	0	15	100	90	10	35	25	60	0	0	30	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	16	109	98	11	38	27	65	0	0	33	0
Pedestrians								50			50	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								4			4	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		200										
pX, platoon unblocked												
vC, conflicting volume	99			175			363	416	120	379	451	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			175			363	416	120	379	451	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			94	85	100	100	92	100
cM capacity (veh/h)	1430			1341			473	448	891	437	428	938

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	147	92	33
Volume Left	0	98	27	0
Volume Right	109	38	0	0
cSH	1430	1341	455	428
Volume to Capacity	0.00	0.07	0.20	0.08
Queue Length 95th (m)	0.0	1.9	6.0	2.0
Control Delay (s)	0.0	5.5	14.9	14.1
Lane LOS		A	B	B
Approach Delay (s)	0.0	5.5	14.9	14.1
Approach LOS			B	B

Intersection Summary				
Average Delay	6.6			
Intersection Capacity Utilization	33.2%	ICU Level of Service	A	
Analysis Period (min)	15			

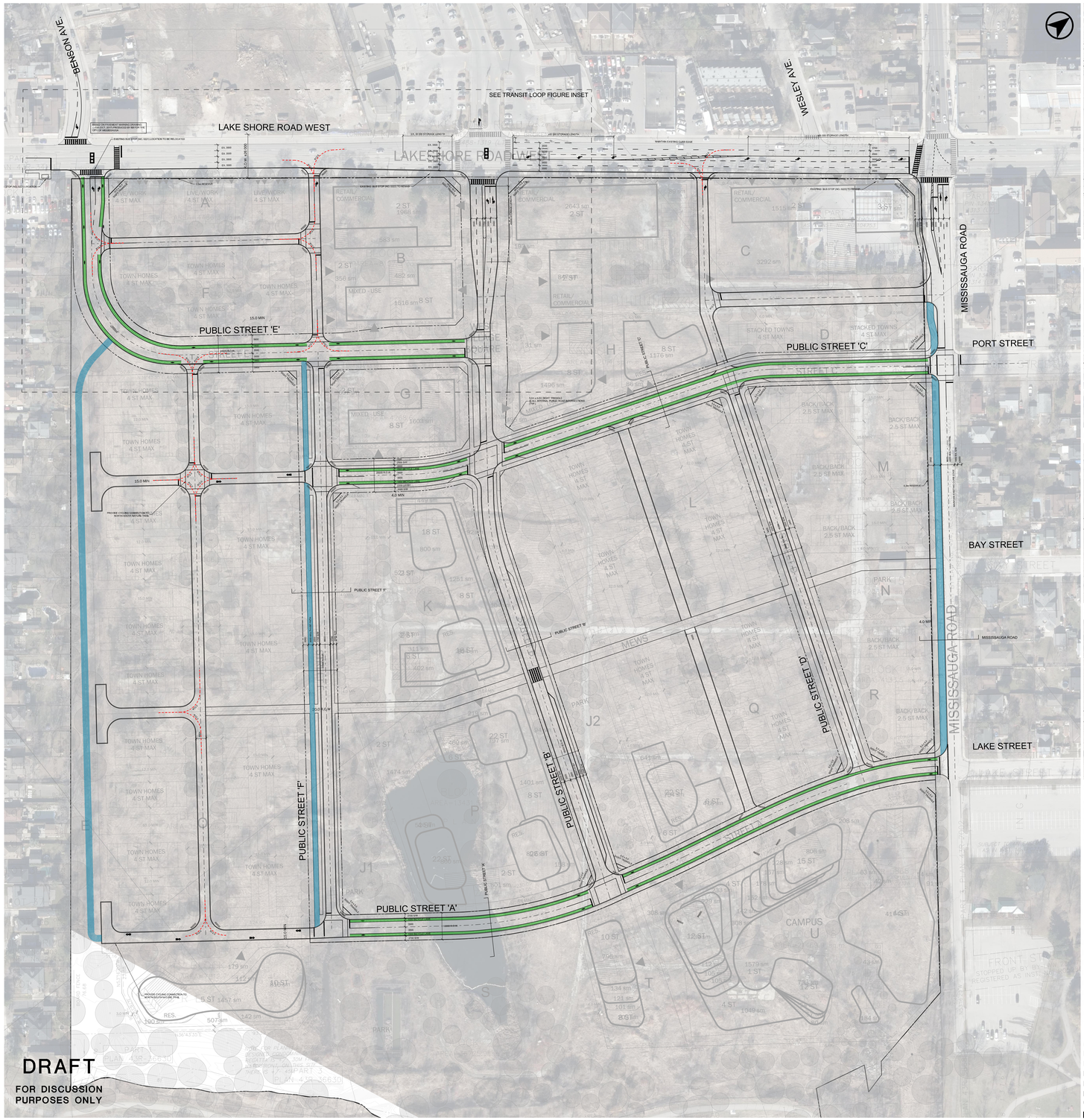


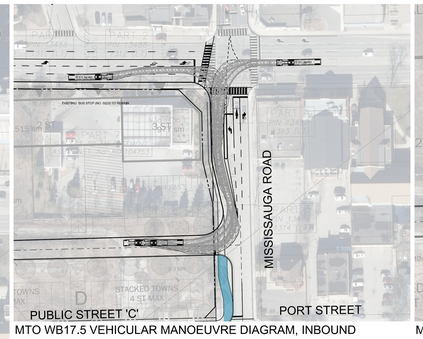
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	0	0	380	320	145
Future Volume (Veh/h)	150	0	0	380	320	145
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	163	0	0	413	348	158
Pedestrians	100					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	8					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					64	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	940	527	606			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	341	435			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	38	100	100			
cM capacity (veh/h)	261	541	868			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	163	413	506
Volume Left	163	0	0
Volume Right	0	0	158
cSH	261	868	1700
Volume to Capacity	0.62	0.00	0.30
Queue Length 95th (m)	30.4	0.0	0.0
Control Delay (s)	39.2	0.0	0.0
Lane LOS	E		
Approach Delay (s)	39.2	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX B: Concept Functional Road Plan

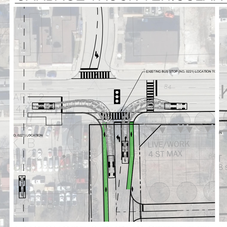




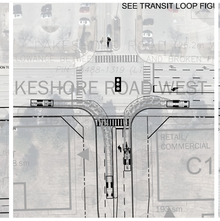
MTO WB17.5 VEHICULAR MANOEUVRE DIAGRAM, INBOUND

MTO WB17.5 VEHICULAR MANOEUVRE DIAGRAM, OUTBOUND

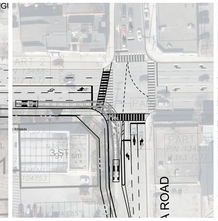
GARBAGE TRUCK VEHICULAR MANOEUVRE DIAGRAMS



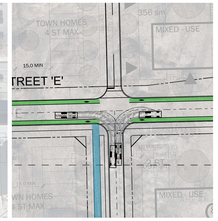
LAKESHORE & PUBLIC STREET 'E'



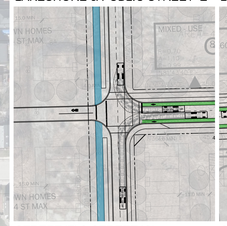
LAKESHORE & PUBLIC STREET 'B'



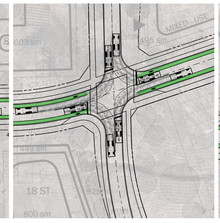
LAKESHORE & MISSISSAUGA



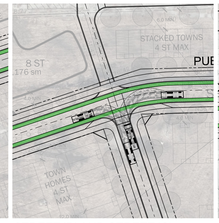
PUBLIC STREET 'E' & 'F'



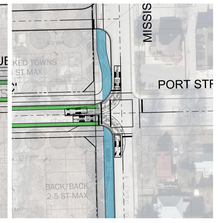
STREET 'F' & STREET 'C'



STREET 'B' AND STREET 'C'



STREET 'D' AND STREET 'C'

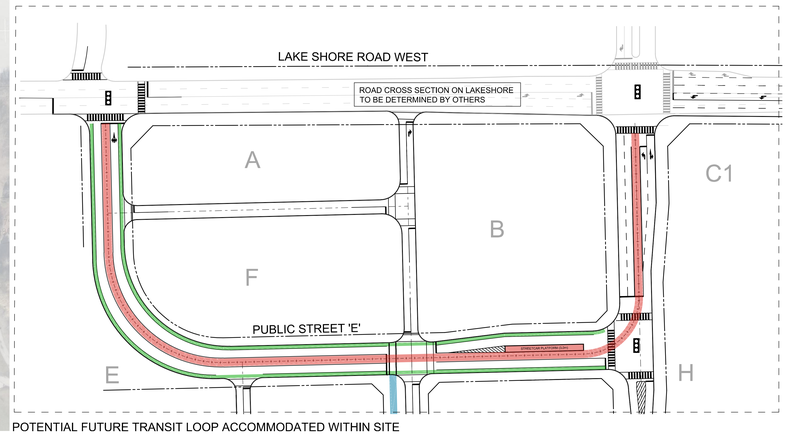


MISSISSAUGA RD. & STREET 'C'

STREET 'F' AND STREET 'A'

STREET 'B' AND STREET 'A'

STREET 'D' AND STREET 'A'



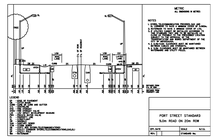
POTENTIAL FUTURE TRANSIT LOOP ACCOMMODATED WITHIN SITE

GENERAL NOTES

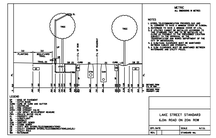
1. THE FUNCTION DESIGN SHOWN IS A CONCEPT DESIGN AND IS SUBJECT TO CHANGE

BICYCLE LANE
MULTI-USE TRIAL
TRANSIT LOOP ACCOMODATION

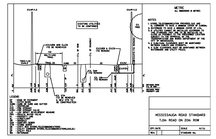
PORT STREET



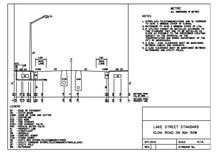
LAKE STREET



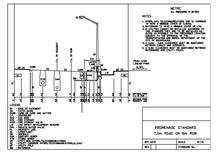
MISSISSAUGA ROAD



LAKE STREET CAMPUS



PROMENADE



00	MAR-09-18	NZF	ISSUED FOR APPROVAL
00	MM-DD-YR	INT	REVISION NOTE

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70 MISSISSAUGA ROAD

FUNCTIONAL ROAD PLAN

Date: MARCH 09, 2018

Project No.: 7189-21

Scale: 1:750 0 15 30m

FD-01