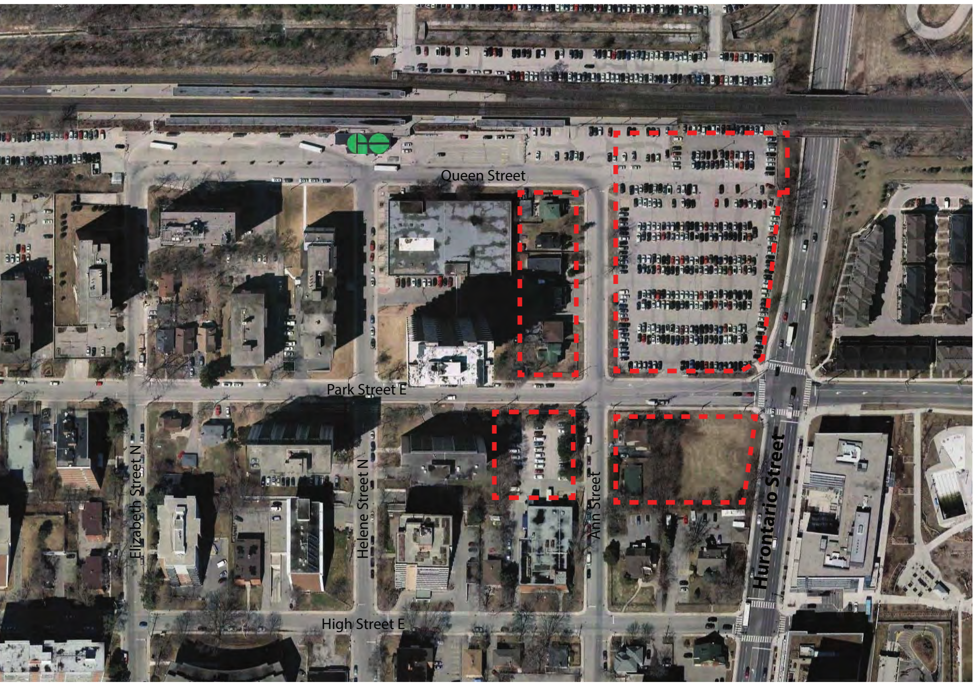
Port Credit GO Station Southeast Area Master Plan Study

October 2, 2015



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Acknowledgements

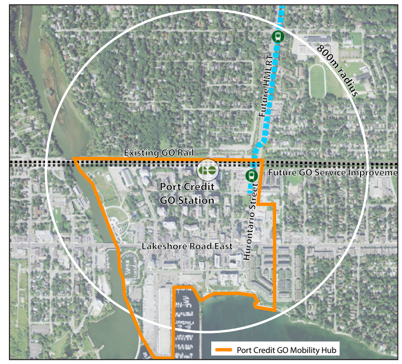
The Port Credit GO Station Southeast Area Master Plan was prepared by:

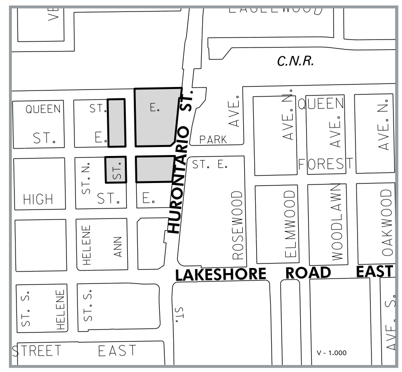
Metrolinx: Realty Services & Planning and Policy

Consultant Team: IBI Group

Metrolinx and IBI Group would like to thank City of Mississauga staff for their assistance and extensive contributions to the Port Credit GO Station Southeast Area Master Plan Study. The Study Team would also like to acknowledge the time and efforts of the various groups and individuals who participated in the landowner meetings, the Advisory Panel established for the Master Plan Study, the Public Open House and the Mississauga Urban Design Advisory Panel. The insight and input received throughout the Study helped identify a clear vision for the Port Credit GO Station Area and shape the recommendations of the Master Plan and the proposed Official Plan Amendment.

Executive Summary





Site 12 as designated by Section 13.1.12 of the Mississauga Official Plan – Local Area Plan

The Port Credit GO Mobility Hub is a 'Gateway Mobility Hub' where high levels of transit ridership are expected as a result of improvements being made to the existing GO Lakeshore West rail line and the development of the Hurontario-Main Light Rapid Transit (HMLRT). In addition to providing seamless integration between multiple modes of transportation, Mobility Hubs are intended to be vibrant places with a mix of concentrated housing, employment, activities and amenities.

The Mississauga Official Plan provides broad policy direction on the height, densities and types of land uses to be achieved within 'Intensification Areas' and 'Major Transit Station Areas', but recognizes that more definitive direction is required for a number of special sites. Approximately 5.04 acres (2.04 hectares) of land located south of the Port Credit GO Station and west of the future HMLRT stop is considered to be one of these special sites and is identified by the Port Credit Local Area Plan as 'Site 12'.

It is a policy requirement that a Master Plan be prepared for the Site 12 lands (herein referred to as the 'Port Credit GO Station Southeast Area') that provides more definitive direction on appropriate land use, built form, heritage resources and transportation. The twelve properties which comprise the area currently contain either single detached dwellings (four of which are listed on the City's Heritage Register), surface parking lots, or are vacant. The majority of the properties are designated as 'Mixed Use' and the lands have been identified by provincial and municipal plans as an appropriate location for intensified development.

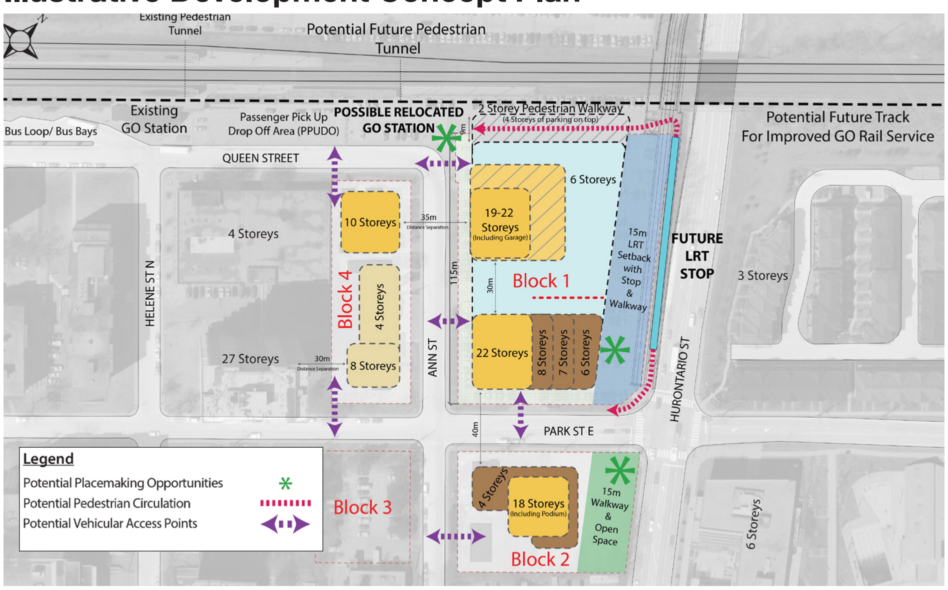
Metrolinx owns the majority of lands which comprise the north corner of the Port Credit GO Station Southeast Area. It currently functions as a surface parking lot for GO Transit customers. Customer surveys and monitoring reports show that there is a current shortage of parking at the Port Credit GO Station. While it is a priority of Metrolinx to increase the proportion of GO Transit customers who arrive at the GO Station by walking, cycling or transit, some of the new and growing customer base will require on-site parking. Through a competitive procurement process, Metrolinx intends to identify a development partner to design and construct a new 800-space GO Transit parking structure (providing 400 net new spaces) and mixed-use, transit-supportive development on its lands.

In coordination with the City of Mississauga, Metrolinx initiated the Master Plan Study process.

With stakeholder and community input, a vision was established for the Port Credit GO Station Southeast Area which recognizes and builds upon prevailing policies and objectives and respects the unique character of the Port Credit area.

Various development scenarios were tested and detailed technical analysis, including a traffic impact assessment, concluded that the Port Credit GO Station SOutheast Area could accommodate a new GO Transit parking structure, up to four towers and low-to-mid-rise buildings. An illustrative Development Concept Plan was prepared to show potential full block redevelopment, assuming land assembly and no heritage issues. The City's Official Plan does include policies which promote the preservation and integration of heritage resources. Full Heritage Impact Assessments will need to accompany future development applications. Given the vision for the Port Credit GO Station Southeast Area and the proposed development parameters, future high-rise development should be able to co-exist with lower density heritage buildings if designed properly.

Illustrative Development Concept Plan



The Master Plan clearly articulates built form, land use and transportation expectations for the Port Credit GO Station Southeast Area, providing a suitable balance between definitiveness (i.e. policies) and flexibility (i.e. guidelines and examples of best practices). Examples of key policies, which are recommended to be implemented through amendments to the Mississauga Official Plan and Port Credit Local Area Plan include:

- All future developments over 1,000 sq. m. (10,760 sq. ft.) shall provide an appropriate mix of non-residential, employment-generating uses including office and other uses such as retail stores, restaurants, personal service establishments or community service space.

Vision for the Port Credit GO Station Southeast Area:

To create a vibrant, pedestrian friendly and cohesive area with:

- Improved transit facilities and services;
- A concentrated mix of uses and activities;
- An engaging and attractive public realm;
- A minimized ecological footprint; and
- Design excellence.

- The following minimum gross floor area (GFA) of employment-generating uses will be required as part of future comprehensive block redevelopments:
  - Block 1: 2,800 sq. m. (30,140 sq. ft.)
  - Block 2: 1,400 sq. m. (15,070 sq. ft.)
  - Block 4: 250 sq. m. (2,690 sq. ft.).
- Reduced, transit-supportive parking standards are encouraged for future development within the Port Credit GO Station Southeast Area. Through the rezoning process, applicants are to provide a parking study to justify the appropriateness of the specific parking standards being proposed.
- Maximum building heights of 22 storeys are permitted throughout the Master Plan Area, with the exception of lands fronting Hurontario Street, if the tower component of a building is primarily residential. Maximum building heights of 19 storeys are permitted where the tower component constructed primarily for office or institutional purposes and is to have greater floor to ceiling heights
- Residential and non-residential buildings fronting Hurontario Street shall be no more than 8 storeys, with a stepback consistent with a 45° angular plan generally required after 6 storeys.
- Above-grade parking structures must be contextually sensitive and provide for visual interest and elements that contribute to the streetscape, such as space for office, retail/commercial or community uses, services for transit users (e.g. ticketing, interactive information boards and service kiosks), building entrances, community display cases, public art, street furniture and landscape features (see Figure 23). Generally, a higher proportion of the building envelop that faces a public street or gateway entry point should be animated at street-level than not. The target is to achieve visual interest and streetscape improvements animation, on each elevation of an above-grade parking structure, with a target of generally providing animation at street level along 2/3rds of a building envelope.
- Development applications shall demonstrate how a seamless integration of modes of travel and access is achieved, especially at-grade and on the lower floors of buildings.

The Master Plan satisfies the City's policy requirements that a Master Plan be prepared for the Port Credit GO Station Southeast Area (Site 12 lands) before any new development occurs. It will help guide the preparation and review of future development applications, as well as responses to requests for proposals or design competitions.

The Port Credit GO Station Southeast Area Master Plan is the first stage of a comprehensive design and planning approvals process for future development of the lands.

The Port Credit GO Station Southeast Area Master Plan is the first stage of a comprehensive design and planning approvals process for future development of the lands.

Figure 1. Port Credit GO Mobility Hub

Figure 2. Metrolinx Mobility Hub Objectives

1.0 Introduction

The Port Credit area of the City of Mississauga is an established yet evolving urban waterfront community. Provincial, regional and municipal policies identify it as a place where appropriate intensification is to occur, particularly in proximity to rapid transit.

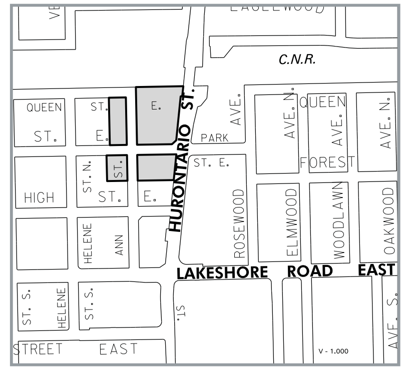
The Big Move, which is the Greater Toronto and Hamilton Area (GTHA) long-range regional transportation plan, identifies the Port Credit GO Station as one of 51 Mobility Hubs within the GTHA. It is designated as a 'Gateway Mobility Hub', given its location at the interchange of two or more planned regional rapid transit lines, with anticipated high levels of ridership:

- The GO Lakeshore West line, which currently provides two-way, all-day rail service between Hamilton and Toronto and is to provide more frequent 15-minute service in the future; and
- The planned Hurontario/Main Light Rail Transit (HMLRT) line, which will connect Port Credit to Downtown Brampton (see **Figure 1**), with service anticipated to start by 2022.

In addition to providing seamless access to the regional transit system, Mobility Hubs are to be vibrant places with a concentrated mix of housing, employment, activities and amenities that incorporate placemaking opportunities (see **Figure 2**).

While the Port Credit GO Mobility Hub is to intensify over time, care must be taken to manage change and to ensure an appropriate balance is maintained between growth and preservation of what makes Port Credit a unique place where people want to live, work, play and visit. The Port Credit Local Area Plan identifies a number of sites that merit special planning and policy attention. One of these special sites is 'Site 12', which is comprised of approximately 5.04 acres (2.04 hectares) of land southeast of the Port Credit GO Station. Policies of the Port Credit Local Area Plan require that a Master Plan be prepared for Site 12 (herein referred to as the 'Port Credit GO Station Southeast Area') that provides further direction on appropriate redevelopment and land use and built form expectations.

Metrolinx is an agency of the Government of Ontario responsible for the coordination of all modes of transportation in the GTHA. It also owns lands within the Master Plan Area which currently function as a surface parking lot for GO Transit customers. Metrolinx plans to redevelop the lands with transit-supportive, mixed-use development and a parking structure to address immediate and long-term parking requirements of GO Transit users. It initiated the Port Credit GO Station Southeast Area Master Plan with input and assistance from the City of Mississauga.



Site 12 as designated by Section 13.1.12 of the Mississauga Official Plan – Local Area Plan

Policies of the Port Credit Local Area Plan require that a Master Plan be prepared for Site 12 (herein referred to as the 'Port Credit GO Station Southeast Area') that provides further direction on appropriate redevelopment and land use and built form expectations.

1.1 Prevailing Municipal Policy Framework

The recently approved Mississauga Official Plan (2014) consists of a principal document and a series of local area plans which contain policies to manage and direct growth through redevelopment and intensification. It establishes a City Structure on the basis of urban hierarchy, whereby the majority of growth is to be accommodated within the following 'Intensification Areas':

- City Centre (Downtown);
- Major Nodes;
- Community Nodes;
- Corporate Centres;
- Intensification Corridors; and
- Major Transit Station Areas.

The central portion of Port Credit is identified as a 'Community Node' by Schedule 2 of the Mississauga Official Plan. Community Nodes are to provide for a similar mix of uses as Major Nodes, but with lower densities and heights. Generally building heights of up to 25 storeys are allowed within Major Nodes and many properties have permissions for a floor space index (FSI) of over 5.0.

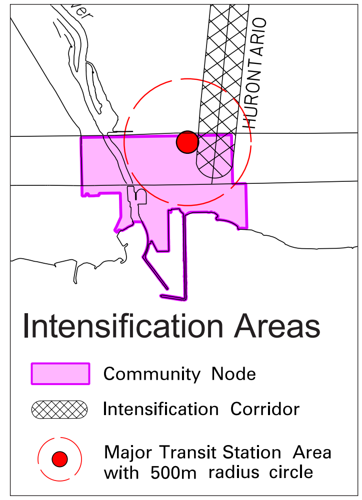
Schedule 2 also identifies the Port Credit GO Station as a 'Major Transit Station Area' and Hurontario Street as an 'Intensification Corridor'. As per policies of the Port Credit Local Area Plan, the greatest heights and densities within Port Credit are to be within proximity of the GO Station and the future HMLRT stop.

The Mississauga Official Plan and the Port Credit Local Area Plan contain broad policies pertaining to land use, urban form and transportation demand management and recognize that further study and more definitive direction is required for a number of sites.

1.2 Master Plan Requirement

The Port Credit Local Area Plan considers approximately 5.04 acres of land south of the Port Credit GO Station and west of the future HMLRT stop as being particularly important for furthering the development of the Mobility Hub. As per policy 13.1.12.3, a comprehensive master plan must be prepared for the lands (identifiied as Site 12), which addresses land use, built form, transportation and heritage resources (see **Figure 3**).

The Port Credit GO Station Southeast Area Master Plan is to have regard for provincial and municipal plans, policies and reports (see **Figure 4**). In particular, the Master Plan is to build upon and refine certain provisions of the recently approved Mississauga Official Plan and the Port Credit Local Area Plan (2014), the Port Credit Built Form Guide (2013), the Metrolinx Mobility Hub Guidelines for the GTHA (2011), the Port Credit Mobility Hub Master Plan Study (2011) and the Hurontario-Main LRT Project Environmental Project Report (2014).



Excerpt from Schedule 2 of the Mississauga Official Plan illustrating Intensification Areas within Port Credit

As per policies of the Port Credit Local Area Plan, the greatest heights and densities within Port Credit are to be within proximity of the GO Station and the future HMLRT stop.

13.1.12 Site 12

13.1.12.1 The lands identified as Special Site 12 are located west of Hurontario Street, south of the C.N. Railway, east of Helene Street, and north of High Street.

13.1.12.2 Notwithstanding the provisions of the Mixed Use and Utility designations and the Desirable Urban Form policies, further study is required to determine the appropriate type of redevelopment on these lands.

13.1.12.3 These lands are in an important location that can further the development of the Port Credit Mobility Hub. A comprehensive master plan will be prepared to the City's satisfaction that will address, among other matters, land use, built form, transportation and heritage resources. In addition, the master plan will:

a) have regard for other City and Provincial plans, policies and reports such as those related to the future Light Rapid Transit on Hurontario and Mobility Hubs;

b) determine appropriate access improvements and linkages for pedestrians, cyclists, and commuters traveling between the GO station and future LRT stop;

c) provide amenities such as secure storage facilities for bicycles, car share drop-off areas, heated waiting areas, traveler information centres, cafes and restaurants, as well as services such as daycares, or grocery stores;

d) address appropriate design of any parking structures; and

e) provide of opportunities to accommodate employment uses.

13.1.12.4 Consultation on the comprehensive master plan will occur with the landowners, local community and other stakeholders.

Mississauga Official Plan – Local Area Plan Port Credit-39

Figure 3. Location of the Port Credit GO Station Southeast Area Lands (Site 12) and Policy Requirements

Figure 4. Examples of Prevailing Policy and Planning Documents

1.3 Master Plan Study Process

As the first landowner within the Port Credit GO Station Southeast Area to discuss development plans with the City of Mississauga, it was agreed that Metrolinx would initiate the Master Plan Study process to satisfy municipal policy requirements. Through a coordinated effort between the City and Metrolinx, a scope of work was prepared that set clear objectives, tasks and deliverables. A multi-disciplinary consulting team from IBI Group was retained by Metrolinx to undertake planning, urban design and transportation analysis and to consult with key stakeholders and the larger community.

The Master Plan is intended to help guide the preparation and review of development proposals for all lands within the Port Credit GO Station Southeast Area. At this point in time, Metrolinx is the only landowner with known development plans. As such, a greater level of analysis was undertaken for the Metrolinx lands.

The Master Plan is to provide a suitable balance of definitiveness and flexibility to facilitate:

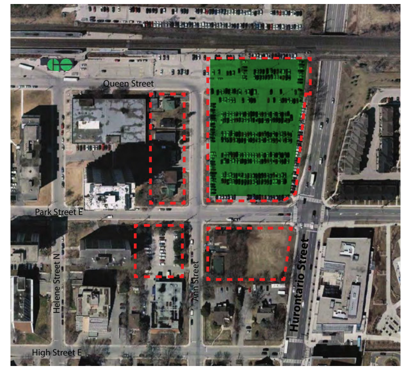
- Public-private partnerships and investment;
- Creativity and innovation;
- Phased implementation and responses to market opportunities and conditions; and
- Integration of all modes of transportation, including future transit infrastructure and services.

Certain recommendations of the Master Plan are to be implemented through an amendment to the Port Credit Local Area Plan and become policies. Other recommendations will remain as guidelines.

The Master Plan is the first stage of a comprehensive design and planning approvals process required for future redevelopment within the Port Credit GO Station Southeast Area. Detailed planning and architectural work for the proposed GO Transit parking structure and mixed-use development will commence after Metrolinx identifies a development partner through an open and competitive procurement process (See **Figure 5**).

1.3.1 Stakeholder and Community Engagement

Valuable input was obtained from area landowners, members of local organizations and interest groups, local residents, transit users, City staff and Council. A variety of comments, questions, concerns and expectations for the planned Metrolinx project and other future developments were raised by stakeholders and the community (See **Figure 6** and **Appendix A**). The input collected through the various forms of consultation helped establish a vision for the Port Credit GO Station Southeast Area and shape the recommendations of the Master Plan.



Planned Metrolinx Redevelopment Site

As the first landowner within the Port Credit GO Station Southeast Area to discuss development plans with the City of Mississauga, it was agreed that Metrolinx would initiate the Master Plan Study process to satisfy municipal policy requirements.

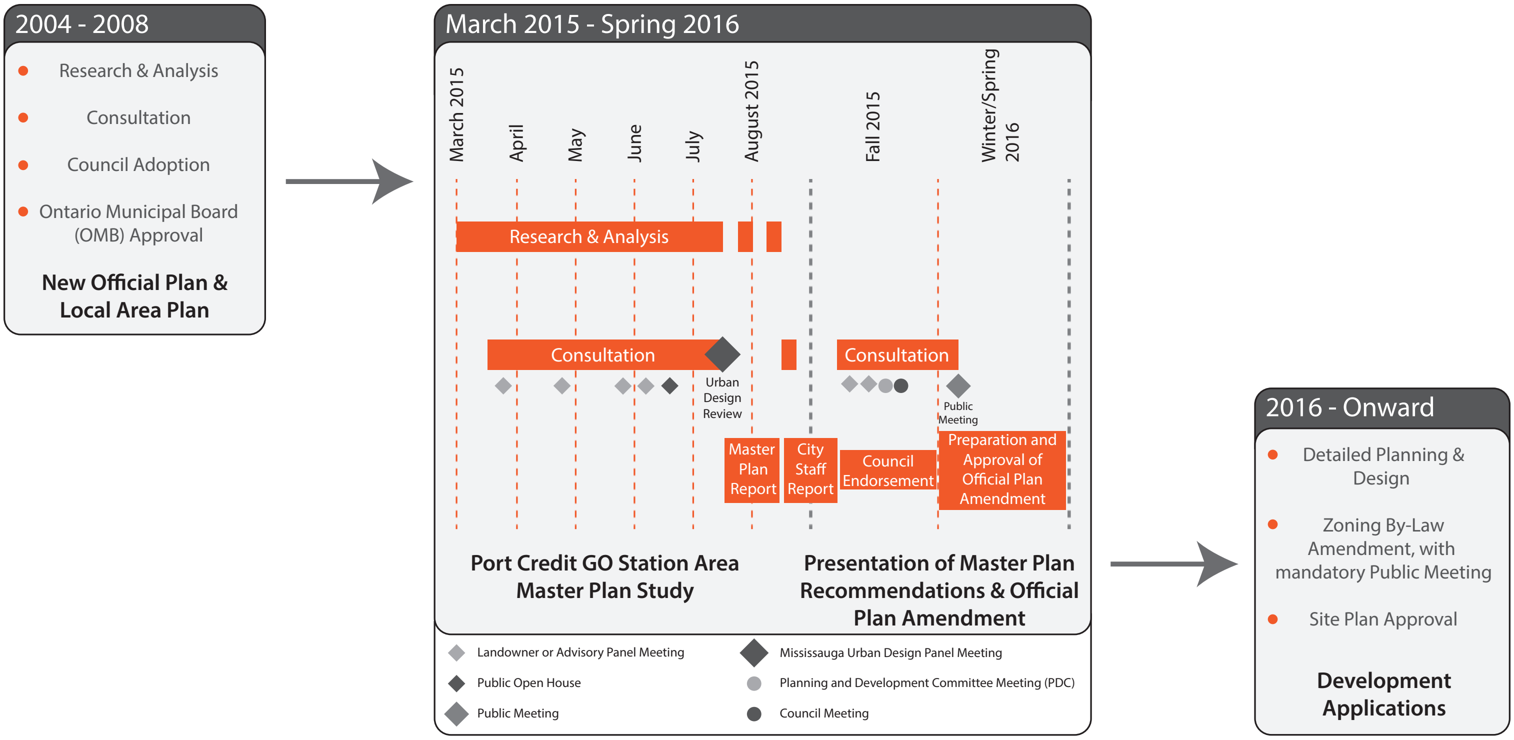


Figure 5. Port Credit GO Station Southeast Area Master Plan Study and Implementation Process

Figure 6. Examples of Stakeholder and Community Interests with Respect to Future Land Use and Built Form

Port Credit GO Station Area Landowner Meetings
At the start of the study, landowners within the Master Plan Area were invited to meet individually with staff from IBI Group and the City of Mississauga. The purpose of the initial meetings was to provide information on the current policy and regulatory framework and the requirement for a Master Plan. The meetings also allowed the Study Team to gain insight on existing site conditions and the potential for redevelopment. Additional consultation was undertaken with land owners to obtain input on the preliminary study findings and recommendations.

Master Plan Study Advisory Panel
An Advisory Panel was formed to act as a sounding board for the Port Credit GO Station Southeast Area Master Plan Study. It included members of several local community groups, as well as representatives from the Province and the City of Mississauga. The role of the Advisory Panel was to:

- Provide insight on existing and desired characteristics for Port Credit, and specifically the lands surrounding the GO Station;
- Identify challenges, concerns and opportunities for future use and development within the Port Credit GO Station Southeast Area; and
- Provide comments on preliminary ideas, draft study findings and other study materials.

IBI Group facilitated four meetings with the Advisory Panel, which covered the following:

April 23, 2015

- Review of the purpose of the Advisory Panel;
- Review Master Plan requirement, Study scope and schedule;
- Review of existing planning provisions; and
- Feedback on opportunities, constraints and concerns pertaining to land use, built form and transportation.

May 26, 2015

- Presentation of draft built form parameters, draft concept plans and preliminary 3-D massing model; and
- Discussion of next steps for built form analysis (i.e. shadow impact, preparation of draft illustrative guiding principles).

June 10, 2015

- Recap of the Metrolinx development partnership initiative;
- Presentation of examples of above-grade parking structures;
- Presentation of revised draft concept, plan and massing model;
- Review of traffic analysis undertaken to-date; and
- Discussion of next steps.

October 13, 2015

- Presentation of Final Master Plan.

An Advisory Panel was formed to act as a sounding board for the Port Credit GO Station Southeast Area Master Plan Study. It included members of several local community groups, as well as representatives from the Province and the City of Mississauga.

Public Open House
A Public Open House was held on June 16, 2015 at Clarke Memorial Hall in Port Credit to:

- Explain the requirement and objectives of the Master Plan Study;
- Share preliminary findings/ideas;
- Outline next steps; and
- Answer questions and collect feedback on the draft built form concepts presented.

Information was provided through a series of display panels, a formal presentation and an open forum question and answer period. Representatives from IBI Group, Metrolinx and the City of Mississauga were available before and after the presentation for one-on-one discussions and participants were asked to complete comment forms. The Open House was attended by over 100 people.

Background information, presentation materials, minutes and other feedback obtained from the Master Plan Study Advisory Panel meetings and the Public Open House are available on the City's website: www.mississauga.ca/portal/residents/pcgomasterplan.

Urban Design Advisory Panel Presentation
Draft recommendations from the Port Credit GO Station Southeast Area Master Plan were presented to the Mississauga Urban Design Advisory Panel on July 21, 2015. Suggestions from the Panel were incorporated into the final Master Plan. All future development proposals and architectural plans for lands within the Master Plan Area will be subject to review by the Mississauga Urban Design Advisory Panel. The Metrolinx Design Review Panel will also evaluate proposals and plans involving its lands.

City Council Presentation
The Port Credit GO Station Southeast Area Master Plan will be presented to City Council on October 26, 2015. Following Council's endorsement of the Master Plan and/or City Planning Staff Report, the City will initiate an Official Plan Amendment to update the Plan to reflect the completion of the Master Plan Study and to implement some or all of the policy recommendations.

Future Engagement
The process to amend the Official Plan to implement recommendations from the Master Plan will involve opportunities for public consultation and input (e.g. open Planning and Development Committee and Council meetings and a mandatory public meeting). Once actual development applications for certain properties within the Port Credit GO Station Southeast Area are brought forth, more detailed information will be available for public review and additional community consultation will be required as part of Zoning By-law amendments process.

Background information, presentation materials, minutes and other input obtained from the Master Plan Study Advisory Panel meetings and the Public Open House are available on the City's website: www.mississauga.ca/portal/residents/pcgomasterplan

Port Credit GO Station Southeast Area (Site 12)

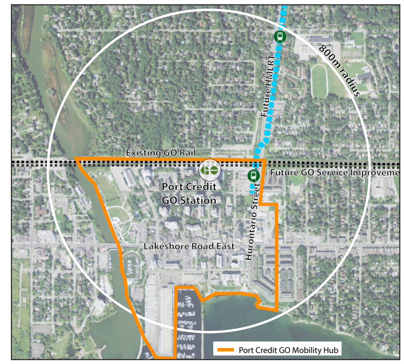
Port Credit GO Mobility Hub

Figure 7. Location of Port Credit GO Station Southeast Area within the Port Credit GO Mobility Hub

2.0 Site Context - Existing Conditions

The Big Move broadly defines the geographic limits of a Mobility Hub to be the area within 800 metres of a Major Transit Station, with the intention that boundaries for the hubs will be further defined based on specific physical characteristics and barriers, neighbourhood context and the local planning framework. Through the Port Credit Mobility Hub Master Plan (2011), the limits of the Port Credit GO Mobility Hub were established as being the area bound by the CN Railway to the north, Lake Ontario to the south, the Credit River to the west and Rosewood and Elmwood Avenues to the east (see **Figure 7**). The Mobility Hub boundary reflects the portion of the 'Community Node' east of the Credit River, as identified by the Port Credit Local Area Plan.

The Port Credit GO Mobility Hub contains a range of land uses and buildings types that vary substantially in terms of age, style, height and density. Some areas contain vacant or under-utilized properties which could accommodate more intensive, transit-supportive uses. In other areas little growth or change is expected to occur.



Through the Port Credit Mobility Hub Master Plan (2011), the limits of the Port Credit GO Mobility Hub were established as being the area bound by the CN Railway to the north, Lake Ontario to the south, the Credit River to the west and Rosewood and Elmwood Avenues to the east.

2.1 Port Credit GO Station Southeast Area

The Port Credit GO Station Southeast Area is comprised of 12 properties totaling approximately 5.04 acres (2.04 hectares) which are located east of Hurontario Street, south of the CN Railway and Queen Street, east of Helene Street and north of High Street. The boundaries of the Master Plan reflect those established by the Port Credit Local Area Plan (i.e. Site 12). For the purpose of analysis, the lands were grouped into four blocks (see **Figure 8**).

The blocks currently contain residential and non-residential uses and are under provincial, municipal and private ownership:

- **Block 1:** Provincially-owned GO Transit parking lot and municipally-owned closed Queen Street East road allowance;
- **Block 2:** Vacant municipally-owned land (former private lawn bowling club acquired by the City of Mississauga for real estate investment purposes) and two privately-owned residential dwellings, one of which is listed on the City's Heritage Register and is currently being used for commercial purposes;
- **Block 3:** Bell Canada surface parking lot and loading bay; and
- **Block 4:** Six privately-owned residential dwellings, three of which are listed on the City's Heritage Register.[1]

[1]A listed property is one which appears on the City of Mississauga's Heritage Register as it has been deemed to be of cultural heritage interest, but it has not been fully researched or documented and therefore is not protected by by-law under the terms and conditions of the Ontario Heritage Act.

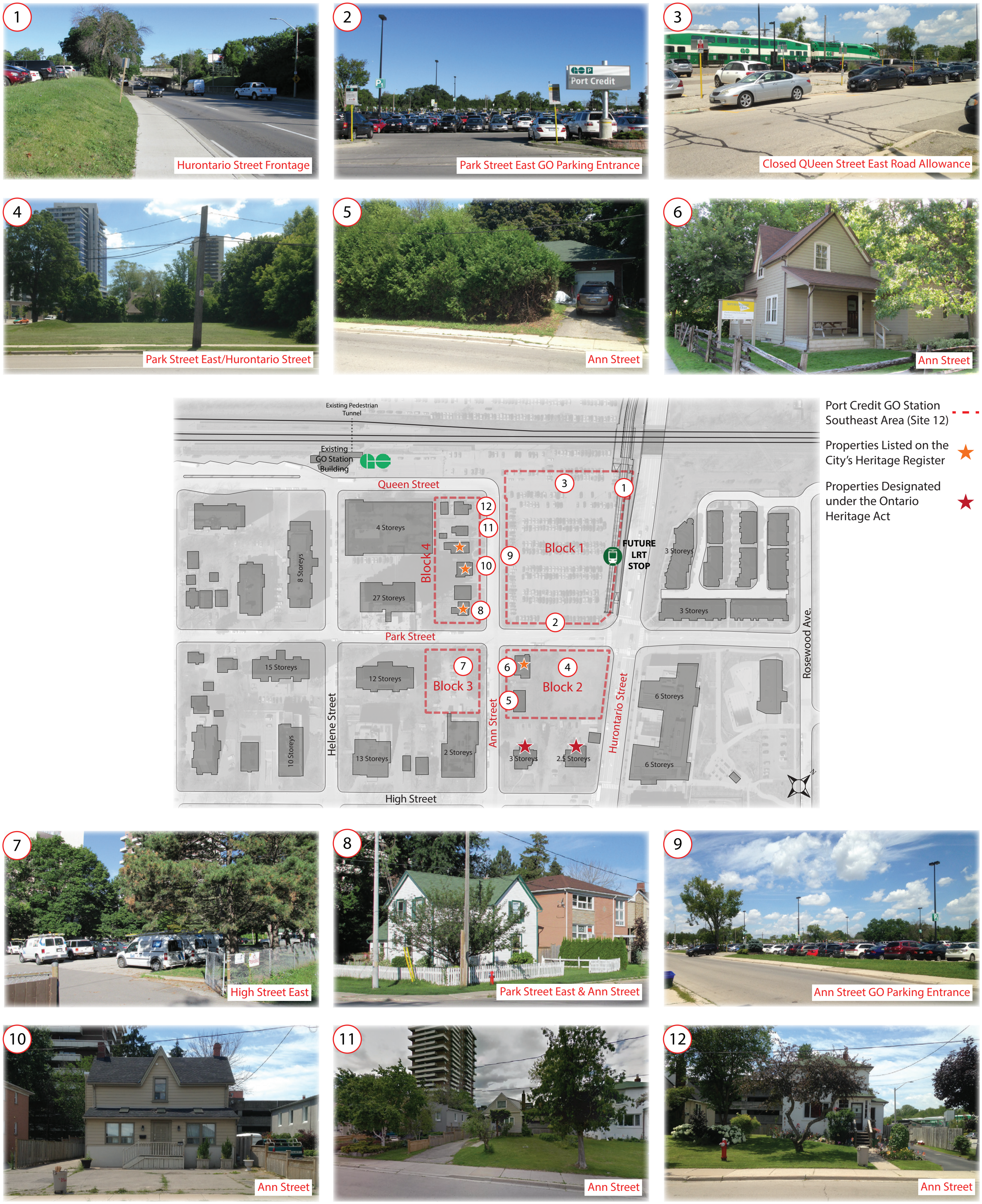


Figure 8. Existing Land Uses and Conditions within the Port Credit GO Station Southeast Area

Blocks 1, 2 and 4 are currently designated 'Mixed Use' by the Mississauga Official Plan. As further described in Section 6 of this report, this designation permits a wide range of residential and non-residential uses. The Block 3 lands are currently designated 'Utility'.

The existing density of the Master Plan Area is estimated to be less than 20 residents and jobs per combined hectare, which is far lower than what the City is seeking to achieve within Community Nodes and Major Transit Station Areas. At this point in time, Metrolinx is the only landowner within the Port Credit GO Station Southeast Area known to be actively pursuing redevelopment. As further described in Sections 4 and 7 of this report, the redevelopment plans for Block 1 include a parking structure for GO Transit customers and high density, mixed-use development.

The Port Credit GO Station Southeast Area lands are generally flat, except for the northeast portion of Block 1 where there is a significant change in grade, with Hurontario Street passing under the rail bridge.

The existing streetscape conditions include relatively narrow sidewalks, few mature trees, minimal landscaping and no street furniture.

2.2 Adjacent Lands

Additional Metrolinx lands and GO Station infrastructure is located immediately north and west of the Master Plan Area (e.g. surface parking for GO Transit users, passenger pick-up and drop-off area, bus loop and bus shelters, the Station building, rail platform and rail tracks).

South of the Master Plan Area are two houses which are designated under the Ontario Heritage Act, as well as a low-rise Bell Canada facility.[2] To the east, wide (approximately 32-metre) right-of-way for Hurontario Street separates the Master Plan Area from a cluster of 3-storey townhouses and a 6-storey senior's apartment known as the 'Port Credit Residences'. A 27-storey apartment building is located to the west, along with a 4-storey parking structure that contains ground floor retail/commercial (see **Figure 9**).

There are no active development proposals or applications on the adjacent lands. Opportunities exist for future redevelopment of some of the adjacent properties, but other properties are fully developed and considered stable or protected under the Ontario Heritage Act. Metrolinx is reviewing options to redevelop the existing GO Station building and potentially other station infrastructure.

The Port Credit GO Station Southeast Area lands are generally flat, with the exception or the northeast portion of Block 1, where there is a significant change in grade, with Hurontario Street passing under the rail bridge.

[2]A designated property is one that has been researched, identified and deemed to have cultural heritage significance. Designated properties are protected through a property specific by-law, under the authority of Part IV or Part V of the Ontario Heritage Act.

Figure 9. Existing Land Uses and Conditions Adjacent to and Surrounding the Port Credit GO Station Southeast Area

2.3 Surrounding Area

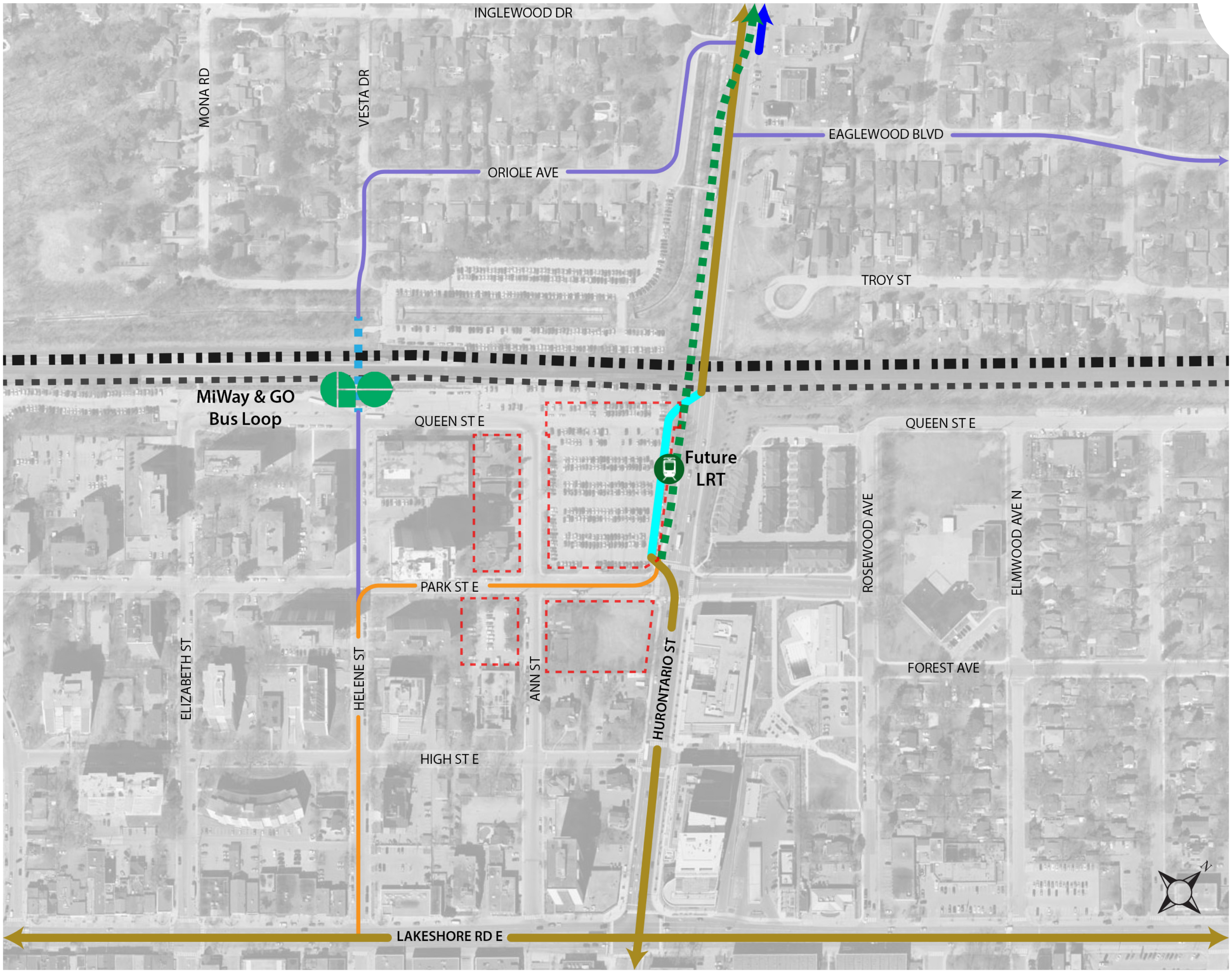
The Port Credit GO Station Southeast Area is surrounded by a number of residential neighbourhoods, including Mineola to the north. A wide range of retail and commercial services and amenities are located within the Main Street Corridor and waterfront area of Port Credit. Numerous special events, festivals and seasonal markets are hosted in the area.

The following generally describes the predominant type of land uses and built forms currently surrounding the Port Credit GO Station Southeast Area:

- **North – West of Hurontario Street:** GO Transit surface parking lot and single-family housing.
- **North – East of Hurontario Street:** Retail services and amenities, single-family housing, townhouses, Port Credit Secondary School and Mineola Public School.
- **East:** Lion's Club Outdoor Pool and Harold E Kennedy Memorial Park, Forest Avenue Public School and single-family housing.
- **South – West of Hurontario Street:** 5 to 20-storey apartment buildings, a few single-family houses, some which contain commercial businesses, retail/commercial and mixed-use development along Lakeshore Road, mid-rise mixed-use and residential condominiums, St. Lawrence Park and Lake Ontario.
- **South – East of Hurontario Street:** 6 to 22-storey condominium known as 'One Port Credit' which contains ground floor commercial uses, retail, retail services and amenities, 3-storey office building, townhouses and Tall Oaks Park.
- **West:** Apartment buildings ranging in height from 3 to 16-storeys, a few single-family houses, the Port Credit Arena, Memorial Park, and the Port Credit River.

Buildings vary substantially in terms of ages, style, height and density within Port Credit and Mineola, as does the condition of the streetscape and the private and public realm. Many properties, particularly along the Credit River and Lake Ontario waterfront, have heritage listings or designations.

A wide range of retail and commercial services and amenities are located within the Main Street Corridor and waterfront of Port Credit. Numerous special events, festivals and seasonal markets are hosted in the area.



Legend

Port Credit GO Station Southeast Area (Site 12)

Existing

Existing GO Lakeshore West Rail Line

Existing Boulevard Trail

Proposed

Future Hurontario-Main Light Rapid Transit (HMLRT)

Proposed Multi-Purpose Trail (HMLRT Environmental Protection Report, 2013)

Proposed Bike Lanes (HMLRT Environmental Project Report, 2013)

Potential Improvements to GO Rail Service *

Proposed Primary On-Road Cycling Route (Schedule 7 of the Mississauga Official Plan, 2014)

Potential Signed Bicycle Route (Metrolinx Mobility Hub: Cycling Network Interface Analysis, 2013)

Potential Multi-Use Path (Metrolinx Mobility Hub: Cycling Network Interface Analysis, 2013)

Figure 10. Existing and Proposed Rapid Transit and Cycling Routes within Proximity of the Port Credit GO Station

3.0 Existing and Planned Transportation Infrastructure and Services

Metrolinx's vision for the future of the GTHA includes the following changes to transportation:

- The distance that people drive every day will drop by one-third compared to today;
- The region will accommodate 50% more people with less congestion than currently experienced today; and
- On average, one-third of trips to work will be taken by transit and one in five will be taken by walking or cycling. 60% of children will walk or cycle to school.

Likewise, it is a priority of the City of Mississauga to develop a transit-oriented city.

The Port Credit GO Mobility Hub is currently serviced by inter-regional rapid transit and local transit. Major investment to rapid transit is planned, and a significant increase in customers and activity at the Port Credit GO Station is expected. Improvements to pedestrian and cycling routes are also proposed (see **Figure 10**). The provision of seamless integration between modes of transportation is a priority.

Major investment to rapid transit is planned and a significant increase in transit customers and activity at the Port Credit GO Station is expected.

3.1 Existing Infrastructure and Services

Today, GO Transit's Lakeshore West line provides two-way, all-day service seven days a week between Toronto and Aldershot. It also provides weekday rush-hour service from Hamilton to Toronto in the morning and back in the afternoon. A GO Transit rail ridership survey undertaken in the fall of 2014 recorded a daily passenger on/off count at the Port Credit GO Station of 4,224 for the AM and PM peak period combined. The station has a high customer walk-in rate, with approximately 26% of rail passengers accessing the station by walking.

GO Transit also provides two-way, all-day bus service between Hamilton and Toronto, which includes services to the Port Credit GO Station, and six local MiWay bus routes utilize the bus loop (i.e. routes 8, 14, 14A, 19, 23 and 103). A 2014 MiWay bus ridership survey recorded a daily passenger on/off count at Port Credit GO Station of 3,818 for the AM and Peak period combined.

There is limited cycling infrastructure within proximity to the Port Credit GO Station. Covered bicycle storage facilities are available at the GO Station. The GO Station has direct covered connections between the north and south rail platforms and north parking lot and passenger amenities within the station building (e.g. washrooms, seating, café and ticketing).

3.2 Planned Infrastructure and Services

On April 21, 2015 the provincial government committed funding to the future HMLRT line which will run between the Port Credit GO Station and the Downtown Brampton GO Station. By 2031 the HMLRT is expected to accommodate 118,000 passengers per average weekday. During the AM peak period, an estimated 1,962 people are expected to get on or off the LRT at the Port Credit stop.

The Environmental Project Report for the HMLRT received Ministry approval in 2014. It shows a western alignment of the LRT track south of Mineola and the Port Credit stop located on the west side of Hurontario, north of Park Street (see **Figure 11**). It identifies a setback within the existing GO Transit south parking lot site (Block 1), of approximately 15 metres to accommodate a portion of the track, the stop and platform, a multi-purpose trail and a direct connection to the GO Station. The setback will include spaces for walking and cycling, trees and other landscaping and street furniture (see **Figure 12**).

A 26% increase in the number of Lakeshore West rail line customers who use the Port Credit Stop during the AM and PM peak period is expected to occur between 2011 and 2031. With these additional 1,098 on/offs, by 2031 more than 5,300 GO Transit customer trips daily will originate or end at the Port Credit GO Station during peak periods alone.

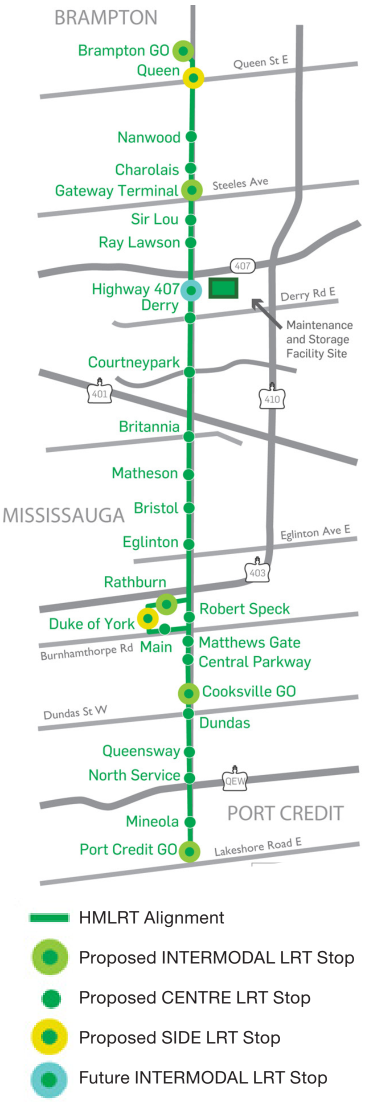
Through its Regional Express Rail (RER) project, Metrolinx is embarking on a massive transformation of the existing GO rail system to bring even better rapid transit. The Lakeshore West rail line is part of the 10-year RER Plan and will introduce 15-minute service or better throughout the day between Toronto and Aldershot and new hourly service to and from Hamilton 7 days a week will be introduced.[3] With RER, a significant increase in ridership along the entire Lakeshore West line is expected. Today, approximately 17 million boardings occur annually on the line. In the future 33 million annual boardings are expected.

Land at the Port Credit GO Station is being protected for other future improvements which are not part of the 10-year plan that may involve reinstating an existing 4th track and reconfiguring the rail platforms and other station infrastructure.

A number of new on and off-road bicycle routes are proposed within proximity to the GO Station, which will improve connectivity within the Port Credit GO Mobility Hub. Residents have also expressed the need for additional east west connections over the Credit River.

By 2031 the HMLRT is expected to accommodate 118,000 passengers per average weekday. During the AM peak period, an estimated 1,962 people are expected to get on or off the LRT at the Port Credit stop.

[3] Note: Service levels west of the Burlington GO Station, including service levels at Aldershot, are dependent on infrastructure and servicing agreements with the Canada National Railway Company (CN), who owns the rail corridor. Final plans may vary as Metrolinx's 10-year program to improve GO Transit service evolves.



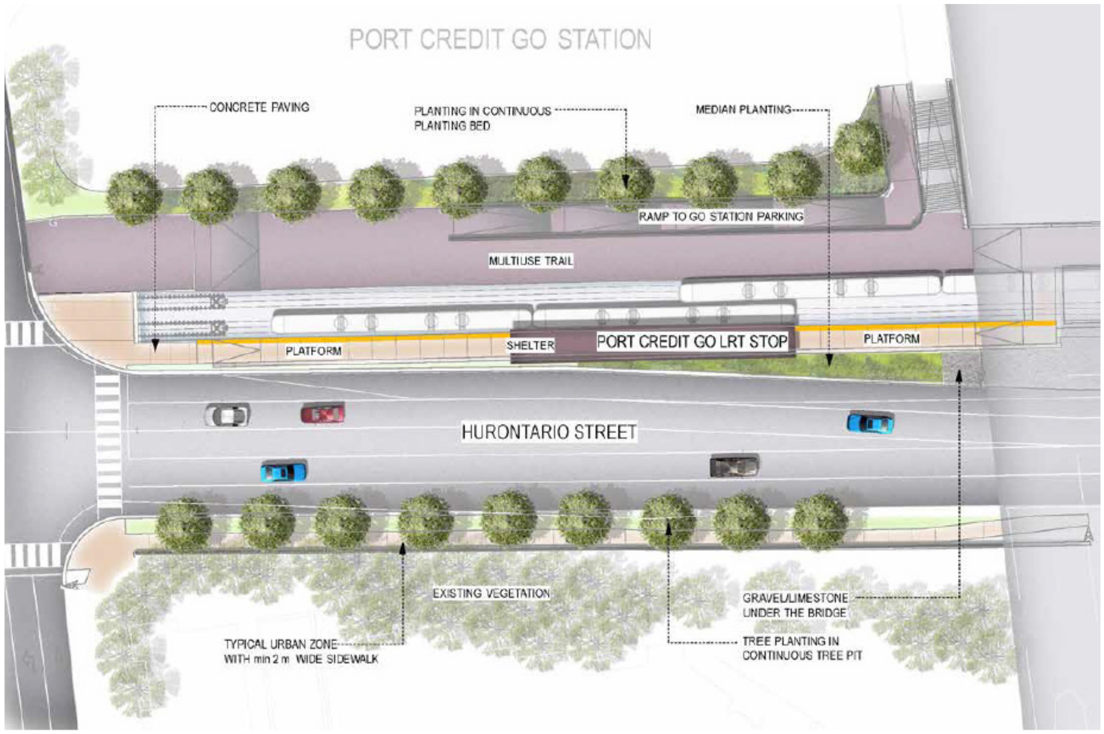


Figure 11. Planned HMLRT Alignment and Port Credit LRT Stop (as per the 2014 Environmental Project Report)

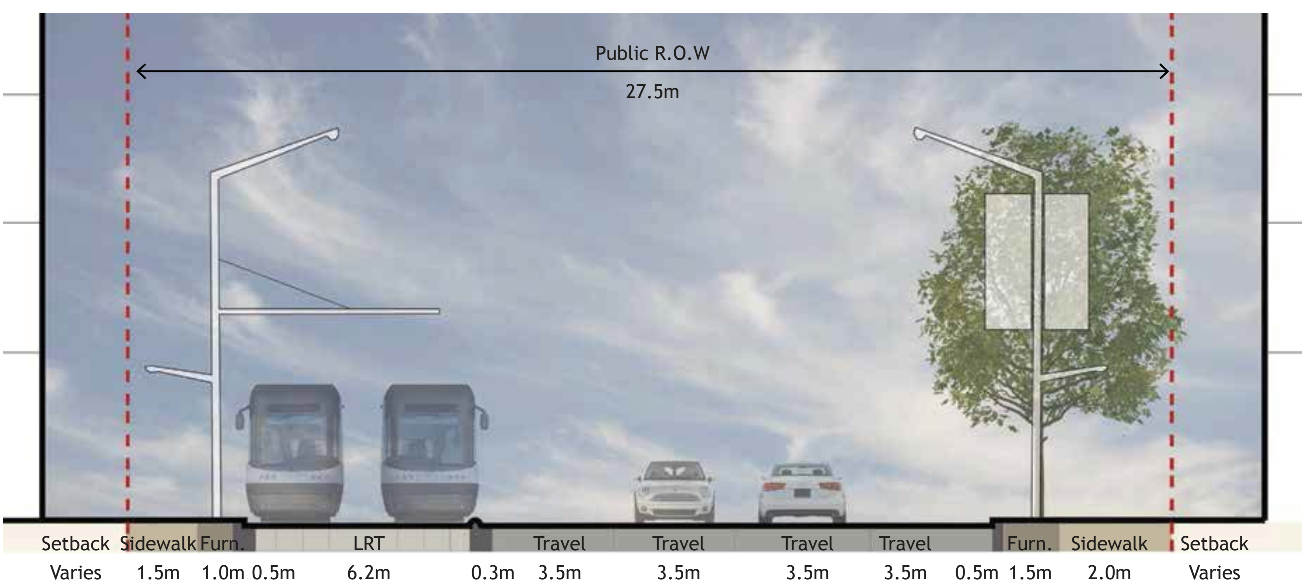


Figure 12. Example of a Typical Streetscape Section for the HMLRT at Port Credit (as per the 2014 Environmental Project Report)

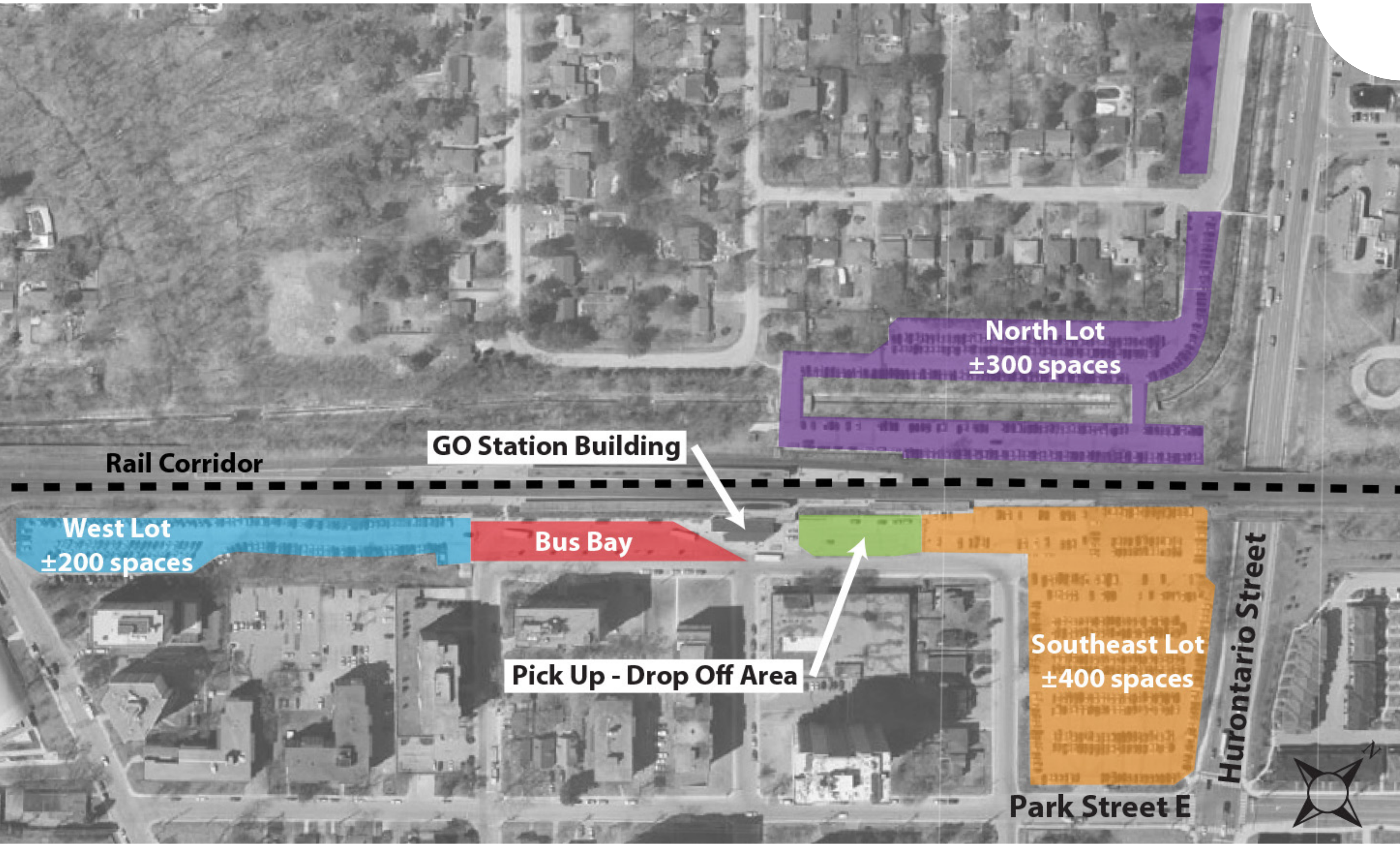


Figure 13. Metrolinx Landholdings and Existing Facilities at the Port Credit GO Station

Figure 14. Existing Southeast GO Transit Parking Lot and Proposed Redevelopment Site:

Left: Hurontario Street Frontage (western view)
Centre: Park Street Entrance (northern view)
Right: Queen Street/Ann Street Entrance (southeast view)

4.0 Metrolinx Redevelopment Plans

Outside of the rail corridor, Metrolinx owns approximately seven acres of land at the Port Credit GO Station which currently accommodates:

- Approximately 900 parking spaces for GO Transit customers, provided for within three surface parking lots (north, southeast and west);
- The GO Station building;
- Bus bay/bus loop;
- Bicycle storage facilities; and
- Passenger pick-up and drop-off area (see **Figure 13**).

As noted, only the southeast parking lot is part of the Master Plan Area.

Over the next 15 years and beyond, thousands of additional GO Transit customers are expected to start using the Port Credit GO Station. While it is a priority to increase the proportion of customers who arrive by walking, cycling or transit, some of the new customer base will drive and require parking. Customer surveys and monitoring show a current shortage of parking at the Port Credit GO Station. Some customers are using parking lots at local community facilities, which are not intended for such purposes.

The Port Credit Mobility Hub Master Plan, prepared in partnership with the City of Mississauga, explored opportunities for improving mobility options for people in Port Credit and the surrounding area. It focused the GO Transit lands and surrounding properties. The study found that the southeast parking lot held the best potential to accommodate additional parking in the form of a multi-level parking structure and mixed-use development. The GO Transit Rail Parking and Station Access Strategy (2013) determined that 200 to 600 additional parking spaces are required at the Port Credit GO Station to meet existing and future GO Transit customer demand.

Metrolinx is seeking to identify a development partner through an open and competitive procurement process involving a request for qualifications (RFQ) and request for proposals (RFP) to develop:

- A GO Transit parking structure with approximately 800 spaces (providing 400 net new spaces) and transit-supportive, mixed-use development on the southeast parking lot; and
- Other new station infrastructure (e.g. new station building).

For safety, operational and financial reasons, the majority of the new GO Transit parking will be provided for above-grade. Typically, GO station infrastructure and lands on which it is located is owned by Metrolinx. The mixed-use development and other station infrastructure may be constructed concurrently with the parking structure, or in a latter phase(s).

Metrolinx is seeking to identify a development partner to design and build GO Transit commuter parking structure and mixed-use development on the southeast parking lot lands (Block 1 of the Master Plan Area).

Illustrative Vision for the Port Credit GO Station Area

5.0 Vision for the Port Credit GO Station Area

The vision for the Port Credit GO Station Area is:

To create a vibrant, pedestrian friendly and cohesive area with:

- Improved transit facilities and services;
- Seamless integration of modes of travel;
- A concentrated mix of uses and activities;
- An engaging and attractive public realm;
- A minimized ecological footprint; and
- Design excellence.

The Port Credit GO Station Southeast Area Master Plan will help build upon the success of Port Credit as a transit-supportive community. The Master Plan envisions development that respects and complements the character of the surrounding area.

It will be a precedent setting place where transportation, intensified land use and urban design are integrated together in a sustainable manner to support a thriving Mobility Hub in Port Credit.

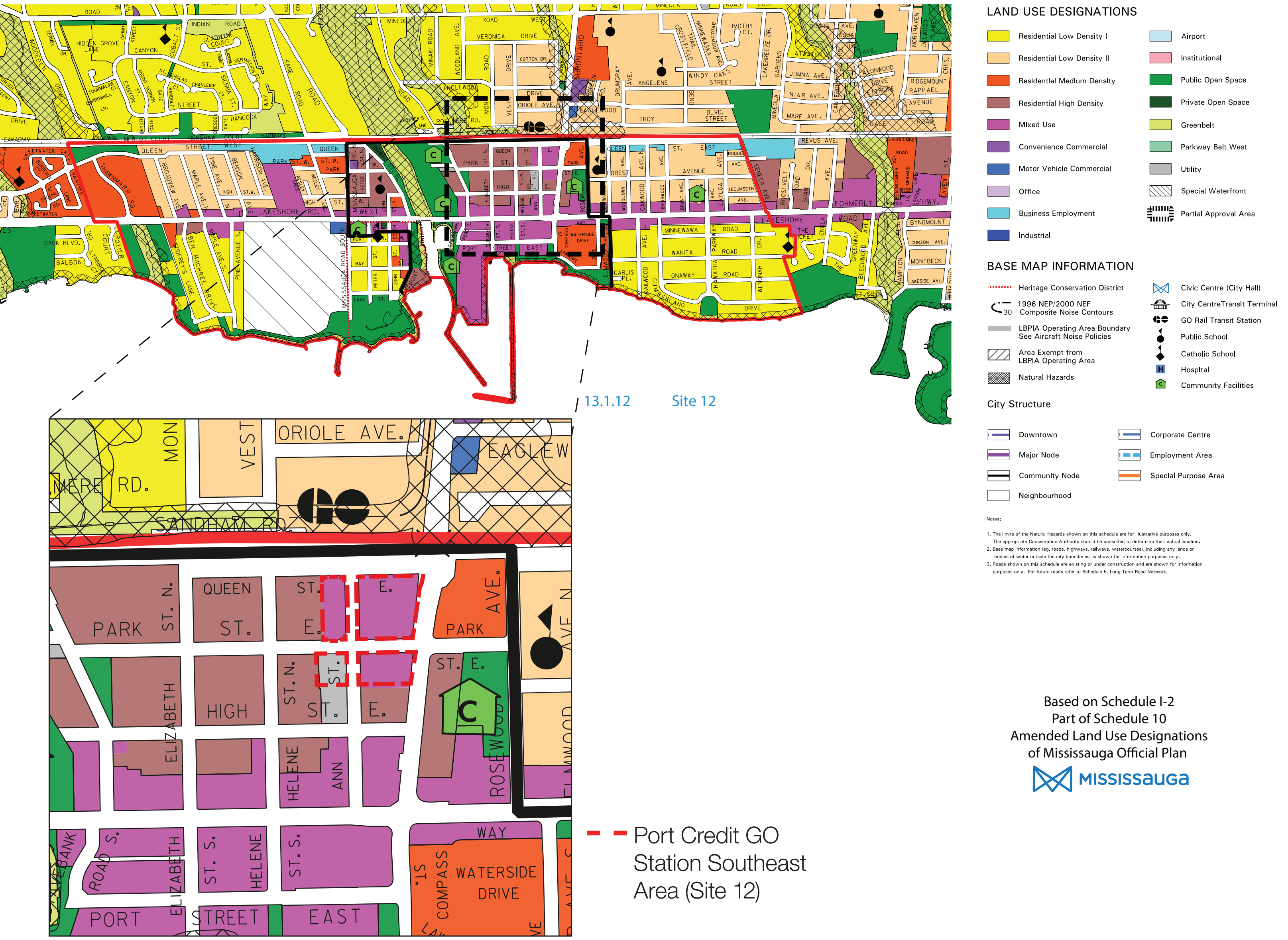


Figure 15. Existing Land Use Designations within the Port Credit GO Station Southeast Area (as per Schedule I-2 of the Mississauga Official Plan)

6.0 Land Use

As noted in the Port Credit Local Area Plan, in 2011 the Port Credit Community Node was home to an estimated 6,860 people and 2,170 jobs. To enhance the live-work balance and support transit infrastructure additional employment is required throughout Port Credit and particularly within proximity to the GO Station and future HMLRT stop.

Blocks 1, 2 and 4 within the Port Credit GO Station Southeast Area are designated as 'Mixed-Use' (see **Figure 15**). This designation permits a wide range non-residential uses, as well as residential uses:

- commercial parking facility;
- conference centre;
- entertainment, recreation and sports facility;
- financial institution;
- funeral establishment;
- overnight accommodation;
- personal service establishment;
- post-secondary educational facility;
- restaurant;
- retail store;
- residential;
- secondary office; and
- uses permitted in all designations.

While detached and semi-detached dwellings are not permitted in the 'Mixed-Use' designation, provisions of the Mississauga Official Plan do allow for existing non-conforming uses to continue.

Block 3 is designated as 'Utility'. This designation permits parking, accessory uses and uses permitted in all designations' (i.e. community infrastructure, community gardening, electricity transmission and distribution facility, natural gas and oil pipeline, parkland, piped services and related facilities for water, wastewater and stormwater and telecommunication facility).

6.1 Objectives

As detailed in The Big Move, the Metrolinx Mobility Hub Guidelines and the Mississauga Official Plan, Mobility Hubs are intended to offer a range of amenities to travelers, local residents and businesses and to be locations for major destinations, such as offices, retail/commercial facilities, institutions and community services.

To enhance the live-work balance and support transit infrastructure, additional employment is required throughout Port Credit and particularly within proximity to the GO Station and future HMLRT stop.

The Mississauga Official Plan encourages lands designated as 'Mixed Use' to contain a mixture of uses and for residential uses to be combined on the same lot or in the same building with another permitted use. Policy 6.1.3 of the Port Credit Local Area Plan requires development applications for properties within the defined Master Plan Area to address, to the City's satisfaction, the appropriate range and amount of employment uses but the Plan does suggest a minimum threshold or specific target for the lands.

While there are various physical, operational and economic challenges and constraints to attracting large office, institutional and retail/commercial uses to Port Credit, recent market research suggests that the Port Credit GO Station Southeast Area lands are well-positioned to accommodate a moderate amount employment-generating uses (see **Appendix C**). Examples of employment-generating uses include, but are not limited to:

- Office;
- Retail store;
- Restaurant;
- Personal service establishment;
- Financial institution;
- Hotel;
- Daycare; and
- Educational, institutional or community service facility.

Over mandating the provision of office or retail/commercial space in the Port Credit GO Station Southeast Area may result in sterilizing the land or long-term vacancies. Such requirements may also negatively impact the City's ability to achieve its growth and employment objectives elsewhere within Mississauga. Incentives may be required to attract employment-generating uses. These could be financial incentives offered by the City, as described in Section 6.2.2 of this report, or allowances for additional building height, as recommended in Section 7.5.1.

Over mandating the provision of office or retail/commercial space in the Port Credit GO Station Southeast Area may result in sterilizing the land or long-term vacancies. Such requirements may also negatively impact the City's ability to achieve its growth and employment objectives elsewhere within Mississauga.

6.2 Recommendations

The following recommended policies and guidelines apply to Blocks 1, 2 and 4 which are designated as 'Mixed Use'. As previously noted, Block 3 is currently designated as 'Utility'. No changes to the existing land use designations shown in Schedule 2 of the Mississauga Official Plan are recommended.

The following recommendations should be read in conjunction with the provisions of the Mississauga Official Plan and Port Credit Local Area Plan, the Port Credit Built Form Guide and the Metrolinx Mobility Hub Guidelines.

6.2.1 Policies

- All future developments over 1,000 sq. m. (10,760 sq. ft.) shall provide an appropriate mix of non-residential, employment-generating uses including office and other uses such as retail stores, restaurants, personal service establishments or community service space.
- The following minimum gross floor area (GFA) of employment-generating uses will be required as part of future comprehensive block redevelopments:
  - Block 1: 2,800 sq. m. (30,140 sq. ft.)
  - Block 2: 1,400 sq. m. (15,070 sq. ft.)
  - Block 4: 250 sq. m. (2,690 sq. ft.).
- Developments should be encouraged to provide office space in larger, contiguous floorplates (at-grade or above-grade) in order to accommodate a variety of businesses and services.

6.2.2 Guidelines

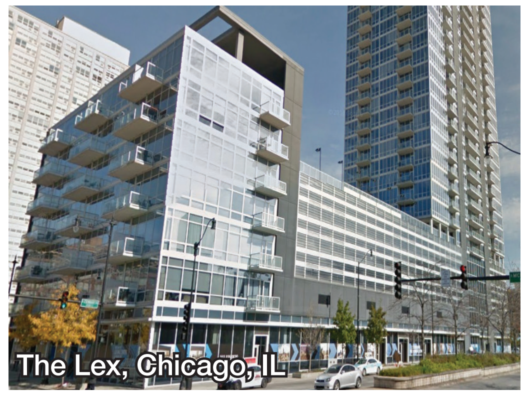
- Opportunities to provide incentives to attract office, retail/commercial and community service uses should be explored, such as establishing a Community Improvement Plan and programs (e.g. waiving of development charges or application fees, providing tax incentives, and tax increment financing or land value capture (LVC) mechanisms, wherever possible), a reduction in parkland dedication and the provision of dedicated discounted or free parking at municipal parking facilities within a short walking distance of the Port Credit GO Station.
- The evaluation of development proposals for provincially and municipally-owned lands (i.e. Block 1 and 2, respectively) should consider to what extent the proposal satisfies Metrolinx and City of Mississauga objectives for creating an attractive and intensive concentration of employment, living, shopping and enjoyment around a major transit station.
- Development is encouraged to identify and incorporate uses that are complementary to transit users and local land uses and activities.
- Where feasible, the design and construction of large parking structures should allow for future modifications (e.g. knockout panels to allow for flex space and direct pedestrian connections to adjacent developments and transit facilities, expansion of uses and full or partial adaptive reuse).

Examples of Built Form and Design Features Preferred for the Port Credit GO Station Southeast Area

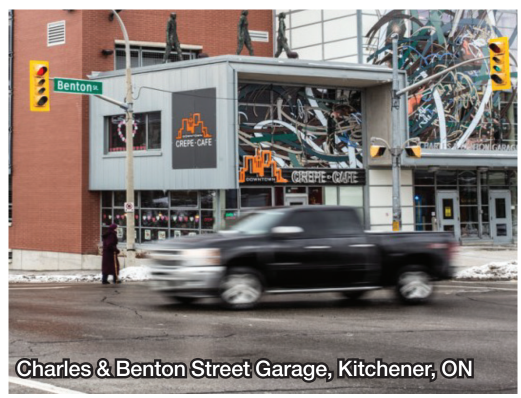

Market Wharf, Toronto, ON


Pure Spirits Condo, Toronto, ON

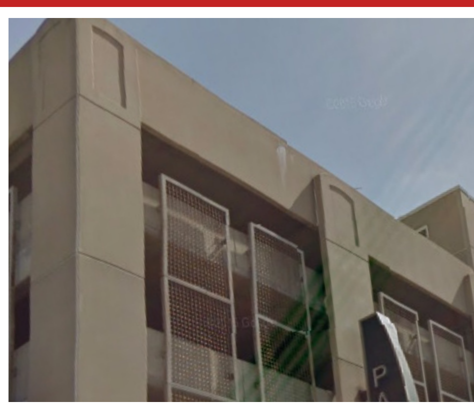

Civic Centre Parking Structure, Santa Monica, CA


The Lex, Chicago, IL


Albert Street Parkade, Brisbane


Charles & Benton Street Garage, Kitchener, ON

Examples of Built Form and Design Features Not Preferred for the Port Credit GO Station Southeast Area



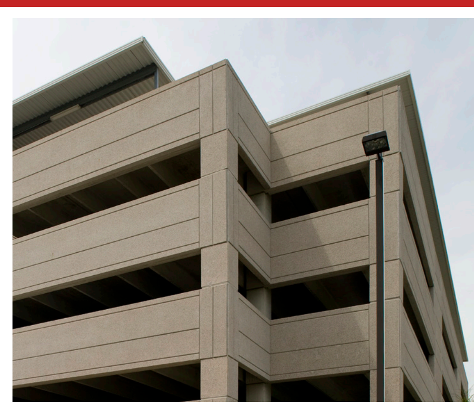


Figure 16. Examples Parking Structure Precedents

7.0 Built Form

Within the Port Credit Community Node, policies direct the greatest intensity of development to be located within proximity of the GO Station and the future HMLRT stop. The Port Credit Local Area Plan shows height permissions ranging from 2 to 22 storeys for the Master Plan Area lands, but includes a requirement that further study be undertaken to determine appropriate building height. The Port Credit Built Form Guide demonstrates how the general urban form policies of the Mississauga Official Plan and Port Credit Local Area Plan can be achieved, but the Guide is not part of the approved policy document. It also does not specifically address the Port Credit GO Station Southeast Area and the important role the lands can play in furthering the development of the Mobility Hub.

Further direction on appropriate built form is required for the Port Credit GO Station Southeast Area lands. The Master Plan should provide a suitable balance of definitiveness (e.g. policy requirements) and flexibility (e.g. guidelines), while recognizing the opportunities for further input and direction on built form as part of rezoning and site plan approval processes.

New development, including above-grade parking structures, should be sensitive to the existing context, local heritage resources and planned character of the area.

7.1 Objectives

Built form objectives for the Port Credit GO Station Southeast Area include achieving:

- Concentrated, transit-supportive development;
- Seamless, direct connections for transit users, pedestrians and cyclists;
- An engaging, attractive and comfortable public realm; and
- Design excellence.

While greater intensities of development are desirable for the Major Transit Station Area, the planned urban hierarchy established by the Mississauga Official Plan is to be respected. New development, including above-grade parking structures, should be sensitive to the existing context and planned character of the area (see **Figure 16** for examples of precedents). The City's objectives for protecting and integrating heritage resources must also be respected.

7.2 Testing of Development Scenarios

Although currently Metrolinx is the only landowner actively pursuing redevelopment in the Master Plan Area, the built form analysis considered all properties with the exception of Block 3. The owner of Block 3 (Bell Canada), has not expressed interest in redesignating the lands in order to permit non-utility uses.

Ownership on Blocks 2 and 4 is currently fragmented. Development scenarios were explored which assumed partial and full land assembly to facilitate block redevelopment.

Variations in building heights and typologies, vehicular access, pedestrian movement and opportunities for improved public realm and placemaking were investigated. With consideration to prevailing policies, a review of natural heritage conditions and infrastructure capacity[4], shadow impacts and stakeholder input, the following built form parameters were established:

- Building heights up to 6 storeys on lands directly fronting Hurontario Street, stepping up to 8 storeys;
- Building heights up to 22 storeys on the remaining lands;
- Maximum residential floor plate size of 800 sq. m.; and
- A minimum distance separation of 30 metres between buildings over 8 storeys.

The ability to achieve this level of intensification on Blocks 2 and 4 will depend on land assembly and the outcome of future Heritage Impact Assessments (previously referred to in municipal planning documents and forms as a Heritage Impact Statement). There are heritage resources in the area that could impact the amount, location and size of new development.

The ability to achieve higher density development on Blocks 2 and 4 will depend on land assembly and the outcome of future Heritage Impact Assessments.

7.2.1 Heritage Resources

Although intensification within the Master Plan Area will support the investment being made in transit infrastructure and provincial and municipal policy objectives for the Mobility Hub and Major Transit Station Area, the City's heritage resources must be respected.

As noted, there are four properties within the Master Plan Area which are listed on the City's Heritage Register and two designated heritage properties are adjacent to the Master Plan Area (see **Figure 17**). A listed property is one that the municipality has deemed to be of cultural heritage interest but has not fully researched or documented. It is not protected under the Ontario Heritage Act. A designated property has been researched, identified and deemed to have cultural heritage significance and is protected under the Ontario Heritage Act.

The Mississauga Official Plan contains a number of heritage policies, including, but not limited to:

7.4.1.12: The proponent of any construction, development, or property alteration that might adversely affect a listed or designated cultural heritage resource or which is proposed adjacent to a cultural heritage resource will be required to submit a Heritage Impact Statement, prepared to the satisfaction of the City and other appropriate authorities having jurisdiction.

4. Technical analysis undertaken for the Master Plan Study found no environmental constraints (e.g. flooding or grading issues, or significant natural heritage features). A review of regional and municipal servicing capacity and infrastructure concluded that new development could be accommodated with some minor upgrades/ improvements potentially required to water mains and sanitary sewer pipes.

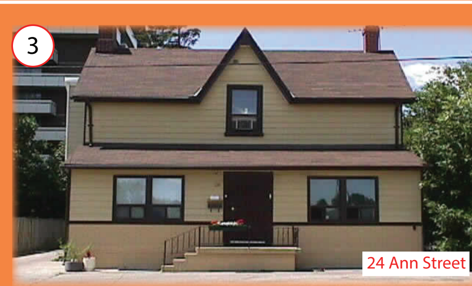
Properties within Master Plan Area

1

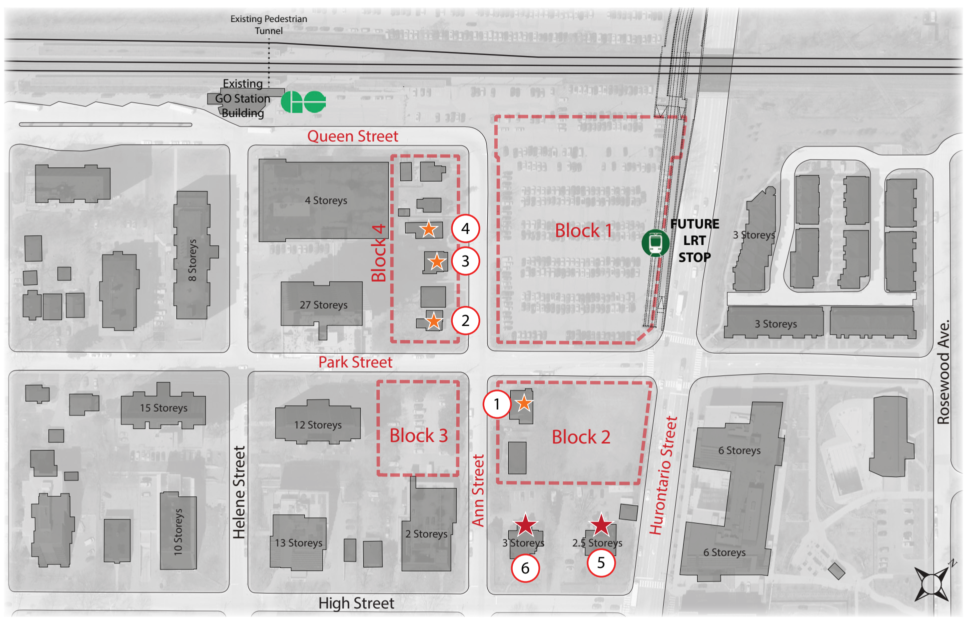

Status: Listed
Description: Vernacular Farmhouse
Reason for Listing: Architectural

2


Status: Listed
Description: Vernacular Farmhouse - Starke Residence
Reason for Listing: Architectural

3


Status: Listed
Description: Vernacular Farmhouse - Latka Residence
Reason for Listing: Architectural



Port Credit GO Station Southeast Area (Site 12)
Properties Listed on the City's Heritage Register
Properties Designated under the Ontario Heritage Act

Source: IBI Group based on City of Mississauga data (www.mississauga.ca/portal/services/property)

Properties Adjacent to Master Plan Area

4


Status: Listed
Description: Colonial Revival - Spanish Pueblo Unity Church of Mississauga
Reason for Listing: Architectural

5


Status: Designated
Description: Bungalow Colonial - Charles Hamilton House 'Avonston'
Reason for Listing: Architectural/Contextual/Historical

6


Status: Designated
Description: Bungalow Colonial - W.T. Gray House
Reason for Listing: Architectural

Figure 17. Heritage Resources in and Adjacent to the Master Plan Area.

- 7.4.1.14: Cultural heritage resources will be integrated with development proposals.
- 7.4.2.3: Development adjacent to a cultural heritage property will be encouraged to be compatible with the cultural heritage property.

Following the review of a Heritage Impact Assessment, the City may permit alterations to a listed heritage building or demolition. Alternatively, it may seek to designate the property. Heritage Impact Assessment will play an important role in understanding and confirming appropriate built form. However given the vision for the Port Credit GO Station Southeast Area and the proposed development parameters, future high-rise development should be able to co-exist with lower density heritage buildings if designed properly.

7.3 Illustrative Development Concept Plan

An illustrative development concept plan was prepared that assumes full land redevelopment and intensification. Based on the previously described parameters, up to four towers could be accommodated within the Master Plan Area; two towers on Block 1, one tower on Block 2 and one tower on Block 4 (see **Figure 18**).

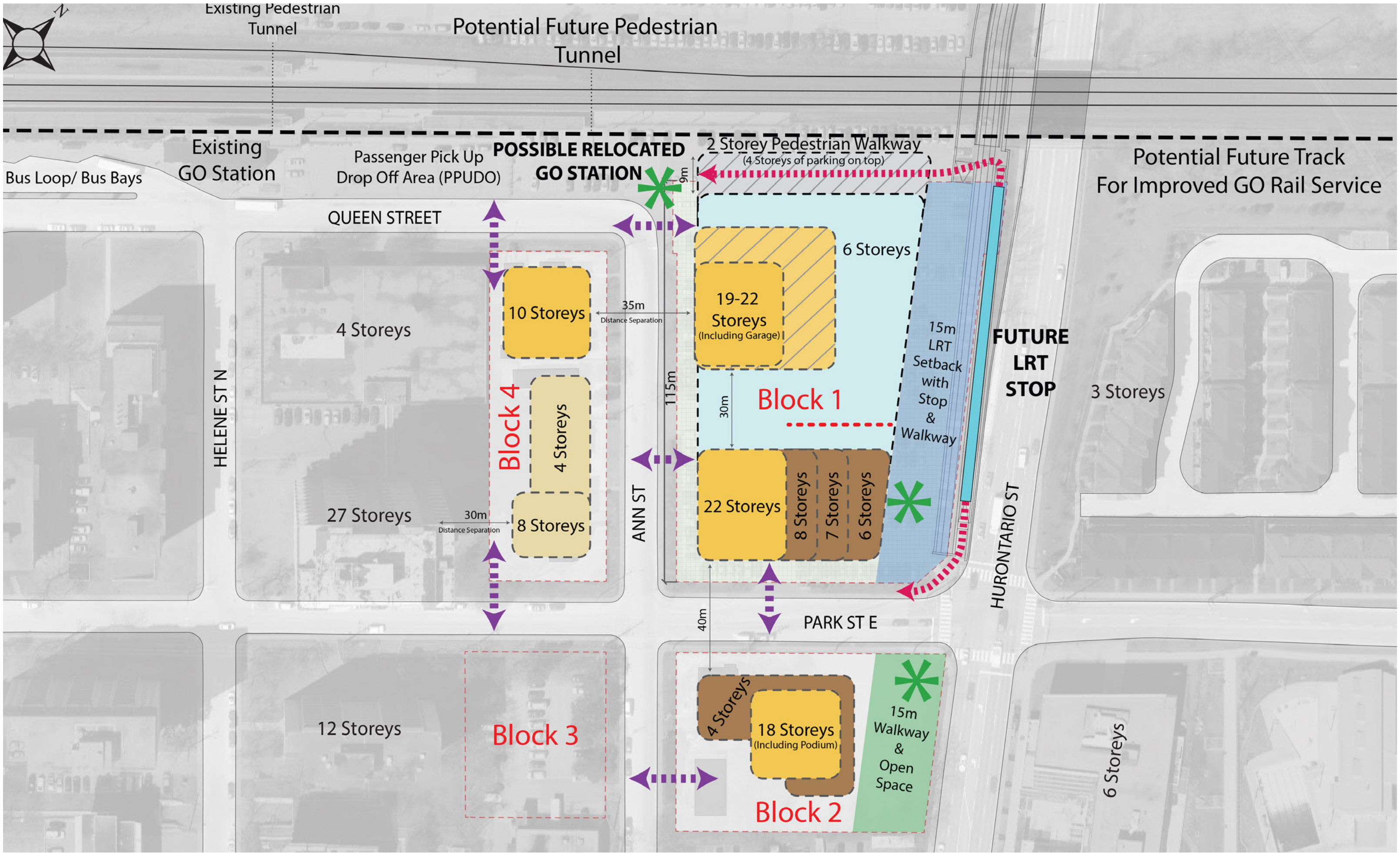
The conceptual development plan does show an 18-storey building on Block 2 and a 10-storey building on Block 4 which reflects:

- The level of intensification envisioned for Community Nodes and policies that direct the tallest buildings in Port Credit to be closest to the GO Station, with a step down in height towards the waterfront; and
- The size and configuration of the blocks, which will make it challenging to accommodate a 22-storey tower and adequate parking.

Further analysis will be necessary to determine if Blocks 2 and 4 can accommodate buildings up to 22 storeys. As noted, one of the three properties comprising Block 2 is listed on the City's Heritage Register and the two properties abutting the block to the south are designated under the Ontario Heritage Act. Three of the six properties comprising Block 4 are listed on the City's Heritage Register. Provincial and municipal heritage policies will continue to apply to the Master Plan lands and applicants will be required to properly study and address heritage as part of the development review process.

The individual properties and existing dwellings on Blocks 2 and 4 can still help support the vision for the Master Plan Area. The Mixed Use designation allows for a range of uses, including office, commercial and retail. Through moderate redevelopment or adaptive re-use, these properties can contribute to the employment objectives for the area and help animate the street.

With land assembly and no heritage constraints, up to four towers could be accommodated within the Master Plan Area; two towers on Block 1, one tower on Block 2 and one tower on Block 4.



Legend

Potential Placemaking Opportunities *

Potential Pedestrian Circulation

Potential Vehicular Access Points

Potential Development/Built Form

Block 1	Floor Plate(sq m)	Floors	GFA(sq m)
Tower	800-2,200	13-16 (Total building height of 19-22)	12,800
GO Parking Structure	5,000	6 (+ 2 Flrs Below)	30,000
Mid-rise	950	6-8	5,580
Tower	750	22	16,500
Subtotal:			64,880
Block 2			
Tower	750	14 (Total building height of 18)	10,500
Podium / Mid-rise	800	4	3,200
Subtotal:			13,700
Block 4			
Tower	775	10	7,750
Low and Mid-rise	1,300	4-8	7,050
Subtotal:			14,800
TOTAL (Includes above-grade parking structure):			**93,380**

Figure 18. Illustrative Development Concept Plan for the Port Credit GO Station Southeast Area

The following provides a brief description of the illustrative development concept plan, 3-D model and demonstrative views prepared for the Study (see **Appendix C** for additional images).

Block 1

Metrolinx generally seeks to provide a minimum separation distance of 30 metres (horizontal and vertical distance combined) between the rail corridor and high occupancy uses, such as residential and office. The 800-space GO Transit parking structure is shown positioned alongside the rail corridor, making use of generally inhabitable space. A preferred approach for providing a direct connection between the future HMLRT stop and the GO Transit Station and platforms is shown. An internal or external mid-block connection could be further explored.

Heights of six to eight-storeys are shown along Hurontario Street, which reflect the generous width of the right-of-way and will help provide an appropriate transition between future towers to the west and the existing townhouses to the east (see **Figure 19**). The two towers shown on Block 1 were modeled using typical residential floor plates. Office buildings generally have larger floorplates and additional consideration to shadow and view impacts would be required if a tall office building is pursued. The concept assumes that parking for residential, office and commercial/retail uses will be provided within several levels of below-grade parking.

The potential for placemaking and public realm improvements along Hurontario Street are shown (see **Figure 20**). Retail serving transit users is likely the most viable at the intersection of Ann Street and Queen Street, given the grading challenges along Hurontario Street, anticipated pedestrian movement and volumes, market and operational requirements. A relocated GO Station could act as a gateway feature at the terminus of Ann Street.

Block 2

A continuation of the wide public realm is shown southward along the west side of Hurontario Street, with a placemaking opportunity at the southwest corner of Hurontario Street and Park Street. As noted, a building up to 22 storeys may be feasible and appropriate, subject to further study. Should the City decide to sell or redevelop its lands, it should consider a design competition to explore options.

Block 4

The illustrative concept shows full block redevelopment, with a mix of low, mid and high-rise buildings. The type, height and timing of new development depends on a number of factors, including the outcome of heritage reviews and land assembly. Opportunities to animate Ann Street and provide a unified approach to streetscape should be pursued.

The height of six to eight-storeys shown along Hurontario Street reflect the generous width of the right-of-way and will help provide an appropriate transition between future towers to the west and the existing townhouses to the east.

Conceptual Western Bird's Eye View - Illustrating Existing and Potential New Development and Seamless Connections between the Future HMLRT and the GO Station

Conceptual Hurontario Street Cross-Section - Illustrating Planned Uses and Activities within the Wide Right-Of-Way and Interface/ Transition between Building Heights

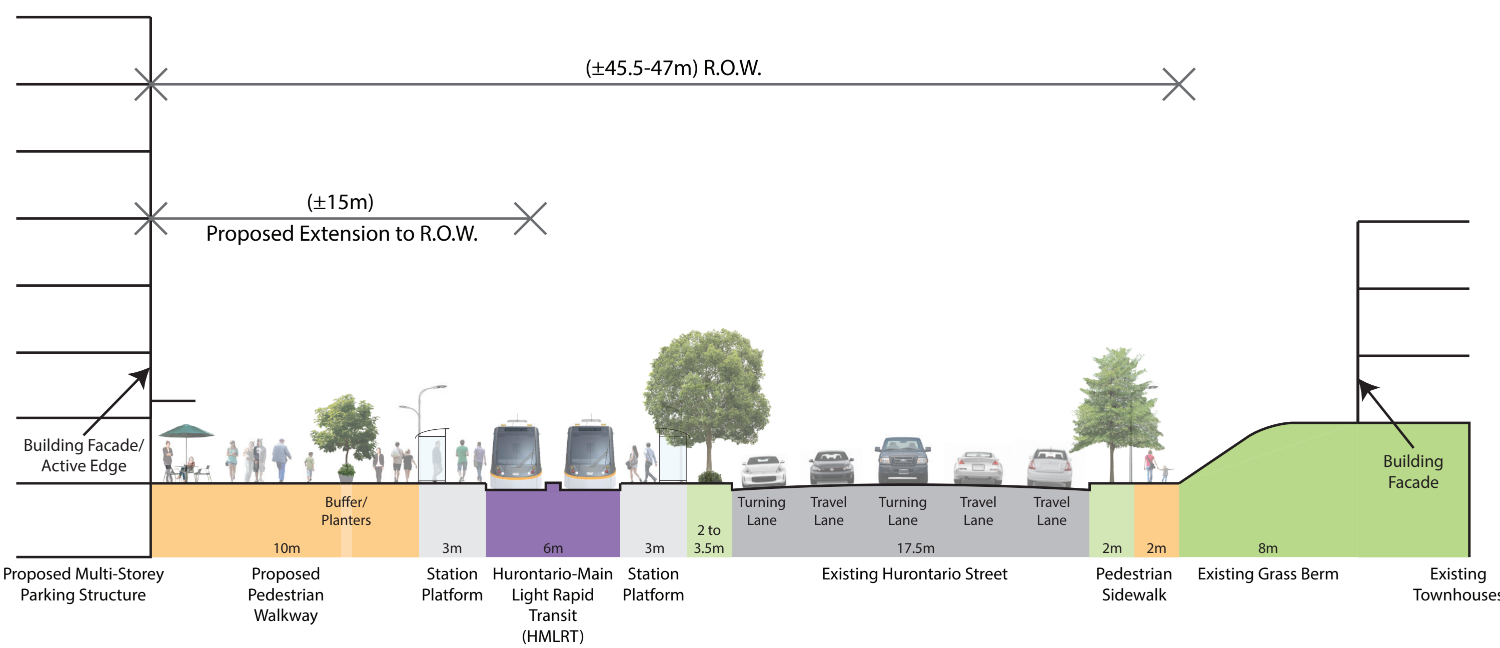


Figure 19. Potential Interface between Future and Existing Development on Along Hurontario Street

Conceptual View from Hurontario Street Sidewalk Looking South – Illustrating the Opportunity for an Attractive Public Realm and Integration of Multi-Modes of Transportation

Conceptual View from Hurontario Street Sidewalk Looking North – Illustrating the Opportunity for a Concentrated Mix of Uses and Public Amenities

Figure 20. Conceptual Demonstrative Views of Potential Redevelopment and Streetscape along Hurontario Street

7.4 Built Form Principles

Six key principles were established to provide further direction on appropriate built form for new development within the Port Credit GO Station Southeast Area (see **Figure 21**).

1. Multi-Modal Connectivity with Pedestrian Priority
Multi-modes of transportation will be accommodated with direct and accessible transfers between various transit modes and routes. Priority will be given to pedestrian comfort and safety, with the provision of inviting and comfortable spaces, appropriate sizing and treatment of sidewalks and walkways, thoughtful location of seating, wayfinding and signage and other traveler services and amenities. Special care must be taken along Hurontario Street, where a significant change in grading poses physical and design challenges.

2. Public Realm
The provision of an interesting and engaging public realm can encourage walking and cycling and make transit systems more attractive to potential users. Existing heritage resources contribute to the special character of the area. High quality public streetscapes with large sidewalks, pedestrian amenities, such as weather protection, public art and opportunities for placemaking will help contribute to the liveliness of the Port Credit GO Station Area.

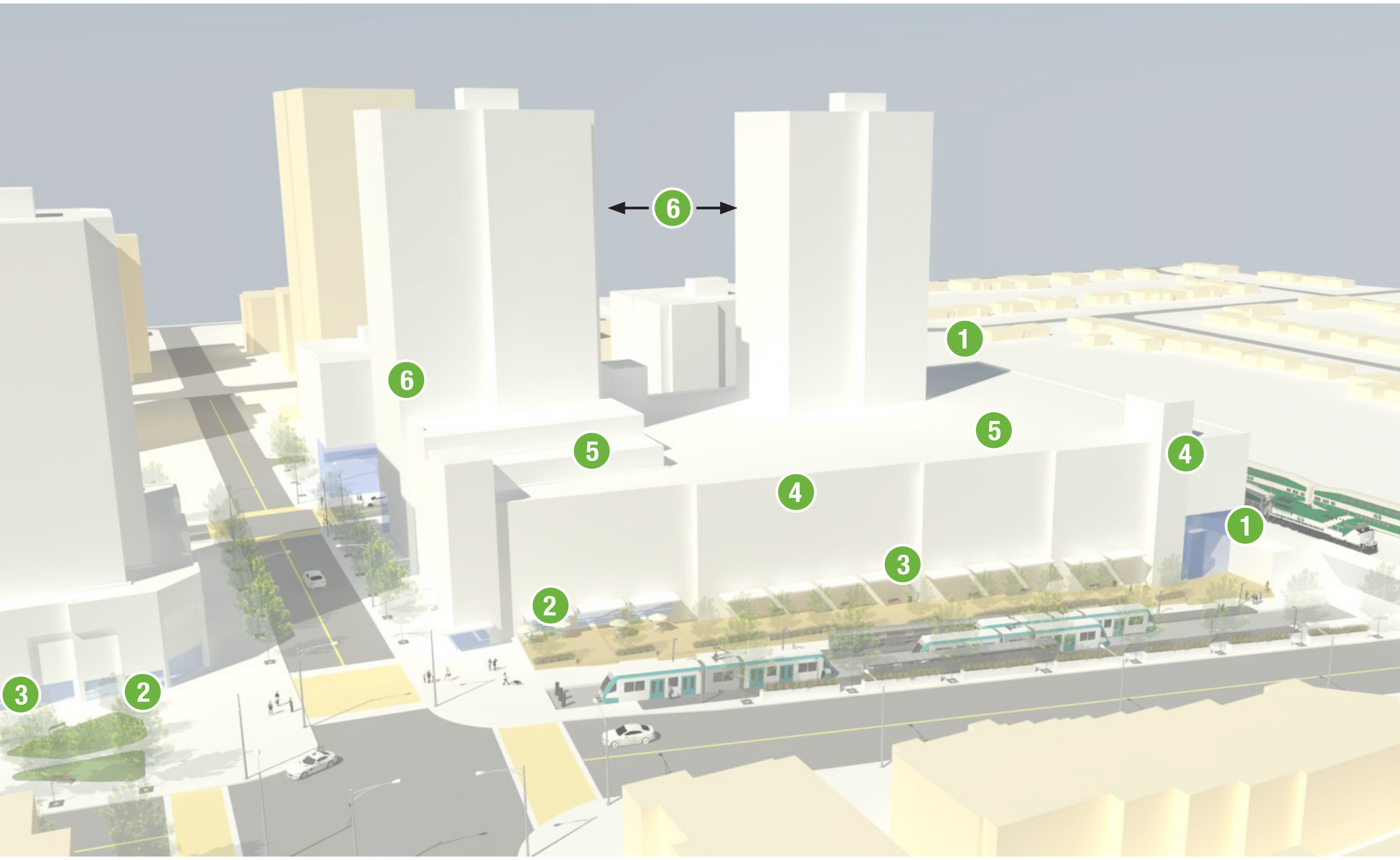
3. Animated Edges
Active street edges, with a mixture of ground-level uses, transparent or articulated façades, landscaping, public art and other building features should be provided along main streets, key intersections and transit infrastructure to ensure high-quality pedestrian environments and to encourage use of the public realm.

4. Massing and Façade Articulation
Building scale should be modulated and broken down through the generous use of stepping, projections, canopies, trellises, changes in scale, fenestration patterns, materials and finishes. This is especially critical for large buildings such as multi-level parking structures and new development within proximity to heritage resources. Special consideration should be given to façade treatment at key view points and gateway locations.

5. Roof Treatments
The careful design of upper floors of buildings and roof tops can help minimize ecological footprints, protect views and provide outdoor amenity spaces.

6. Vertical Elements and Separation Distance Between Towers
The placement and orientation of tall buildings should contribute to the skyline of Port Credit. Towers should be slender, to minimize negative impacts such as shadow and loss of views. They should have elements that relate to the ground to achieve a human scale.

High quality public streetscapes with large sidewalks, pedestrian amenities, public art and opportunities for placemaking will help contribute to the liveliness of the Port Credit GO Station Area.

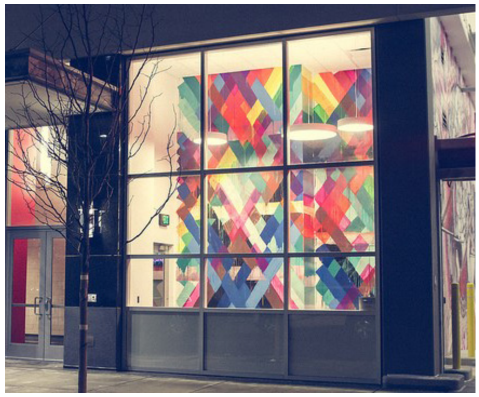


1 Multi-Modal Connectivity with Pedestrian Priority

- Seamless integration between various modes of transit, pedestrians, cyclists and automobiles.

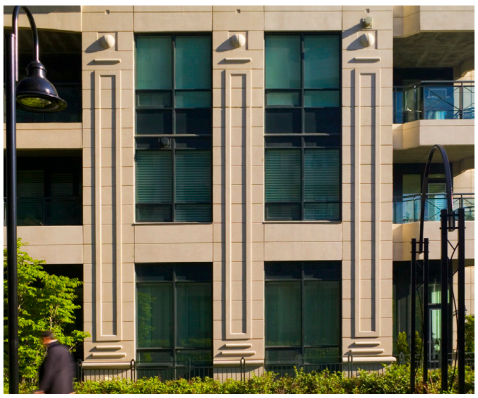
2 Public Realm:

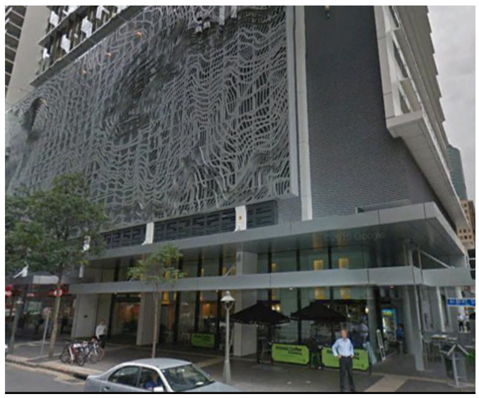
- An engaging public realm that encourages walking and cycling.
- High quality streetscapes.



3 Animated Edges:

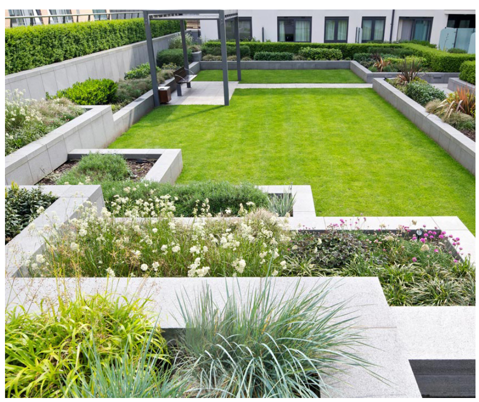
- Active street edges, with a mix of ground floor uses and features.
- Transparent and articulated façades with prominent entrances.





4 Massing and Façade Articulation:

- A mix of vertical and horizontal elements to break up building volume.
- Use of fenestration, variation in building materials and public art.



5 Roof Treatments:

- Green roofs.
- Upper storey setbacks.

6 Vertical Elements and Separation Between Towers:

- Placement and orientation of buildings should maximize sky views.
- Built form to relate with human scale.

Figure 21. Key Design Principles for the Port Credit GO Station Southeast Area

7.5 Recommendations

The following recommended policies and guidelines are intended to apply to all lands within the Port Credit GO Station Southeast Area, including Block 3, should it be redesignated in the future. They should be read in conjunction with the provisions of documents such as, but not limited to, the Mississauga Official Plan and Port Credit Local Area Plan, the Port Credit Built Form Guide, the Metrolinx Mobility Hub Guidelines for the GTHA, the Metrolinx-GO Transit Adjacent Development Guidelines and the GO Design Requirements Manual.

7.5.1 Policies

- Maximum building heights of 22 storeys are permitted throughout the Master Plan Area, with the exception of lands fronting Hurontario Street, if the tower component of a building is primarily residential. Maximum building heights of 19 storeys are permitted where the tower component constructed primarily for office or institutional purposes and is to have greater floor to ceiling heights (see **Figure 22**).
- Residential and non-residential buildings fronting Hurontario Street shall be no more than 8 storeys, with a stepback consistent with a 45° angular plan generally required after 6 storeys.

  The maximum permitted height of buildings fronting Hurontario Street may be exceeded by 1 storey for every storey of additional office use provided beyond the recommended minimum requirement, up to a maximum of 2 storeys. The ability to achieve up to 10 storeys along Hurontario Street will require a proponent to provide further built form, design and planning justification, to the satisfaction of the City.
- All buildings shall be a minimum of 2-storeys.
- Variation in building heights and form, including the position of towers, should be achieved.

Legend

Port Credit GO Station Southeast Area (Site 12)

Notes

Black: Existing minimum and maximum height permissions as per Schedule 2B of the Port Credit Local Area Plan (2014)

Red: Proposed minimum and maximum height permissions

As per Section 1.1.4 of the Mississauga Official Plan (2014), the locations of the boundaries shown are approximate and not intended to define the exact locations.

Figure 22. Recommended Minimum and Maximum Building Heights for the Port Credit GO Station Southeast Area

- A minimum of 30 metres shall be provided between any portion of a building that is 8 storeys or higher to another building that is 8 storeys or higher.
- The maximum size of residential floor plates beyond the 15th floor shall generally be 800 square metres or less.
- Long or full block buildings will be permitted but the provision of internal or external mid-block connections are encouraged where possible and long or full block buildings shall generally provide variation in the facade to break up the massing (e.g. physical vertical recesses, changes in materials or other forms of articulation).
- Above-grade parking structures must be contextually sensitive and provide for visual interest and elements that contribute to the streetscape, such as space for office, retail/commercial or community uses, services for transit users (e.g. ticketing, interactive information boards and service kiosks), building entrances, community display cases, public art, street furniture and landscape features (see **Figure 23**). Generally, a higher proportion of the building envelop that faces a public street or gateway entry point should be animated at street-level than not. The target is to achieve visual interest and streetscape improvements animation, on each elevation of an above-grade parking structure, with a target of generally providing animation at street level along 2/3^{rds} of a building envelope.
- Development applications shall demonstrate how a seamless integration of modes of travel and access is achieved, especially at-grade and on the lower floors of buildings.

1. Occupied Retail Commercial, or Office

2. Retail or Service Kiosks

3. Transit Information and Ticketing

4. Prominent Building Entrances

5. Community Display Cases and Public Art

6. Landscaping and Street Furniture

Figure 23. Examples of Street-Level Animation

7.5.2 Guidelines

1. Multi-Modal Connectivity with Pedestrian Priority

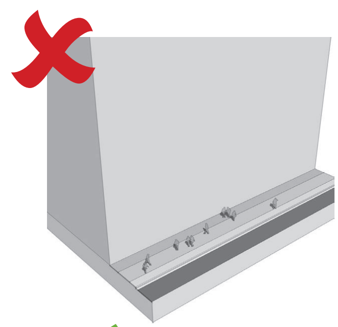
- Provide seamless integration between various modes of transit at the Port Credit GO Station by way of short, direct, comfortable and accessible connections.
- Provide well-designed station infrastructure for a high quality user experience.
- Develop a block structure that balances site circulation patterns with the emphasis on pedestrian movements. Where feasible, provide for mid-block connections (external or internal).
- Provide continuous pedestrian weather protection along the base portion of all buildings that have active uses or are on route to transit facilities (e.g. use of canopies, shelters and street trees).
- Use special paving and materials, such as coloured concrete, 'stamped' concrete, coloured pavers, paving blocks or coloured and stamped asphalt to identify high pedestrian traffic zones or community elements such as plazas and parkettes. The choice of paving material and design should minimize uneven surfaces to ensure pedestrian comfort, safety and ease especially for people with physical disabilities.
- Provide universal design features along sidewalks and walkways that are suited to users with visual limitations, such as textured banding, bus stop detection strips, and corner curbs and ramps.
- Emphasize the use of colour, light, street furniture and natural materials to counter dreary effects of winter days and nights.
- Minimize public/private driveway crossings over pedestrian circulation routes. Where feasible, locate vehicular access points off rear laneways and consolidate parking within above or below-grade parking structures.
- Incorporate stairwells within parking structures with glass or transparent openings for visibility purposes.

2. Public Realm

- Prioritize pedestrian movement by providing an attractive, interesting and comfortable walking experience, accommodating an appropriate balance between movement and amenities and minimizing/consolidating vehicular access points.
- Site buildings on Park Street and Ann Street to provide an adequate setback for sidewalks, landscaping that includes mature trees, and street furniture to allow for easy and unobstructed pedestrian movement. Setbacks from the property line may range from 0 to 6 plus metres, depending on the planned function of the street and the anticipated volumes of pedestrian traffic.
- Undertake new sidewalks and streetscape enhancements along Ann Street and Park Street in concert with the design of the LRT and multi-use path along Hurontario Street. Coordinate landscaping, seating, shade structures, public art, bike posts, rings or racks, waste and recycling and other related site furnishings as appropriate.
- Strengthen the connection between people and the places they share by incorporating placemaking into new developments (e.g. outdoor seating, plazas, parkettes and flexible areas which can accommodate a range of uses and activities).
- Opportunities should be sought to integrate heritage resources, if appropriate, to help preserve and enhance the special character of the area.

3. Animated Edges

- Provide for street-level animation and ground floor activity by maximizing transparency and minimizing blank walls. Animation can be achieved by incorporating active ground floor uses (e.g. space for office, retail/commercial or community uses, services for transit users and flex space), prominent building entrances, fenestration, community display cases, public art and landscaping.
- Orient buildings close to the Hurontario Street, Park Street and Ann Street frontages to reinforce the street edge, while ensuring sufficient space for pedestrian movements to access transit.
- Ensure buildings at the Hurontario and Park Street intersection have active edges with street-fronting uses, transparent wall elevations and prominent entrances to the building.
- Locate principal building entrances so that they are clearly visible and directly accessible from the public sidewalk.
- Provide glass or transparent entry points and stairwells within parking structure.



4. Massing and Façade Articulation

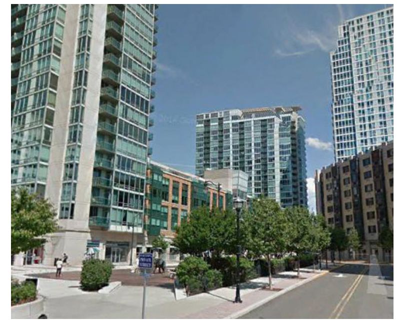
- Incorporate a mix of vertical and horizontal elements to break up the volumes of large buildings.
- Ensure that taller buildings have slender tower forms with a defined base, middle and top sections in the wall elevations.
- Design building heights and massing to limit shadow and wind impacts on public spaces and adjacent properties.
- Set upper storeys back from Hurontario Street so that the streetscape edge complements the height and character of surrounding buildings. Special consideration should be given to the interface between new development and heritage resources, including the provision of appropriate setbacks and transition in heights.
- Reinforce and emphasize the "landmark" nature of the Port Credit GO Station area by featuring the highest quality architecture and innovation in its design features.
- Use a mix of quality materials, fenestration and recessed/in integrated balconies to articulate the façade of buildings.
- Provide an appropriate transition in colour, materials and texture to soften building mass, add visual depth to the building elevation and mitigate against noise and light pollution.
- Integrate the design and siting of parking structures shall with the surrounding context, in terms of a complementary urban scale, massing, design character and treatment of the public realm, including appropriate landscaping. Exterior treatments and materiality shall be informed by civic considerations, utilizing large-module, high-quality cladding panels, selected for their ability to reduce the visual impact of the parking structure in the public realm, while adding visual interest.

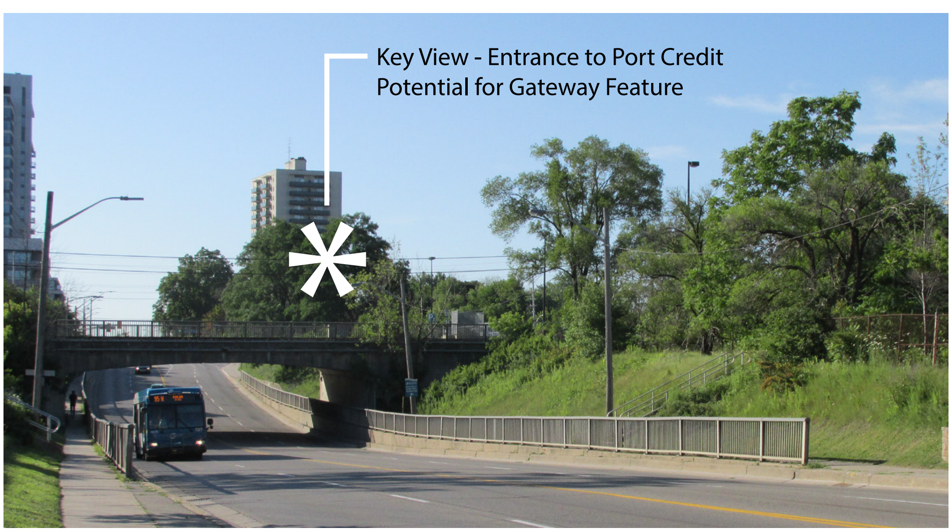
5. Roof Treatments

- Provide green roofs to help reduce stormwater run-off, increase building heating and cooling efficiency, reduce energy consumption and create outdoor amenity space.
- Reduce the urban heat island effect by minimizing the extent of paved surfaces and encouraging the use of light coloured materials, particularly on roof surfaces.
- Provide stepbacks of upper storeys from the base portion of buildings to provide additional physical separation of upper storeys from the street and surrounding buildings.
- Integrate roof top mechanical structures into the design of buildings or clad mechanical penthouses with materials to compliment the building façade.

6. Vertical Elements and Separation Distance Between Towers

- Design and space vertical tower building mass and height to minimize negative environmental effects, such as overshadowing of public spaces and creating wind tunnels.
- Design buildings over 10 storeys as tall, slender towers, rather than bulkier, squat buildings. Residential floorplates should be no more than 800 sq. m. after the 15th floor.
- Provide a minimum 30 metre separation distance between buildings over 8 storeys in height to maintain sky views and minimize shadow impact and oversight.
- Limit visual and shadowing impacts of the built form on surrounding buildings and streets through building setbacks.
- Generally buildings shall have a step back after the 6th storey.
- Ensure height to width ratios that create a human scale on Hurontario Street, Ann Street and Park Street frontages and an environment that is comfortable to people and encourages walking. An appropriate street wall height will help maintain a human scale at the sidewalk, ensuring adequate sunlight, sky view and ventilation.
- Provide variation in height and built form, including, where appropriate, off setting height and density in a block by maintaining or incorporating listed heritage buildings.
- Ensure top floors of tall buildings contribute to the city skyline through special architectural treatment, particularly for any towers/ buildings at the Ann Street and Park Street intersection.
- Where appropriate, establish gateway features to help identify the Port Credit GO Station as a major destination.
- Consideration should be given to designing the north façade of a parking structure on Block 1 as a gateway feature. Given the grading of Hurontario Street and the likely removal of some mature trees within the right-of-way to facilitate the HMLRT, future development on Block 1 will be highly visible as one enters the Port Credit area by transit, bicycle, foot or car.





Potential Redevelopment Tested for the Master Plan Study Area	
Site	
1	225 residential units; 1,250 sq.m retail & 13,200 sq.m office
2	112 residential units & 200 sq. m. retail
3	No new development, continuation of Bell Canada utility operations
4	149 residential units & 500 sq. m. of retail

Note: For the purposes of testing potential traffic impacts ('worst case scenario'), full build-out by 2031 was assumed with the northern tower on Block 1 being office.

Potential Redevelopment Tested for Sites Elsewhere in the Port Credit Community Node Character Area	
Site	
5	66 residential units & 180 sq.m retail
6	60 residential units & 180 sq.m retail
7	66 residential units
8	66 residential units
9	20 residential units & 180 sq.m retail
10	56 residential units; 1,905 sq.m retail & 2,301 sq.m office
11	110 residential units & 900 sq.m retail
12	583 sq.m bank; 670 sq.m restaurant & 2,109 sq.m office
13	750 residential units & 9,887 sq.m non-residential*

Note: Based on planned (approved) development applications, active development proposals and estimates provided by the City of Mississauga for other potential redevelopment sites.
*For the purposes of testing potential traffic growth, it was assumed that half of the proposed redevelopment for site 13 (Canada Lands/Inspiration Port Credit) would be built by 2031.

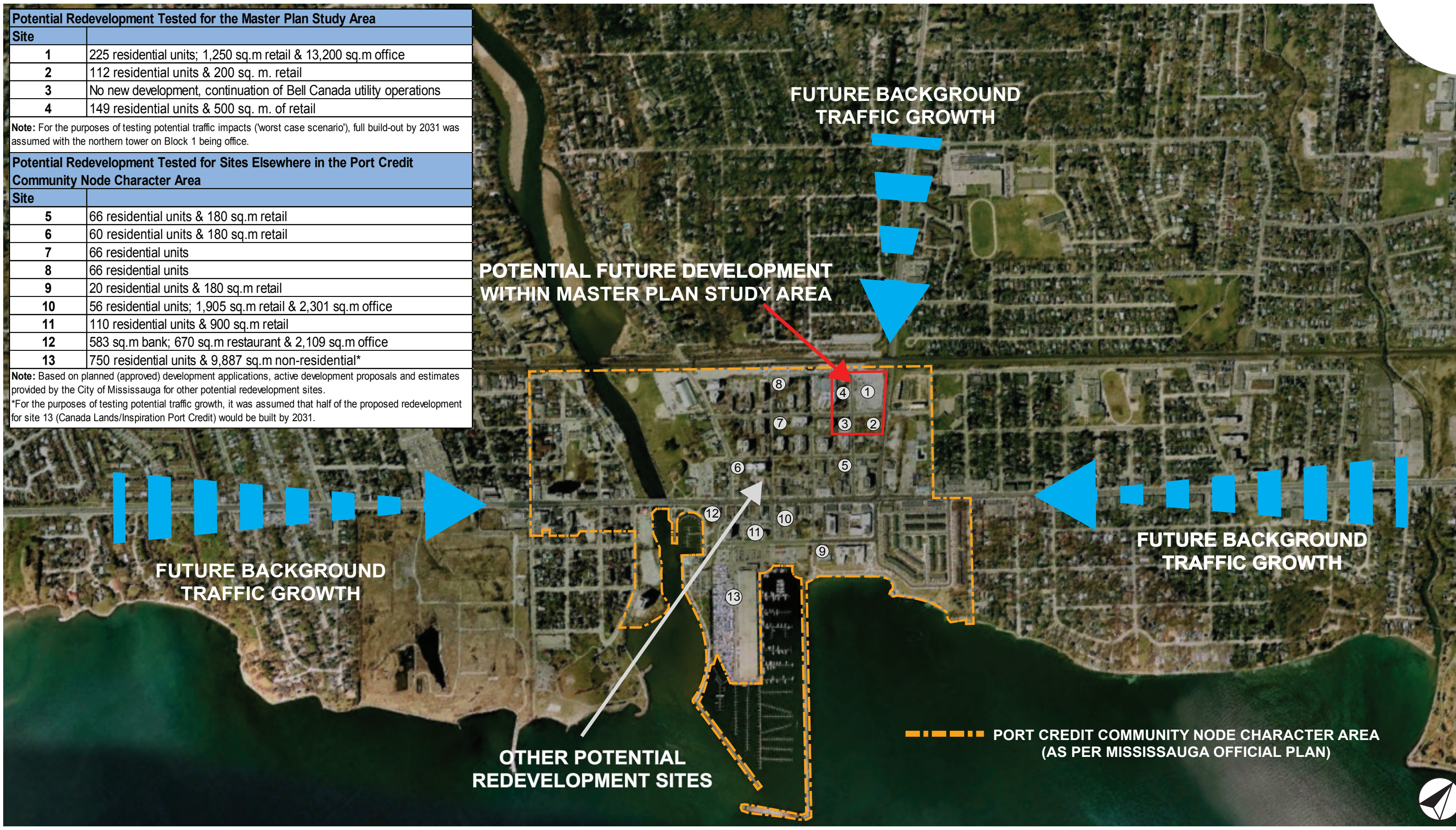


Figure 24. Traffic Impact Study Area

8.0 Transportation

A transportation assessment was undertaken as part of the Master Plan Study that considered not only the impact that potential future development within the Port Credit GO Station Southeast Area may have on the local road network, but also the impact of development which may occur elsewhere in the Port Credit Community Node and beyond (see **Figure 24**). Specifically, the traffic assessment assumed that 12 sites would be developed and generating traffic by 2031:

- The Port Credit GO Station Southeast Area (sites 1-3);
- Two properties that were recently rezoned for mixed-use development (sites 10 and 12);
- One property with an active development application (site 5);
- Inspiration Port Credit, for which a Master Plan Study is currently underway (site 13); and
- Five sites identified by the City as potential candidates for future redevelopment/intensification, all of which currently are developed and some would require land assembly to facilitate intensification (sites 6, 7, 8, 9, 11).

The traffic impact analysis also factored in how development outside of Port Credit would impact the local road network (i.e. background traffic).

The development yield shown in the conceptual development plan prepared for the Port Credit GO Station Southeast Area was tested (i.e. approximately 93,000 sq. m. of gross floor area, which includes a GO Transit parking structure that will provide additional 400 parking spaces). Given the future HMLRT is intended to run along the west side of Hurontario Street, no vehicular access points are anticipated along the eastern frontage of Block 1. Access to the GO Transit parking structure will likely be off Ann Street. Depending on the land use mix and further traffic analysis undertaken as part of the rezoning process, access points for mixed- use development on Blocks 1 and 2 could be off Ann Street and/or Park Street. With land assembly on Block 4, a rear driveway or access lane could be introduced which would help minimize the number of driveway cuts and traffic volume on Ann Street.

From a traffic-generating perspective, a worst case scenario approach was assumed whereby one of the towers on Block 1 would be office. Office uses generate higher volumes of AM and PM peak period traffic than residential uses. A conservative approach to modal split was also taken. Even though the lands hold great potential to attract users and occupants who largely use transit, walking and cycling, the analysis assumed between 50 and 55% of future trips would be taken by car during travel peak periods.

The transportation assessment concluded the local road network can accommodate full build-out of the Port Credit GO Station Southeast Area, as well a considerable amount of redevelopment and intensification elsewhere within the Port Credit Community Node.

The assessment concluded that the local road network can accommodate full build-out of the Port Credit GO Station Southeast Area as well a considerable amount of redevelopment and intensification elsewhere within the Port Credit Community Node (see **Appendix D** for the full traffic assessment report).

During peak traffic periods, intersections are expected to operate under capacity without lengthy delays, with a few exceptions:

- Eastbound through, westbound through and northbound left-turn at Stavebank Road and Lakeshore Road (PM peak);
- Eastbound left-turn at Hurontario Street and Lakeshore Road (PM peak); and
- Southbound through at Hurontario Street and Eaglewood Boulevard (PM peak).

For the few signalized intersections with capacity problems, one of the sources of the operational concerns stem from the large background traffic originating from outside of Port Credit. The Lakeshore Road Master Plan will be examining traffic in this area and offering recommendations.

The impact new development may have on local bus service was considered. Current available MiWay bus data was utilized for the review, although with the introduction of the HMLRT there will likely be fewer buses servicing the area and using the Port Credit GO Station bus loop. Under the worse case traffic scenario, where full development of the Port Credit GO Station Southeast Area occurs by 2031 with a considerable amount of new office space, the following intersection delays could impact MiWay bus operations:

- Elizabeth Street / Park Street: increase in waiting time of 1 second (AM and PM Peak);
- Ann Street / Queen Street: increase in waiting time of up to 17 seconds and up to 9 seconds (PM Peak); and
- Ann Street / Park Street: increase in waiting time of up to 30 seconds (AM Peak) and up to 4 seconds (PM Peak).

These impacts are considered to be acceptable but opportunities to reduce the delay time at Ann Street and Park Street could be explored by the City of Mississauga and MiWay, such as:

- Redesigning the intersection as part of the Block 1 development to include a queue jump lane to be used by transit vehicles only; and
- Converting Queen Street to two-way, east-west operations (instead of one-way, westbound operations only), with eastbound movements for transit vehicles only. This would need to be tested and designed in a manner to accommodate buses and their turning movements.

Both Metrolinx and the City of Mississauga are committed to reducing automobile dependency and support a variety of transportation demand management (TDM) tools.

8.1 Objectives

Both Metrolinx and the City of Mississauga are committed to reducing automobile dependency and support a variety of transportation demand management (TDM) tools. Examples include improved infrastructure and facilities to support transit users, pedestrians and cyclists, minimizing surface parking lots, pricing strategies, promoting shared parking and reduced parking requirements for transit-oriented development.

The City of Mississauga does not have official reduced parking standards for new development in Mobility Hubs or Major Transit Station Areas.

Right-sizing of commuter parking is critical to meeting transit user needs and maximizing development and ridership potential at Major Transit Stations. Through customer surveys, monitoring and findings from the GO Transit Rail Parking and Station Access Strategy (2013), Metrolinx has determined that an additional 400 parking spaces are required at the Port Credit GO Station to satisfy current and future GO Transit customer demand. The construction of parking structure on the southwest GO Transit surface parking lot will not only provide the much needed additional customer parking, but also free up land for transit-supportive, mixed-use development.

The construction of parking structure on the southwest GO Transit surface parking lot will not only provide the much needed additional customer parking, but also free up land for transit-supportive, mixed-use development.

8.2 Recommendations

The following recommended policies and guidelines are intended to apply to all lands within the Port Credit GO Station Southeast Area. They should be read in conjunction with the provisions of the Mississauga Official Plan and Port Credit Local Area Plan, the Port Credit Built Form Guide, the Metrolinx Mobility Hub Guidelines and other provincial, regional and municipal plans and strategies pertaining to transportation.

8.2.1 Policies

- Development applications shall demonstrate how transit use, cycling, car and bike sharing, car pooling, charging stations for electronic vehicles, shared parking and other travel demand management measures will be achieved.
- Reduced, transit-supportive parking standards are encouraged for future development within the Port Credit GO Station Southeast Area. Through the rezoning process, applicants are to provide a parking study to justify the appropriateness of the specific parking standards being proposed.

8.2.2 Guidelines

- Reduced parking standards for future development within the Port Credit GO Station Southeast Area could be in the range of:

	Existing Parking Requirements City of Mississauga Zoning By-law 0225-2007 (TABLE 3.1.2.1)	Proposed Parking Requirements Transit-Supportive
Residential	Condominium Apartment Dwelling: bachelor unit: 1.0 one-bedroom unit: 1.25 two-bedroom unit: 1.40 three-bedroom unit: 1.75	Condominium Apartment Dwelling: bachelor unit: 0.7 one-bedroom unit: 0.8 two-bedroom unit: 0.9 three-bedroom unit: 1.0
Residential Visitor	Visitor spaces per unit within a Condominium Apartment Dwelling: 0.2	Visitor spaces per unit within a Condominium Apartment Dwelling: 0.15 Consideration should be given to shared parking, since the typical peak periods for visitor parking are weekday evenings and weekends and this is generally opposite to the peak period for office uses and some retail/commercial uses.
Office	3.2 spaces per 100 sq. m. of GFA	2.0 spaces per 100 sq. m. of GFA.
Medical Office	6.5 spaces per 100. sq.m. of GFA	4.0 spaces per 100 sq. m. of GFA
Retail Store	5.4 spaces per 100 sq. m. of GFA	2.5 spaces per 100 sq. m. of GFA, with opportunities for further reduced parking or no on-site parking for small, service-oriented retail that is primarily intended to serve transit users.
Restaurant	16.0 spaces per 100 sq. m. of GFA	9.0 spaces per 100 sq. m. of GFA.
Restaurant, Take-Out	6.0 spaces per 100 sq. m. of GFA	3.0 spaces per 100 sq. m. of GFA.
Parking requirements for the above-noted uses, as well as other non-residential uses, could potentially be reduced further if it can be demonstrated that the GO Transit parking structure or another local parking structure or parking lot has surplus parking that could be made available during the weekday peak periods or during off-peak periods evening and weekend periods.		

- Surface parking should be minimized.
- A reciprocal shared parking agreement between the City of Mississauga, Metrolinx and other landowners/developments that provide substantial amounts of parking should be explored. Such agreements could be limited to special periods or events (e.g. community festivals) or off-peak periods.
- Metrolinx shall explore the implementation of commuter parking pricing, incentives for car pooling and alternative fuel vehicles.
- Metrolinx shall continue to monitor commuter parking requirements at the Port Credit GO Station and if there is a decrease in demand, it should explore opportunities for the redevelopment of its surface parking lots or reuse of the parking structure.
- A range of traveler services and amenities should be provided for either at or within close proximity to the Port Credit GO Station and the future HMLRT stop, such as secure storage facilities for bicycles, car share drop-off areas, charging facilities for electric vehicles, heated waiting areas and information facilities for travelers and complementary retail/commercial uses.

Official Plan Amendment/Rezoning/Subdivision Application Checklist

Development Application Review Committee (DARC)
List of Required Information/Studies

- □ Development Application Review Checklist
- □ Notice sign erected on-site
- □ Complete Application Form and Fee, which includes:
  - Environmental Site Screening Questionnaire and Declaration
  - Tree Injury or Destruction Questionnaire and Declaration
  - Acknowledgement of Public Information
  - Payment of Fees
- □ Planning Justification Report
- □ Draft Official Plan Amendment
- □ Draft Zoning By-law
- □ Draft Plan of Subdivision or Condominium
- □ Urban Design Study
- □ Arborist Report (Tree Survey/Preservation Plan)
- □ Parking Use Study
- □ Sun/Shadow/Wind Study
- □ Environmental Impact Study *(type to be determined following a site visit prior to application submission)*
- □ Slope Stability Study/Top of Bank Survey
- □ Downstream Erosion Impact Report Investigation
- □ Functional Storm Drainage Report
- □ Storm Water Management Study
- □ Streambank Assessment
- □ Implementation for Two Zone Floodplain Policies
- □ Site Remediation Studies, including Phase I Environmental Site Assessment, Phase II Environmental site Assessment, Remedial Work Plan, Site Clean-Up Report, Record of Site Condition
- □ Acoustical Feasibility Study
- □ Vibration Analysis
- □ Air Quality Study
- □ Geotechnical Report
- □ Traffic Impact Study (may be scoped for gapping, signal operations and/or other relevant traffic issues)
- □ Traffic Safety Impact Study
- □ Transit Impact Assessment/Statement
- □ On-Street Parking Analysis
- □ Park Concept Plan
- □ Heritage Impact Statement
- □ Community Needs Assessment
- □ Above and below ground Utility locations (City and Subject Lands)
- □ Utility Plan *(see Terms of Reference)*
- □ Archaeological Assessment
- □ Restrictions on Title
- □ Provide a list of green site and building initiatives in accordance with Green Development Standards.
- □ Draft Wording for Notice Sign
- □ Complete application form for each relevant application – Official Plan Amendment/Rezoning, Plan of Subdivision, Plan of Condominium, Consent – Land Division

*Submit 7 copies of any Studies/Reports.

*in addition to the hard copies required, please submit 2 copies of all documents, images, drawings on disc(s) in PDF format.

Other applications such as site plan, minor variance, part lot control will follow as the application proceeds through the approval process.

All opinions offered by staff are preliminary and based on limited information available. Opinions are subject to change depending on further review of information/studies.

Note: All measurements on all drawings/studies must be in metric.

Date of Meeting: ______________________

Planner: ______________________

Applicant Name: ______________________

____

Location of Site: ______________________

____

Ward: ______________________

□ Other Information: ______________________

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MISSISSAUGA *Leading today for tomorrow*

SITE PLAN APPLICATION: PROCESS GUIDELINES

1.3 SITE PLAN PROCESS FLOW CHART

Under the Planning Act, R.S.O. 1990 c.P, 13, as amended

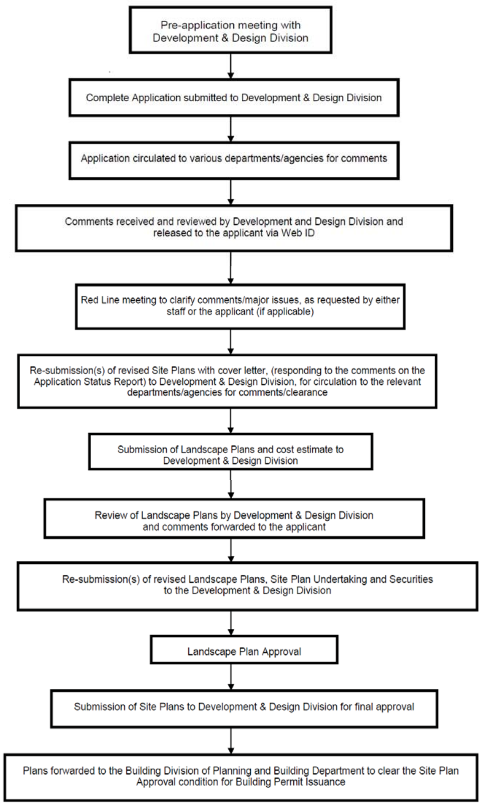

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Figure 25. Examples of Municipal Rezoning and Site Plan Approval Requirements

9.0 Implementation and Phasing

The Master Plan for the Port Credit GO Station Southeast Area clearly articulates built form, land use and transportation expectations, while providing a suitable balance of definitiveness and flexibility to facilitate:

- Public-private partnerships and investment;
- Creativity and innovation;
- Phased implementation and responses to market opportunities and conditions; and
- Integration of all modes of transportation, including future transit infrastructure and services.

The Master Plan will help achieve the objectives of the Mississauga Official Plan and the Port Credit Local Area Plan. It provides additional guidance for the preparation and review of development applications and responses to requests for proposals or design competitions.

Subject to Council endorsement of the Master Plan and/or City staff recommendations, implementation of Council's endorsement shall be through an Official Plan Amendment. Amendments to Section 13.1.12, Schedule 2B of the Port Credit Local Area Plan and other policies are recommended to:

1. Recognize that a Master Plan has been completed for the Site 12 lands; and
2. Implement policy recommendations of the Port Credit GO Station Southeast Area Master Plan (see **Appendix E**).

The Port Credit GO Station Southeast Area Master Plan is the first stage of a comprehensive design and planning approvals process for future development of the lands. Zoning By-law 0225-2007 does not reflect current policy objectives. As such, all of the designated Mixed Use properties will need to be rezoned to permit the increased range of uses anticipated by the Mississauga Official Plan. With a rezoning application, the City may require a number of studies and additional analysis to illustrate the appropriateness of a proposed development (see **Figure 25**).

Development proposals may also be brought to the City of Mississauga Urban Design Advisory Review Panel and be subject to Site Plan Approval. The Site Plan Approval process ensures that the design and technical aspects of a proposed development are functional and compatible with the surrounding area. Site Plan applications may be required to address matters relating to exterior design of buildings (e.g. character, scale, appearance and design features), sustainability and energy conservation.

The Port Credit GO Station Southeast Area Master Plan is the first stage within a comprehensive design and planning approvals process for future development of the lands.

GLOSSARY

Floor Space Index (FSI): Means the ratio of the gross floor area of all buildings on a site to the net developable area of that site. The gross floor area calculated for purposes of floor space index (FSI) is generally measured from the exterior of outside walls, but does not generally include mechanical areas, stairwells, washrooms, elevators, storage, and parking or other items as defined in specific Zoning By-laws. [Source: City of Mississauga Official Plan, 2014]

Gateway Hubs: Key nodes in the regional transportation system located where two or more current or planned regional rapid transit lines intersect and where there is expected to be significant passenger activity (4,500 or more forecasted combined boardings and alightings in 2031 in the morning peak period). [Source: Metrolinx, Mobility Hub Guidelines for the Greater Toronto and Hamilton Area, 2011]

Greater Toronto and Hamilton Area (GTHA): The metropolitan region encompassing the City of Toronto, the four surrounding Regional Municipalities (Durham, Halton, Peel and York) and the City of Hamilton. [Source: Metrolinx, The Big Move, 2008]

Heritage Impact Statement/Heritage Impact Assessment: means a statement that will identify all heritage resources of a property; describe and evaluate their heritage significance; and, evaluate their sensitivity to a proposed development, use or reuse, including, where possible, measures to mitigate deleterious consequences. [Mississauga Official Plan, 2014]

Hurontario-Main Light Rail Transit (HMLRT): A planned new rapid transit line that will bring 23 kilometres of fast, reliable, rapid transit to the cities of Mississauga and Brampton along the Hurontario-Main corridor. [www. http://lrt-mississauga.brampton.ca]

Intensification Corridor: Means the lands within approximately 200 to 300 metres of the centre line of roads identified as having the potential for higher density mixed use development consistent with planned transit service levels. [Mississauga Official Plan, 2014]

Intermodal Transit Hub: Stations or centres where different transit modes come together and allow for easy transfers from one mode to another. They can also facilitate transfers at different scales: local, regional and intercity. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Light Rail Transit (LRT): Streetcar trains (up to three or four cars per train) operating on protected rights-of-way adjacent to or in the medians of roadways or rail rights-of-way. Generally at-grade, possibly with some sections operating in mixed-traffic and/or in tunnels. Electric power is normally via an overhead trolley or pantograph. Capacity of 2,000 to 10,000 passengers per hour in the peak direction, with higher capacities where there are significant stretches of completely segregated rights-of-way. Average speed: 15 to 35 km/h depending on station spacing and extent of grade separation. [Source: Metrolinx, The Big Move, 2008]

Major Transit Station Areas: The area including and around any existing or planned higher-order transit station within a settlement area, or the area including and around a major bus depot in an urban core. Station areas generally are defined as the area within an approximate 500 metre radius of a transit station, representing about a 10-minute walk. [Source: Ministry of Energy and Infrastructure, Growth Plan for the Greater Golden Horseshoe, 2006]

Mobility Hub: Major transit station areas, as defined in the Growth Plan for the Greater Golden Horseshoe, that are particularly significant given the level of transit service that is planned for them and the development potential around them. They are places of connectivity between regional rapid transit services, and also places where different modes of transportation, from walking to high-speed rail, come together seamlessly. They have, or are planned to have an attractive, intensive concentration of employment, living, shopping and enjoyment around a major transit station. To be identified as a mobility hub, a major transit station area must be located at the interchange of two or more current or planned regional rapid transit lines as identified in the RTP, and be forecasted in the RTP to have 4,500 or more combined boardings and alightings in the morning peak period in 2031. In addition, these areas are generally forecasted to achieve or have the potential to achieve a minimum density of approximately 10,000 people and jobs within an 800 metre radius. The primary major transit station area associated with an urban growth centre are also identified as mobility hubs, as are Pearson Airport and Union Station due to their roles as the GTHA's primary international gateways. (For more information see the backgrounder "Mobility Hubs, December 2008"). [Source: Metrolinx, The Big Move, 2008]

Modal Split: The proportion of total person trips using each of the various different modes of transportation. The proportion using any one mode is its modal split. [Source: Metrolinx, The Big Move, 2008]

Multi-modal Streets: Multi-modal streets provide for and balance the needs of different travel modes: pedestrians, cyclists, transit riders, motorists and others. Transportation choice is increased when safe and appealing options for getting from place to place are provided - options to walk and bike provide opportunities for increased community health and reductions in air and noise pollution. Multi-modal streets are part of a network of streets, bicycle paths and walkways with plenty of high quality pedestrian amenities. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Placemaking: Placemaking is a term that began to be used in the 1970s by architects and planners to describe the process of creating squares, plazas, parks, streets and waterfronts that will attract people because they are pleasurable or interesting. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Public Amenities: Public amenities are resources, conveniences, facilities or benefits continuously offered to the general public for their use and/or enjoyment, with or without charge (e.g. restrooms, information displays, public telephones, rain shelters, drinking fountains, etc.). [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Public Realm: Consists of public spaces such as streets, parks and sidewalks. The public realm is also a place where the community can come together through collaborative activities such as street festivals and other programmable activity. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Rapid Transit: Transit service separated partially or completely from general vehicular traffic and therefore able to maintain higher levels of speed, reliability and vehicle productivity than can be achieved by transit vehicles operating in mixed traffic. [Source: Metrolinx, The Big Move, 2008]

Regional Express Rail (RER): High-speed trains, typically electric, serving primarily longer-distance regional trips with two-way all-day service. Regional Express service could have a capacity of 25,000 to 40,000 passengers per hour in the peak direction with trains operating in completely separated rights-of-way, with as little as 5 minutes between trains. Average speed: 50 to 80 km/h with stations two to five km apart. [Source: Metrolinx, The Big Move, 2008]

Regional Rapid Transit Network: The network of Express Rail, Regional Rail, Subway and Other Rapid Transit services identified in Schedules 1 and 2 of the RTP. [Source: Metrolinx, The Big Move, 2008]

Right-of-Way (ROW): Land that is reserved, usually through legal designation, for transportation and/or utility purposes, such as for a trail, hydro corridor, rail line, street or highway. A right of-way is often reserved for the maintenance or expansion of existing services. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Sense of Place: Often used in relation to characteristics that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Streetscapes: The visual elements of a street, including the road, adjoining buildings, street furniture, trees and open spaces, etc, that combine to form the street's character. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Transit-oriented Developments (TOD): Transit-oriented developments (TOD) are 'urban villages' where all residents are within a 5-10 minute walk of quick, efficient public transit and can 'live, work, play, shop and learn' in a pedestrian-friendly environment – without the need of a car. TOD is a planning approach that calls for high-density, mixed-use business/residential neighbourhood centers to be clustered around transit stations and corridors. TOD is considered a "smart growth" strategy, because it addresses the issue of where growth should occur from a sustainability perspective and it coordinates land use and transportation such that both land and infrastructure are used efficiently. As its name implies, TOD is designed to be served by transit rather than or in addition to the automobile. Networks of streets and multi-use paths are also created to provide a walkable and bikeable environment that is conducive to living, working, and shopping in the same area. TOD is focused within a 800m radius of transit stops, with the highest intensity and mix of land uses concentrated within 400 m or adjacent to the station. Land use intensities and densities decrease away from the core area, with transitions included in development plans to ensure compatibility with existing neighbourhoods. [Source: Metrolinx, Mobility Hub Guidelines, 2014]

Tall Building: Means a building having a height greater than the width of the street on which they front. Tall buildings are defining elements in the city structure; becoming icons and landmarks in the skyline and streetscape. They have a greater opportunity and responsibility to contribute towards defining an area's identity and success. Further, when appropriately sited and designed, tall buildings can accommodate transit supportive densities and facilitate the viability of a successful, well used public transit system. [Mississauga Official Plan, 2014]

REFERENCES

Avison Young (2015) 2nd Quarter 2015 Toronto West Office Market Report.

Avison Young Commercial Real Estate (Ontario) Inc. (2015) Retail Feasibility Study, Port Credit GO Station.

Cushman & Wakefield (2015) Marketbeat Office Snapshot Q2 2015.

Cushman and Wakefield (2015) Port Credit Office Market Perspectives.

Cushman & Wakefield (2015) Marketbeat Office Snapshot Q2 2015.

City of Mississauga Economic Development Department (2015) City of Mississauga Economic Indicators.

City of Mississauga Planning and Building Department (2015) 2015 Vacant Lands.

City of Mississauga (2014) Mississauga Official Plan.

City of Mississauga (2014) Port Credit Local Area Plan.

City of Mississauga (2013) Port Credit Built Form Guide.

Hemson Consulting Ltd. (2013) Mississauga Long-Range Growth Forecasts Employment, 2011-2041.

Metrolinx (2008) The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area (GTHA).

Metrolinx (2011) Mobility Hub Guidelines for the Greater Toronto and Hamilton Area.

Metrolinx, City of Mississauga and City of Brampton (2014) Hurontario-Main LRT Project Public Information Centre 3.

Metrolinx (2013) Go Transit Rail Parking and Station Access Strategy.

MMM Group, Greenberg Consultants Inc., NHBC and Via Architecture (2011) Port Credit Mobility Hub Master Plan Study.

SNC Lavalin, Steer Davies Gleave, Dialog and LEA Consulting Ltd. (2014) Hurontario-Main LRT Project, Preliminary Design/TPAP Environmental Project Report 508956-3210-4ERA-0001.

Base Air Photos

City of Mississauga (Cover, Pages 1, 6, 9 and 11 and Figures 1, 8, 9, 10, 13, 17 and 21)

Cushman & Wakefield Ltd. (Figure 7 and Page 21)

Google Earth (Figure 23, Appendix D)

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Port Credit BIA (Page 15)

21st Urban Solutions (Page 41)

www.bikewalklincolnpark.com (Page 40)

www.commons.wikipedia.org (Page 22)

www.ilovepublicspace.blogspot.ca (Page 22)

www.kreepnyc.com (Figure 22)

www.lightrailnow.org (Page 22)

www.speed-xm.com (Page 22)

www.sri-countertech.co.uk (Figure 22)

www.TheMarkVancouver.com (Page 42)

Official Plan Mapping and Schedules
City of Mississauga (Pages 1, 2, 3 and 4, Figures 3 and 15 and Appendix E)

Other Images
IBI Group (Cover, Pages 1 and 41 and Figures 1, 5, 6, 8, 9, 10, 13, 17, 18, 19, 20, 21 and 23 and Appendix D and E)

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APPENDIX A.

Summary of Responses to Stakeholder and Community Input

Appendix A. Summary of How the Port Credit GO Station Southeast Area Master Plan Addresses Stakeholder and Community Questions, Comments and Concerns

As part of the Port Credit GO Station Southeast Area Master Plan, the Study Team consulted with stakeholders and the general public through:

- Individual landowner meetings;
- Master Plan Study Advisory Panel meetings;
- City of Mississauga Interdepartmental meetings;
- Public Open House (question and answer period and comment forms); and
- A presentation to the City of Mississauga Urban Design Panel.

Through the study consultation processes, a range of comments, questions and concerns were raised. The following provides a summary of the input received and how it was addressed by the Port Credit GO Station Southeast Area Master Plan. Full meeting minutes and comment form submissions can be found on the City's website: www.mississauga.ca/portal/residents/pcgomasterplan.

Stakeholder and Community Input	How the Master Plan Addresses Stakeholder and Community Input	
	Reference / Recommendation	Section
Additional GO Transit Parking		
• Why are 400 additional parking spaces required at Port Credit GO Station for GO Transit customers? • Do not build a GO Transit parking structure / do not provide any more GO Transit parking. • More GO Transit parking is required.	Customer surveys and monitoring show a current shortage of parking at the Port Credit GO Station. Some customers are using parking lots at local community facilities, which are not intended for such purposes. A 26% increase in the number of Lakeshore West line customers who use the Port Credit GO Station is expected by 2031, with an even greater increase in customer volume occurring once Regional Express Rail is introduced. The GO Transit Rail Parking and Station Access Study (2013) determined that between 200 and 600 additional parking spaces are required at the Port Credit GO Station to meet current and future GO Transit customer demand. Further physical and market analysis concluded an additional 400 parking spaces should be provided.	3 & 4
• Providing more parking encourages the use of cars, not transit.	The Province and the City of Mississauga are making significant investments to transit and cycling infrastructure in order to reduce automobile dependency. It is a priority of Metrolinx to increase the proportion of customers who arrive to the Port Credit GO Station by walking, cycling or transit, but some of the new 1,000 plus daily customers will drive and require parking.	3 & 4
• What happens if an additional 400 spaces ends up not being required for GO Transit customers.	The Master Plan includes a guideline that where feasible, the design and construction of large parking structures should allow for future modifications (e.g. expansion of retail, commercial or other uses, full or partial adaptive reuse). It also encourages shared parking.	6 & 8
• GO Transit parking should not be free, it discourages the use of public transit.	Through its Mobility Hub Guidelines, Metrolinx has identified exploring commuter parking pricing.	8

Stakeholder and Community Input	How the Master Plan Addresses Stakeholder and Community Input	
	Reference / Recommendation	Section
• Can spaces be reserved for electric vehicles and charging stations provided?	Metrolinx has a program called smart commute, and they are looking at car sharing, green options, etc.	8
• Why can't the new GO Transit parking structure be below-grade?	For safety, operational and financial reasons, it is the preference of Metrolinx and its customers that commuter parking be provided for above-grade.	4
• Where will GO Transit customers park while the southeast parking lot is under construction?	Depending on the configuration and phasing of the redevelopment of the southeast GO Transit parking lot, up to 400 parking spaces may be lost during construction of the new parking structure. Metrolinx is working closely with the City of Mississauga and other area landowners on an interim parking strategy.	
Traffic Impacts		
• Traffic is currently bad, new development will make it worse.	As part of the Master Plan Study process, a detailed transportation assessment was undertaken. An assessment of a 'worst case' scenario found that the local road network can accommodate the proposed additional 400 GO Transit parking spaces, full build-out of the Port Credit GO Station Southeast Area, as well as a considerable amount of redevelopment elsewhere within the Port Credit Community Node. Mitigation measures are identified to improve intersection operations, including delay times for Miway buses accessing the Port Credit GO Station bus loop. Further study is required to determine the ultimate size and configuration of the bus loop once the HMLRT is running and when the fourth rail track is implemented. As part of the rezoning process, all future development applications within the Master Plan Study Area must be supported by a detailed Traffic Impact Assesment.	8 & Appendix D
• Oakville is a good example of traffic issues caused by commuters leaving the GO Station.		
• Thru traffic is a problem in Mineola.		
• Mineloa Road needs to have access to be able to turn north on Hurontario Street due to schools and no sidewalks on some streets.		
• With the replacement of Hurontario buses with the LRT, can the existing bus bay be reduced in size?		
• New developments should be allowed to provide a reduced level of parking.	The Master Plan includes a policy recommendation that reduced transit-supportive parking standards be encouraged for new developments within the Port Credit GO Station Southeast Area.	8
Pedestrian and Cyclist Infrastructure and Connections		
• Direct access to and from the east end of the GO platforms to Hurontario Street is needed.	The provision of a direct connection from Hurontario Street and the future HMLRT stop to the GO Station is proposed.	7
• More options for cyclists and pedestrians are required, including bridges or tunnels (paths) (e.g. over the Credit River and the rail tracks)	A number of new cycling routes within proximity to the Port Credit GO Station are being contemplated by Metrolinx and the City of Mississauga. A key principle of the Master Plan is to promote multi-modes of transportation, with pedestrian priority, and an attractive public realm to encourage walking and cycling.	4 & 7

Stakeholder and Community Input	How the Master Plan Addresses Stakeholder and Community Input	
	Reference / Recommendation	**Section**
Appearance of Parking Structures		
• Parking structures must be attractive and sensitive to the character of Port Credit.	The Master Plan recognizes the importance of ensuring that new above-grade parking structures are attractive and sensitive to the existing character of the area. A number of built form policies and guidelines are recommended which provide direction on appropriate building massing and facade articulation, building materials, the public realm and streetscape and roof treatments. A particularly important policy recommendation is that all elevations of a parking structure must provide for visual interest and elements that contribute to the streetscape, such as space for office, retail/commercial or community uses, services for transit users (e.g. ticketing, interactive information boards and service kiosks), building entrances, community display cases, public art, street furniture and landscape features. Photographic examples illustrate preferred design approaches/features.	7
• We do not want the garage to look like what was recently built for GO Transit in Mississauga and Oakville.		
• A 6-storey parking structure is too high.		
• The design and facade treatment of the parking garage should consider how to reduce noise and light impacts on adjacent housing.		
• No huge GO signs facing housing to the east.		
• The location of the Metrolinx site lies at the entrance to Port Credit. No one wants to see a very large, block-long bare concrete structure at 'front door'.		
• Disguise an otherwise uninteresting and purely functional place for cars. The exterior could be softened by natural greenery, the effect would enhance the surroundings rather than detract from them.		
Tall Buildings		
• 22 storeys is too tall for new development.	The City's existing policy provisions and direction for where and what form future growth and intensification is to occur supports buildings of up to 22 storeys within the Master Plan Area. The technical analysis undertaken for the Master Plan Study concluded that tall buildings of up to 22 storeys can be physically accommodated, without significant shadow impacts. The Master Plan includes policies and guidelines to mitigate against shadow and wind impacts. Further study will be required as actual development proposals are brought forward and they go through rezoning and site plan approval processes.	1 & 7 and Appendix B
• Why should there be a height cap on tall buildings, why can't they be taller than 22 storeys?		
• Maximum building heights should consider floor to ceiling heights, which are different for new and older residential buildings and for non-residential buildings.	The Master Plan includes a policy recommendation that recognizes the difference in floor to ceiling heights of various types of buildings/uses and limits the number of storeys for tall office or institutional buildings.	7

Stakeholder and Community Input	How the Master Plan Addresses Stakeholder and Community Input	
	Reference / Recommendation	Section
Other		
• Metrolinx or the City of Mississauga should expropriate land at Park Street and Ann Street to mitigate loss of property value.	Neither Metrolinx nor the City of Mississauga currently have plans to expropriate any of the properties along Ann Street or Park Street. Provincial and municipal plans anticipate and support the intensification of low-density properties within proximity to Major Transit Station, with redevelopment occurring over time. The Master Plan includes policy and guideline recommendations to mitigate impacts new higher density development may have on existing low-density properties.	6 & 7
• What can be done to secure the residential/park feel of Mineola?	The City of Mississauga Official Plan does not contemplate any major changes or intensification occurring within the Mineola area. Through the Port Credit Mobility Hub Master Plan Study (2011), the boundaries of the Port Credit GO Mobility Hub were delineated to exclude the stable residential area of Mineola.	1 & 2

APPENDIX B.

Overview of Employment Conditions and Forecasts

Appendix B. Overview of Employment Conditions and Forecasts for the City of Mississauga and Port Credit

Existing Conditions

In 2011, Mississauga was home to approximately 448,000 jobs:

- 97,000 (21.7%) major office: jobs occurring in office buildings that are 20,000 sq. ft. (1,860 sq. m.) or more;
- 124,000 (27.7%) population-related: jobs serving the local population base, such as retail services, professional services and schools and government activities; and
- 227,000 (50.7%) employment lands: jobs occurring on lands set aside for employment purposes, such as manufacturing, warehousing, wholesaling and research and development.[1]

Less than one percent (3,900) of the municipality's 448,000 jobs were located in Port Credit. The majority of employment opportunities within Port Credit were population-related. In 2011 only 500 of the City's 97,000 major office jobs were located in Port Credit.

Mississauga is home to almost 30 million sq. ft. of office space. Approximately 1.4 million sq. ft. was added within the past 3 years.[2] Port Credit has a limited amount of office space, and no large office buildings offering contiguous space.

In the past few years, high levels of absorptions of office space were seen in Mississauga as result of tenants taking occupancy in new developments. Growth for the remainder of 2015 is expected to be offset by displaced space returning to the market from transactions completed in previous quarters and absorptions will likely fall. [3] New office space entering the market has put pressure on older buildings and resulted in reductions in lease rates and increased vacancy rates. Mississauga currently has an office vacancy rate of 17.1% (see Figure A). Currently hundreds of office/commercial buildings in Mississauga have available space. For example, 24 office buildings in the Mississauga City Centre have space for lease, 14 of which are Class A. There are 64 office buildings in Meadowvale that have space for lease, 34 of which are Class A and 9 of the buildings have contiguous space available that is greater than 50,000 sq. ft.[4] A number of smaller office/commercial spaces are available in or near Port Credit.

Figure A. Vacancy Rates and Lease Rates for Office Space in Mississauga

	4th Q 2013	4th Q 2014	2nd Q 2015
Availability Rates	13.40%	11.90%	17.10%
Net Lease Rates	$10.23 - $17.22	$12.75 - $17.05	$11.29 - $16.26

Source: City of Mississauga, Economic Development Department (2015) City of Mississauga Economic Indicators

Based on Cushman & Wakefield Office Space Market/Vacancy Snapshot and Colliers GTA West Office Statistics

At 17.10%, the office vacancy rate in Mississauga is considerably higher than elsewhere in the GTA:

- Downtown Toronto 5.1%;
- Midtown Toronto 5.5%
- GTA North 6.1%;
- GTA East 10.0%; and
- GTA West 13.4%.[5]

[1] Hemson Consulting Ltd. (2013) Mississauga Long-Range Growth Forecasts Employment, 2011-2041.
[2] City of Mississauga Economic Development Department (2015) City of Mississauga Economic Indicators.
[3] Cushman & Wakefield (2015) Marketbeat Office Snapshot Q2 2015.
[4] Source: Avison Young (2015) 2nd Quarter 2015 Toronto West Office Market Report.
[5] Cushman & Wakefield (2015) Marketbeat Office Snapshot Q2 2015.

Cushman & Wakefield suggest that the GTA West office market was somewhat oversupplied following the 2008 credit crunch and subsequent recession, when American parent companies downsized or closed their Canadian regional offices. More office space was built than could be absorbed. While the GTA West office market remains healthy, it will take time to fill current vacancies and support substantial new office development.

Within the City of Mississauga approximately 807 hectares (1,995 acres) of employment land (i.e. lands designated 'Business Employment', 'Office' and 'Industrial') are vacant and available for development. Municipal reports suggest that the demand for employment lands has leveled out.[6]

Employment Growth Forecasts (2011-2041)

Long-range growth forecasts of population, housing and employment were prepared by Hemson Consulting Ltd. for the City of Mississauga (September 2013). The forecasts are based on the 2011 Census and other relevant information, including the recently released Amendment 2 to the Provincial Growth Plan. The forecasts reflect the City's new urban hierarchy that includes 52 'Character Areas.

Three growth forecast scenarios were prepared by Hemson that incorporate Growth Plan policy direction and reflect varying degrees of intensification and redevelopment in the City of Mississauga. The "Steady Growth" scenario was adopted by City of Mississauga Council in November 2013. It shows that over the period of 2011 to 2041 Mississauga's employment base will grow by 104,000 jobs (i.e. from 448,000 to 552,000 jobs).[7] These forecasts are based on assumptions of Mississauga's share of growth in the Region of Peel and Greater Toronto and Hamilton Area (GTAH) employment. The greatest levels of employment growth are expected to be realized in the following four character areas:

- Gateway Corporate Centre (18,800 new jobs);
- Downtown Core (Mississauga City Centre) (16,300 new jobs);
- Meadowvale Corporate Centre (15,400 new jobs); and
- Airport Corporate Centre (10,800 new jobs).

As shown in Figure B, between 2011 and 2041 only 1,300 new jobs are expected to be created in Port Credit.

The City of Mississauga's long-range forecasts estimate that 60% of the municipality's long-term employment growth will be in major office development. Over the past two decades, most new office development in Mississauga has taken place in the Corporate Centres and Business Parks, mainly Airport Corporate, Meadowvale and Gateway. Current municipal policies direct the majority of future major office growth to major urban area such as Mississauga City Centre/Downtown Mississauga. The growth forecasts anticipate the majority of the 62,000 new major office jobs will be located within the following four character areas:

- Gateway Corporate Centre (17,200 new major office jobs);
- Downtown Core (Mississauga City Centre) (10,900 new major office jobs);
- Meadowvale Corporate Centre (12,500 new major office jobs); and
- Airport Corporate Centre (9,700 new major office jobs).

Of the 1,300 new jobs anticipated to be created in Port Credit between 2011 and 2041, 31% (400) expected to be major office jobs and the remaining 69% (900) are expected to be population-related jobs.

[6] City of Mississauga, Planning and Building Department 2015 Vacant Lands.
[7] Hemson Consulting Ltd. (2013) Mississauga Long-Range Growth Forecasts Employment, 2011-2041.

Figure B. Total Employment Forecasts for the City of Mississauga and its Character Areas

EMPLOYMENT, 2011-2041

Place of Work Employment Forecast by Character Area - Total Employment								
Character Area	**2011**	**2016**	**2021**	**2026**	**2031**	**2036**	**2041**	**2011 - 41**
DT Cooksville	3,500	3,900	4,200	4,300	4,500	4,700	4,900	1,400
DT Core	21,100	22,600	26,800	29,200	32,000	34,200	37,400	16,300
DT Fairview	1,100	1,200	1,300	1,300	1,400	1,400	1,400	300
DT Hospital	8,200	8,700	9,800	10,000	10,300	10,400	10,900	2,700
Downtown Subtotal	**33,900**	**36,400**	**42,100**	**44,800**	**48,200**	**50,700**	**54,600**	**20,700**
MN Central Erin Mills	8,100	8,700	9,300	9,700	10,000	10,300	10,800	2,700
MN Uptown	2,400	2,900	3,200	3,400	3,600	3,800	4,000	1,600
Major Nodes Subtotal	**10,500**	**11,600**	**12,500**	**13,100**	**13,600**	**14,100**	**14,800**	**4,300**
CN Clarkson Village	1,300	1,400	1,500	1,600	1,700	1,700	1,800	500
CN Malton	1,100	1,200	1,400	1,400	1,500	1,500	1,600	500
CN Meadowvale	1,500	1,600	1,700	1,700	1,700	1,800	1,900	400
CN Port Credit	2,300	2,400	2,600	2,700	2,800	2,800	2,900	600
CN Rathwood-Applewood	1,300	1,400	1,400	1,500	1,600	1,700	1,700	400
CN Sheridan	2,000	2,100	2,200	2,200	2,300	2,400	2,400	400
CN South Common	1,600	1,700	1,800	1,800	1,900	2,000	2,100	500
CN Streetsville	2,100	2,200	2,300	2,400	2,400	2,500	2,700	600
Community Nodes Subtotal	**13,200**	**14,000**	**14,900**	**15,300**	**15,900**	**16,400**	**17,100**	**3,900**
NHD Applewood	4,400	4,600	4,800	4,800	4,800	4,900	5,000	600
NHD Central Erin Mills	3,100	3,200	3,300	3,300	3,300	3,300	3,400	300
NHD Churchill Meadows	3,400	3,500	3,700	3,700	3,800	3,800	3,900	500
NHD Clarkson-Lorne Park	3,800	4,000	4,100	4,100	4,200	4,200	4,300	500
NHD Cooksville	3,400	3,600	3,700	3,800	3,800	3,900	4,000	600
NHD Creditview	900	900	900	900	1,000	1,000	1,000	100
NHD East Credit	8,300	8,700	8,900	9,000	9,100	9,200	9,400	1,100
NHD Erin Mills	3,400	3,600	3,700	3,700	3,700	3,700	3,800	400
NHD Erindale	2,900	3,000	3,100	3,100	3,100	3,200	3,200	300
NHD Fairview	2,400	2,500	2,600	2,600	2,700	2,700	2,800	400
NHD Hurontario	4,600	4,700	4,800	4,800	4,800	4,900	5,000	400
NHD Lakeview	4,900	5,100	5,400	5,600	5,700	5,800	5,900	1,000
NHD Lisgar	2,200	2,300	2,300	2,300	2,400	2,400	2,400	200
NHD Malton	3,300	3,400	3,500	3,500	3,500	3,600	3,700	400
NHD Meadowvale	2,700	2,700	2,800	2,700	2,800	2,800	2,900	200
NHD Meadowvale Village	2,700	2,800	2,900	2,900	3,000	3,000	3,100	400
NHD Mineola	1,400	1,400	1,500	1,600	1,600	1,600	1,600	200
NHD Mississauga Valleys	1,300	1,300	1,400	1,400	1,400	1,500	1,500	200
NHD Port Credit	1,600	1,700	1,700	1,800	1,900	2,200	2,300	700
NHD Rathwood	2,400	2,500	2,600	2,600	2,600	2,700	2,700	300
NHD Sheridan	1,700	1,800	1,800	1,800	1,900	1,900	1,900	200
NHD Streetsville	1,600	1,600	1,700	1,800	1,800	1,800	1,800	200
Neighbourhood Subtotal	**66,400**	**68,900**	**71,200**	**71,800**	**72,900**	**74,100**	**75,600**	**9,200**
Airport CC	34,300	36,300	38,100	40,900	42,800	44,000	45,100	10,800
Gateway CC	14,700	19,800	25,000	26,900	28,800	30,500	33,500	18,800
Sheridan Park CC	6,200	7,100	7,500	7,900	8,300	8,600	9,300	3,100
Meadowvale Business Park CC	47,600	54,300	57,900	59,300	60,900	62,100	63,000	15,400
Corporate Centres Subtotal	**102,800**	**117,500**	**128,500**	**135,000**	**140,800**	**145,200**	**150,900**	**48,100**
EA Churchill Meadows	-	400	1,000	1,300	1,300	1,500	1,500	1,500
EA Clarkson	1,100	1,100	1,500	1,500	1,500	1,500	1,700	600
EA Dixie	15,800	16,100	16,400	16,400	16,400	16,700	17,200	1,400
EA Gateway	44,100	45,400	46,500	46,700	46,800	47,000	47,300	3,200
EA Lakeview	1,800	1,800	1,800	1,700	1,700	1,900	2,100	300
EA Mavis-Erindale	8,200	8,400	8,500	8,500	8,700	8,700	8,700	500
EA Northeast	106,300	108,200	109,400	109,200	109,400	109,400	109,600	3,300
EA Southdown	5,900	6,400	7,000	7,500	7,700	7,800	7,900	2,000
EA Western Business Park	13,800	14,600	15,400	15,700	16,000	16,100	16,400	2,600
Employment Area Subtotal	**197,000**	**202,400**	**207,500**	**208,500**	**209,500**	**210,600**	**212,400**	**15,400**
SPA Airport	21,700	22,000	22,300	22,600	22,800	23,100	23,400	1,700
SPA UTM	2,100	2,300	2,500	2,600	2,700	2,700	2,900	800
Special Policy Area Subtotal	**23,800**	**24,300**	**24,800**	**25,200**	**25,500**	**25,800**	**26,300**	**2,500**
Ninth Line SSA	-	-	100	100	100	200	200	200
City of Mississauga Grand Total	**448,000**	**475,000**	**501,000**	**514,000**	**527,000**	**537,000**	**552,000**	**104,000**

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Market Opportunities for Port Credit

The Port Credit Community Node currently has a population to employment ratio of 3.2:1. As detailed in Section 6.1 of the Port Credit Local Area Plan (2014), the target population for Community Nodes is 2 people per 1 job.

A mixed-use development project currently under construction on Lakeshore Road East will provide 22,700 sq. ft. of new office space and 7,210 sq. ft. of new retail/commercial space. Zoning approvals are in place for a mixed-use development on Lakeshore Road East which is to contain approximately 24,770 sq. ft. of office and 20,500 sq. ft. of retail.

While Port Credit, and particularly the Port Credit GO Station Southeast Area, offers good higher order transit access, this alone will not likely be sufficient to foster significant new office or retail/commercial demand. Other Mobility Hubs within the City of Mississauga and the GTHA and employment nodes also offer rapid transit, as well as abundant and low-cost or free surface parking, direct access and visibility from major highways and lower lease rates/development charges.

An office market review undertaken by Cushman and Wakefield for Metrolinx in May 2015 suggests that a major speculative office building, without substantive core tenancy, cannot be supported within the Port Credit GO Station Southeast Area. The emergence of a major core tenant (e.g. for 70% of a proposed office building or component) would definitely be a catalyst for new office development in Port Credit, provided that the tenant would be a market pioneer that is prepared to pay economic rent which factors in the high cost of required decked or underground parking.

Cushman & Wakefield suggest that there may be a limited opportunity to provide office development that caters to small businesses and professionals, particularly if there is the potential for ownership (i.e. condominium office). They caution that the market for office condominium in Port Credit is unproven and represents a development risk and recommend building no more than 5% of the total Gross Floor Area (GFA) of speculative office within a single condominium phase (e.g. between 10,000 to 20,000 sq. ft. based on the illustrative concept plan for Block 1 and anticipated transit ridership and pedestrian traffic). They also caution that the requirement for the provision of an excessive amount of office space within a single condominium phase would burden the developer with undue office condominium sale risk, impacting the overall economic viability of the project and prospects for redevelopment of the Port Credit GO Station Southeast Area. Cushman & Wakefield recommend that any new office space have an address on Hurontario Street.

A retail feasibility analysis undertaken by Avison Young Commercial Real Estate (Ontario) Inc. for Metrolinx in June 2015 found a substantial supply of retail and commercial services within Port Credit, including a number of national tenants along Lakeshore Road. A coffee shop is currently located within the GO Station building and a few retail stores and services are located at Ann Street and Helene Street, within the ground level of the parking structure (e.g. variety store, hair salon, print shop and photography studio).

Avison Young suggest that some additional restaurant and service space could be supported in the Port Credit GO Station Southeast Area, providing approximately 400,000 sq. ft. of new fully occupied office and residential space is development and there is an increase in transit ridership. They recommend that new retail and service uses be centrally positioned to pedestrian traffic originating from the GO Transit parking lots, the future HMLRT stop and the GO Station. Local retail uses are not likely to be a candidate for tenancy given anticipated rental rates.

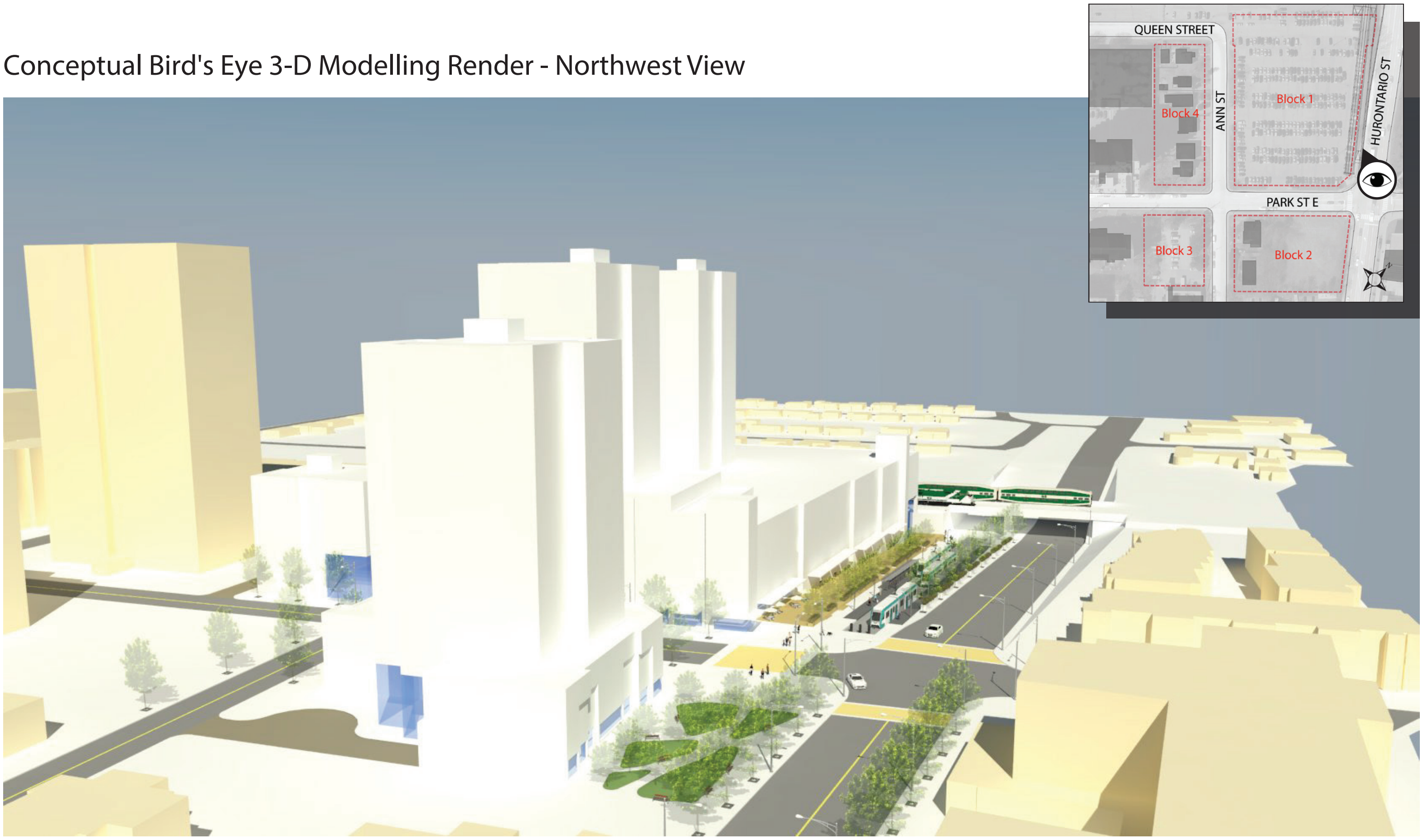
APPENDIX C.

Demonstrative Conceptual Views and Preliminary Shadow Impact Analysis

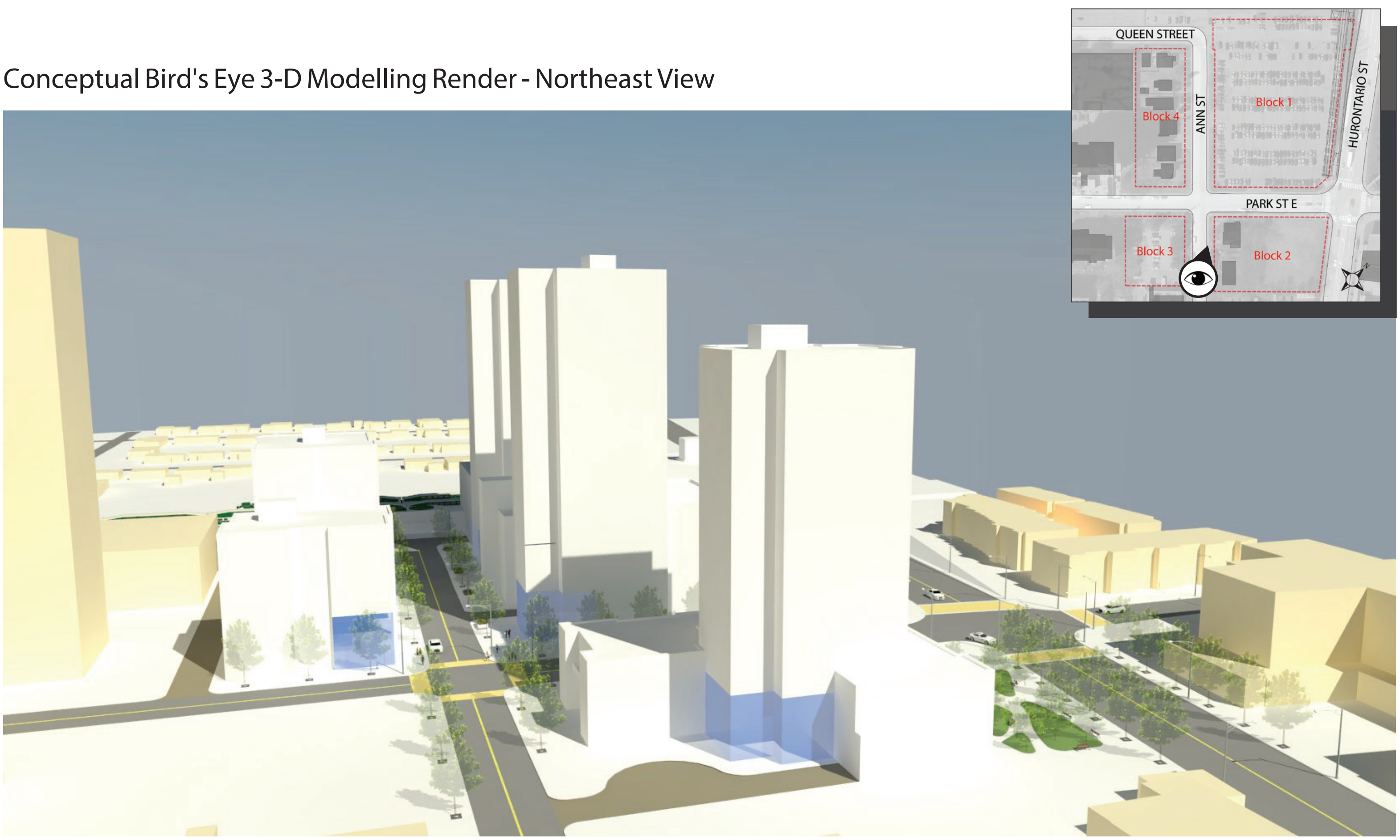
Appendix C. Demonstrative Conceptual Views and Preliminary Shadow Impact Analysis

Conceptual Bird's Eye 3-D Modelling Renders - West View

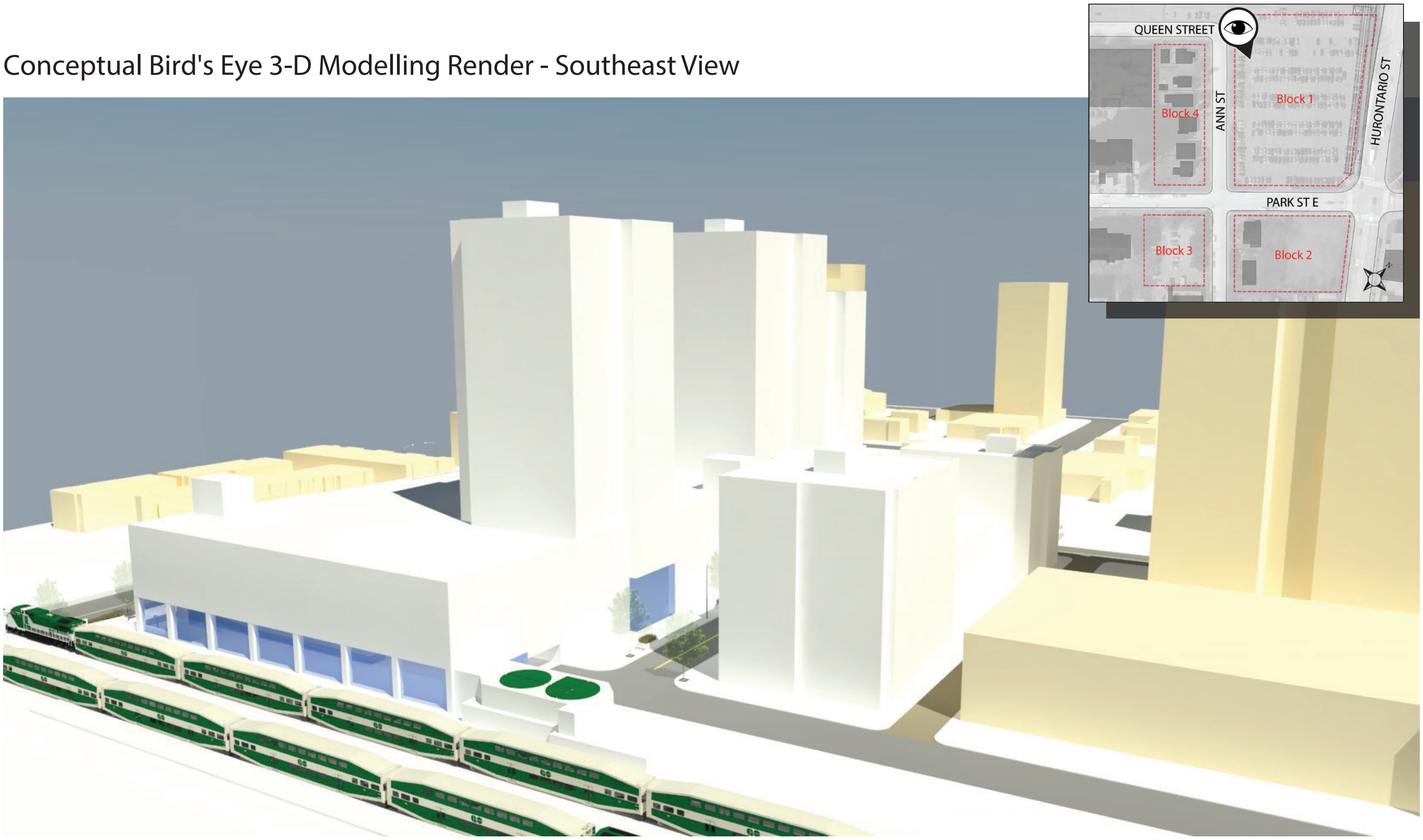
Conceptual Bird's Eye 3-D Modelling Render - Northwest View



Conceptual Bird's Eye 3-D Modelling Render - Northeast View



Conceptual Bird's Eye 3-D Modelling Render - Southeast View



Conceptual Streetview 3-D Modelling Render - Hurontario Sidewalk Looking South

Conceptual Streetview 3-D Modelling Render - Corner of Hurontario Street & Park Street Looking Northwest

Conceptual Streetview 3-D modelling Render - Hurontario Sidewalk and Public Realm Looking North

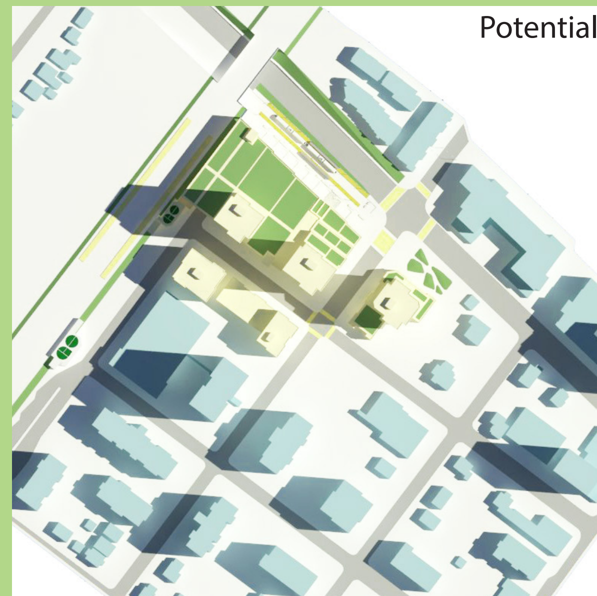
Conceptual Streetview 3-D modelling Render - Proposed HMLRT Stop Looking North

Conceptual Streetview 3-D Modelling Render - Corner of Hurontario Street & Park Street Looking South

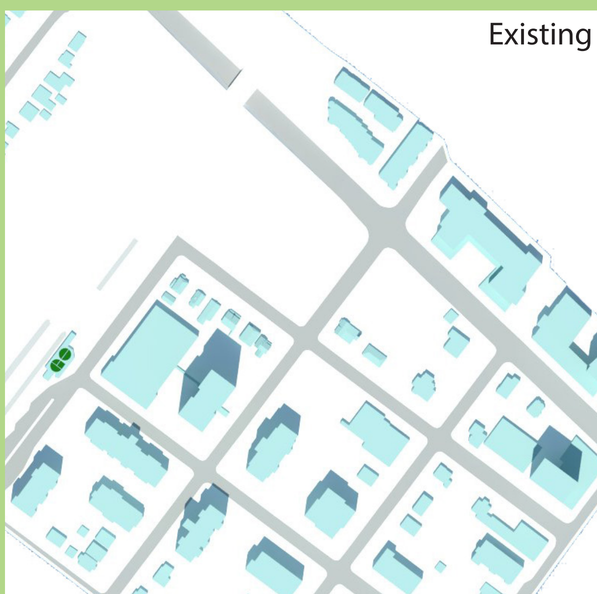
Conceptual Streetview 3-D Modelling Render - Potential Covered Pedestrian Walkway from Hurontario Street and the Future HMLRT STop to the GO Station

Preliminary Shadow Impact Assessment - June 21st

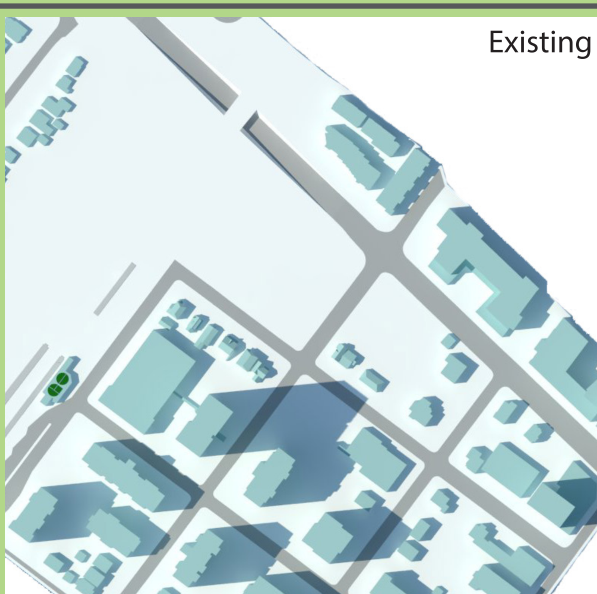
8am - Morning

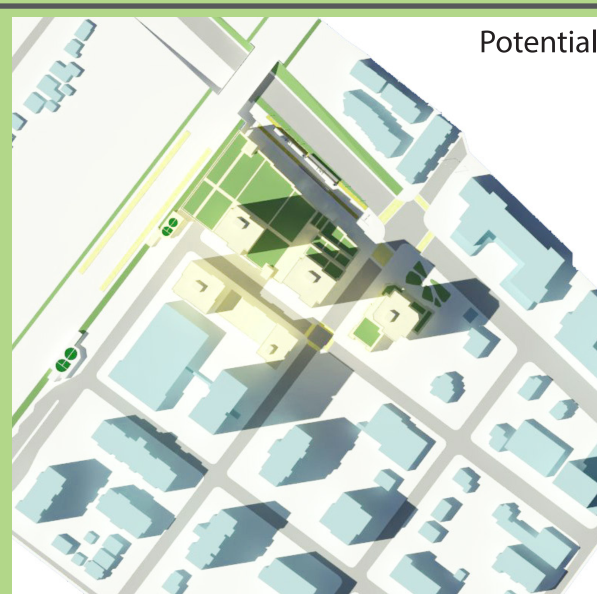


12pm - Noon



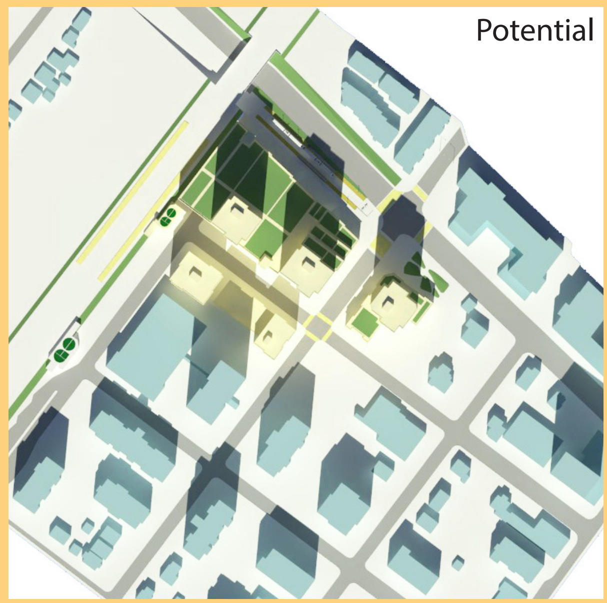
4pm - Afternoon



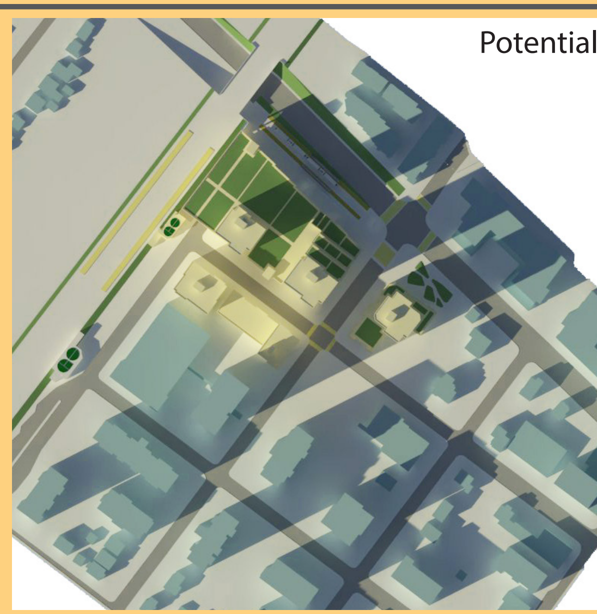


8am - Morning Preliminary Shadow Impact Assessment - March 21st

12pm - Noon

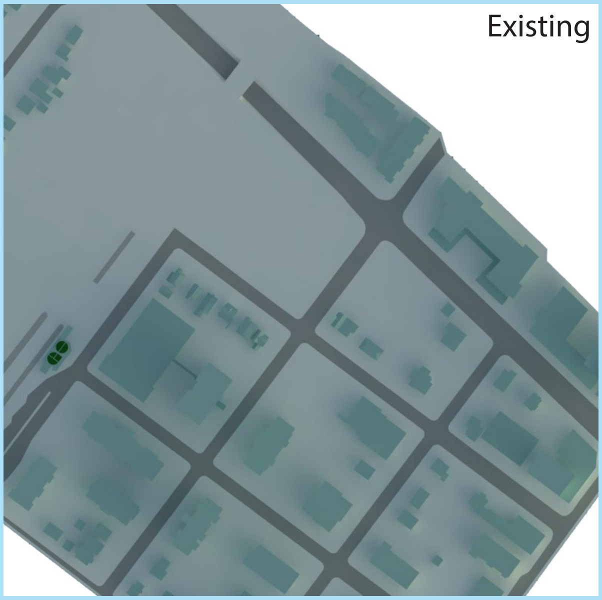


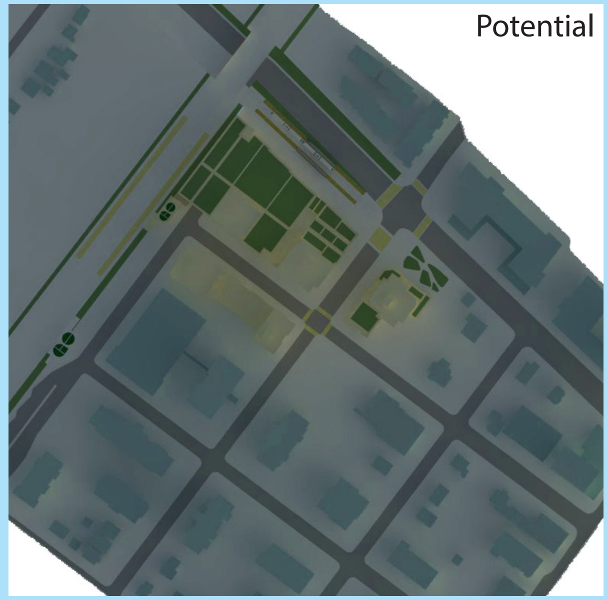
4pm - Afternoon



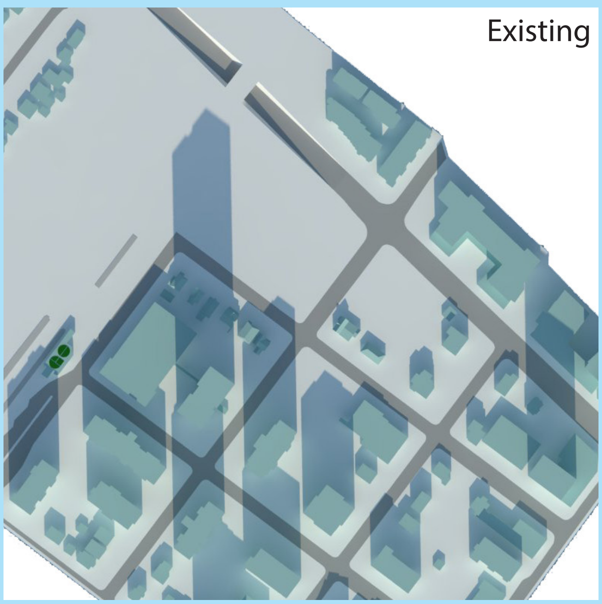
Preliminary Shadow Impact Assessment - December 21st

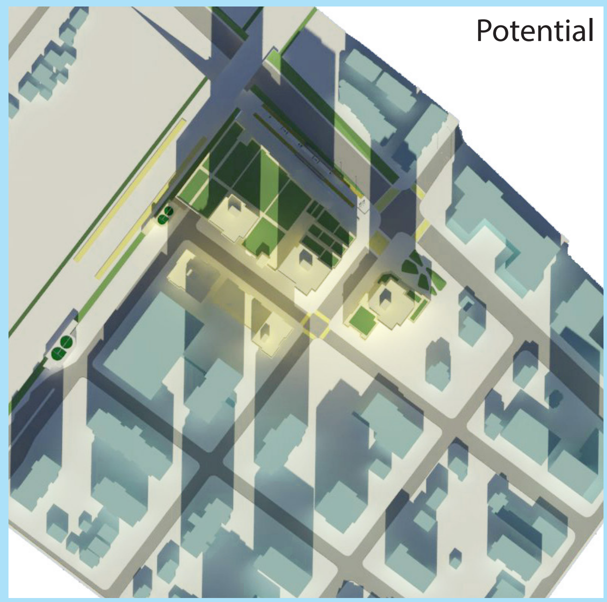
8am - Morning



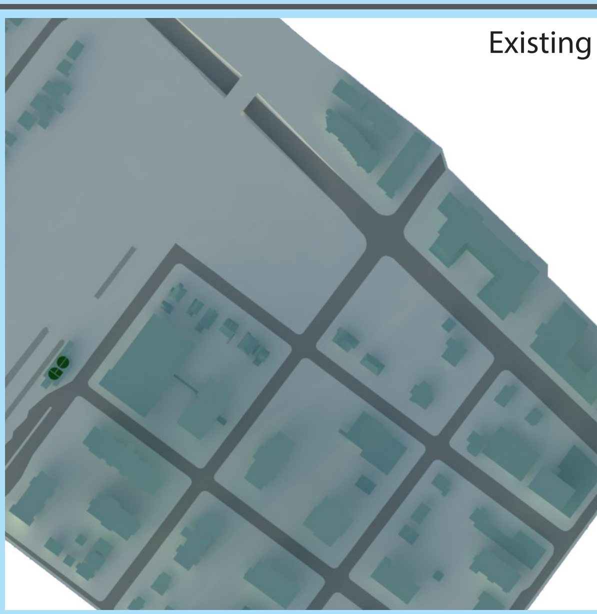


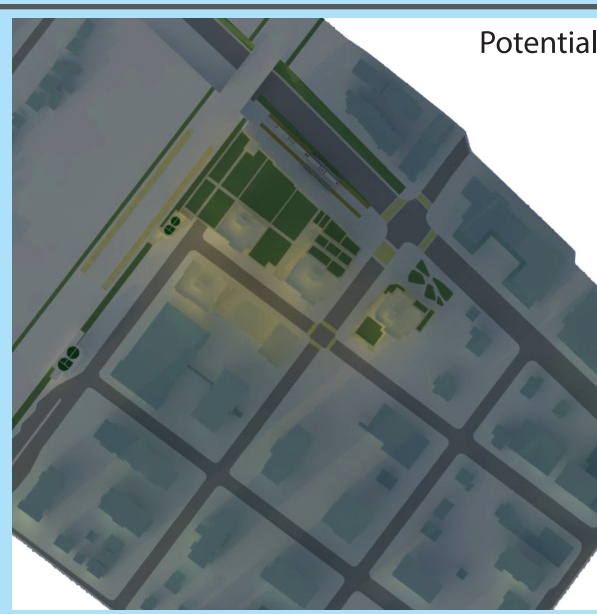
12pm - Noon





4pm - Afternoon





APPENDIX D.
Transportation Analysis

Final Report

Port Credit GO Station Southeast Area (Site 12) Master Plan Study - Transportation Analysis

Prepared for Metrolinx
by IBI Group

October 2, 2015

Table of Contents

Table of Contents (continued)

List of Exhibits

Table of Contents (continued)

List of Appendices

1 Introduction

Transportation analysis was completed as part of the Port Credit GO Station Southeast Area (Site 12) Master Plan Study (herein referred to as the 'Master Plan Study'). This report documents the findings related to the traffic analysis, with the report structured as follows:

Section 2: Traffic Study and Analysis Assumptions – this discusses the study area, and the confirmed parameters such as modal split, trip distribution, and trip generation;

Section 3: Background Growth and Development – this section outlines the various developments that contribute to the future traffic volumes;

Section 4: 2031 Total Traffic Operations – the traffic results for the various development scenarios are presented in this section, based on the information from Sections 2 and 3; and

Section 5: Conclusions and Recommendations – based on the results presented in Section 4, a summary of the conclusions and recommendations are discussed in this section.

2 Study Scope and Analysis Assumptions

The City of Mississauga, Metrolinx, and IBI Group were all involved in the development of the scope of work for the transportation assessment and traffic impact analysis. The framework for the traffic study was established when the parties met on March 13, 2015. Subsequent memorandums and discussions confirmed the specific parameters and assumptions of the study, which are discussed in this section. Additional details can be found in **Appendix A**.

2.1 Port Credit GO Station Southeast Area Master Plan Study Area

The Master Plan Study Area is comprised of approximately 4.6 acres of land (1.86 hectares) located south of the Port Credit GO Station which were identified by the Port Credit Local Area Plan (PCLAP) as 'Site 12'. Policies of the PCLAP require a Master Plan be complete for the lands to provide further direction on appropriate land use, built form, transportation and heritage resources.

It was agreed with the City of Mississauga that the transportation assessment and traffic impact study for the Master Plan Study would include intersections within the area bound by:

- North: Rail tracks and Eaglewood Boulevard / Inglewood Drive;
- South: Lakeshore Road;
- East: Hurontario Street; and
- West: Stavebank Road.

The intersections included within the transportation assessment and traffic impact study area (herein referred to as 'the study area') are shown in Exhibit 1, along with the larger traffic influence area that was considered. The turning movement count dates for the intersections are detailed in Exhibit 2.

Exhibit 1: Transportation Impact Study Area and Traffic Influence Area

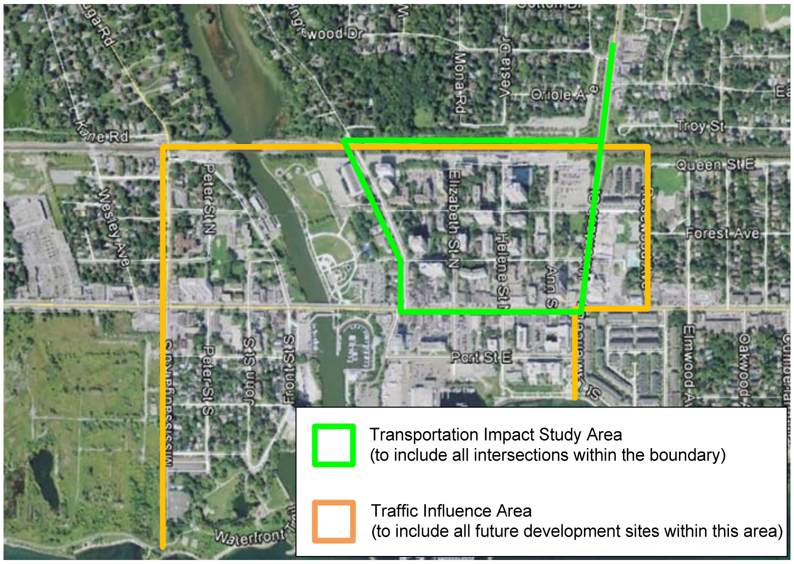


Exhibit 2: Study Area Intersections and Intersection Count Dates

STUDY AREA INTERSECTION	COUNT DATE
Stavebank Road & GO Parking Access	Wednesday, April 1, 2015
Stavebank Road & Park Street	Wednesday, April 1, 2015
Stavebank Road & High Street	Wednesday, April 1, 2015
Stavebank Road & Lakeshore Road	Wednesday, April 1, 2015
Bus Exit/Elizabeth Street & GO Parking Access/Queen Street	Thursday, October 30, 2014
Elizabeth Street & Park Street	Wednesday, April 1, 2015
Elizabeth Street & High Street	Wednesday, April 1, 2015
Elizabeth Street & Lakeshore Road	Thursday, October 30, 2014
Bus Entrance/Helene Street & Queen Street	Wednesday, April 1, 2015
Helene Street & Park Street	Wednesday, April 1, 2015
Helene Street & High Street	Wednesday, April 1, 2015
Helene Street & Lakeshore Road	Wednesday, April 1, 2015
GO Parking Access/Ann Street & Queen Street/GO Parking Access	Thursday, October 30, 2014
Ann Street & Park Street	Tuesday, December 2, 2014
Ann Street & High Street	Wednesday, April 1, 2015
Ann Street & Lakeshore Road	Thursday, October 30, 2014
Hurontario Street & Inglewood Drive/Private Access	Tuesday, April 16, 2013
Hurontario Street & Eaglewood Boulevard	Tuesday, November 23, 2010*
Hurontario Street & Park Street	Thursday, October 30, 2014
Hurontario Street & High Street	Wednesday, April 1, 2015
Lawrence Drive/Hurontario Street & Lakeshore Road	Wednesday, April 1, 2015

*The through volumes were found to be higher than those at the Inglewood Drive intersection (2013) and similar to those collected along Hurontario Street in 2014 and 2015. Therefore, it was determined that the volumes of the 2010 count were appropriate despite their age.

2.2 Horizon Years and Future Development Scenarios

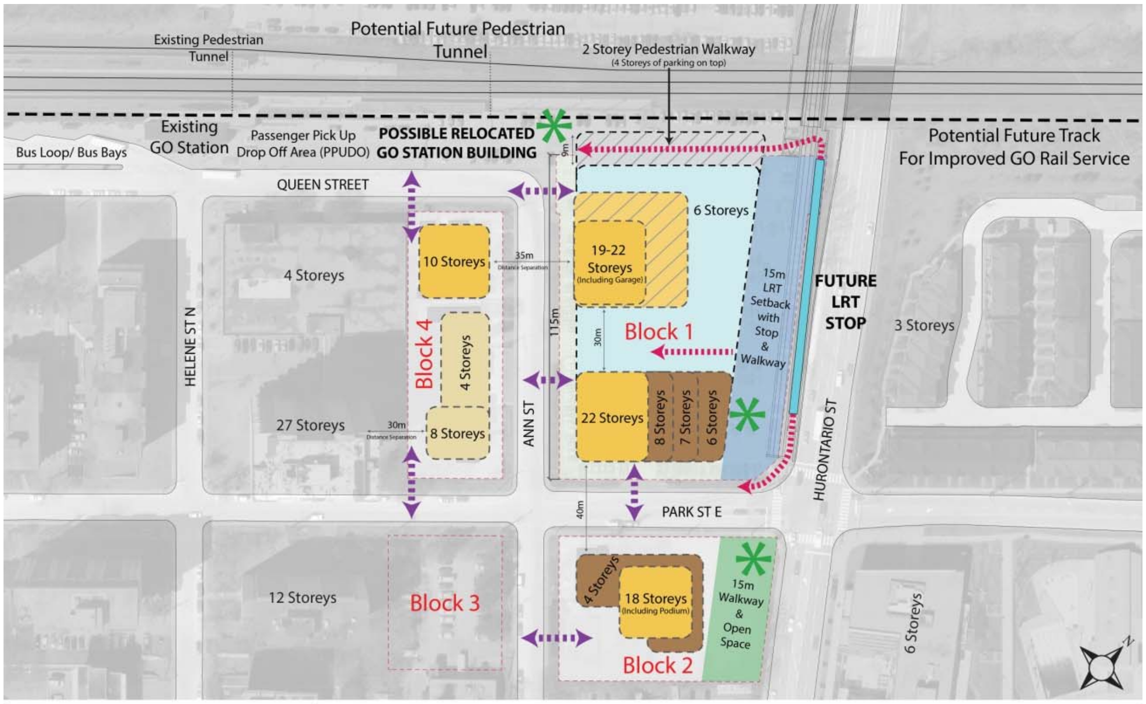
The City of Mississauga identified several sites in the Community Node of Port Credit (as identified by the Mississauga Official Plan and PLCAP) that have potential for redevelopment. To align with these planning development assumptions, and to allow for the completion of the proposed Hurontario-Main LRT (HMLRT) and other long range assumptions, it was decided by the City of Mississauga that the horizon year for all of the traffic analysis should be 2031.

The traffic impact analysis examined the impact of different combinations of planned, proposed and potential future developments on 13 sites, which are illustrated in Exhibit 3. The owners of Sites 10 and 12 have zoning approvals for new developments, while the owners of Sites 1, 5, and 13 have proposed developments. The City has identified the remaining eight sites as locations where development may potentially occur by 2031.

Exhibit 3: Planned, Proposed and Potential Developments within the Port Credit Community Node (by 2031)

For the Master Plan Study, a concept plan was prepared by IBI Group to illustrate potential redevelopment of three of the four blocks which comprise the Master Plan Area (see Exhibit 4). The PCLAP does include lands at the southwest corner of Ann Street and Park Street within the Site 12 Master Plan Area, however this block is currently designated as ‘Utility’ and the landowners have not expressed interest in redesignating or redeveloping the lands. As such, no new development was assumed or tested for these lands.

Exhibit 4: Illustrative Development Concept Plan for the Port Credit GO Station Southeast Area



Legend

- Potential Placemaking Opportunities
- Potential Pedestrian Circulation
- Potential Vehicular Access Points

Potential Development/Built Form

Block 1	Floor Plate(sq m)	Floors	GFA(sq m)
Tower	800-2,200	13-16 (Total building height of 19-22)	12,800
GO Parking Structure	5,000	6 (+ 2 Flrs Below)	30,000
Mid-rise	950	6-8	5,580
Tower	750	22	16,500
Subtotal:			64,880
Block 2			
Tower	750	14 (Total building height of 18)	10,500
Podium/ Mid-rise	800	4	3,200
Subtotal:			13,700
Block 4			
Tower	775	10	7,750
Low-rise	1,300	4-8	7,050
Subtotal:			14,800
TOTAL (Includes above grade parking structure):			**93,380**

Exhibit 5 provides a table of the development assumptions for all 13 sites used for traffic analysis purposes. Additional details can be found in **Appendix B.**

To avoid unfairly attributing future congestion and intersection problems solely to the Metrolinx site (Site 1), which accounts for a small percentage of overall cumulative traffic growth, it was agreed that the study would analyze traffic results for the following background scenarios:

- Scenario A: Development on sites 5-13;
- Scenario B: Development on sites 2-4 and 5-13;
- Scenario C: Development on sites 1 and 5-13; and
- Scenario D: Development on all 13 sites.

Due to the lack of actual development applications, as well as the collaboration needed between adjacent landowners, the 2031 traffic analysis represents a worst case scenario, should the lands develop as assumed. This is also contingent upon the lands developing as assumed. For the purposes of testing potential traffic impacts (“worst case scenario”), a substantial amount of office development/use was assumed for Site 1. The development assumptions for Site 1 are explained in greater detail in Section 3.

Exhibit 5: Table of Identified, Planned, Proposed and Potential Developments within the Port Credit Community Node (to be complete by 2031)

SITE	DEVELOPMENT
1	225 residential units; 1,250 sq.m retail; 13,200 sq.m office & 400 net new parking spaces
2	112 residential units & 200 sq.m retail
3	No new development, continuation of Bell Canada utility operations
4	149 residential units & 500 sq.m retail
5	66 residential units & 180 sq.m retail
6	60 residential units & 180 sq.m retail
7	66 residential units
8	66 residential units
9	20 residential units & 180 sq.m retail
10	56 residential units; 1,905 sq.m retail & 2,301 sq.m office
11	110 residential units & 900 sq.m retail
12	583 sq.m bank; 670 sq.m restaurant & 2,109 sq.m office
13	750 residential units & 3,150 sq.m retail; 3000 sq.m office; 1,764 sq.m marine & 1,973 sq.m live-work *

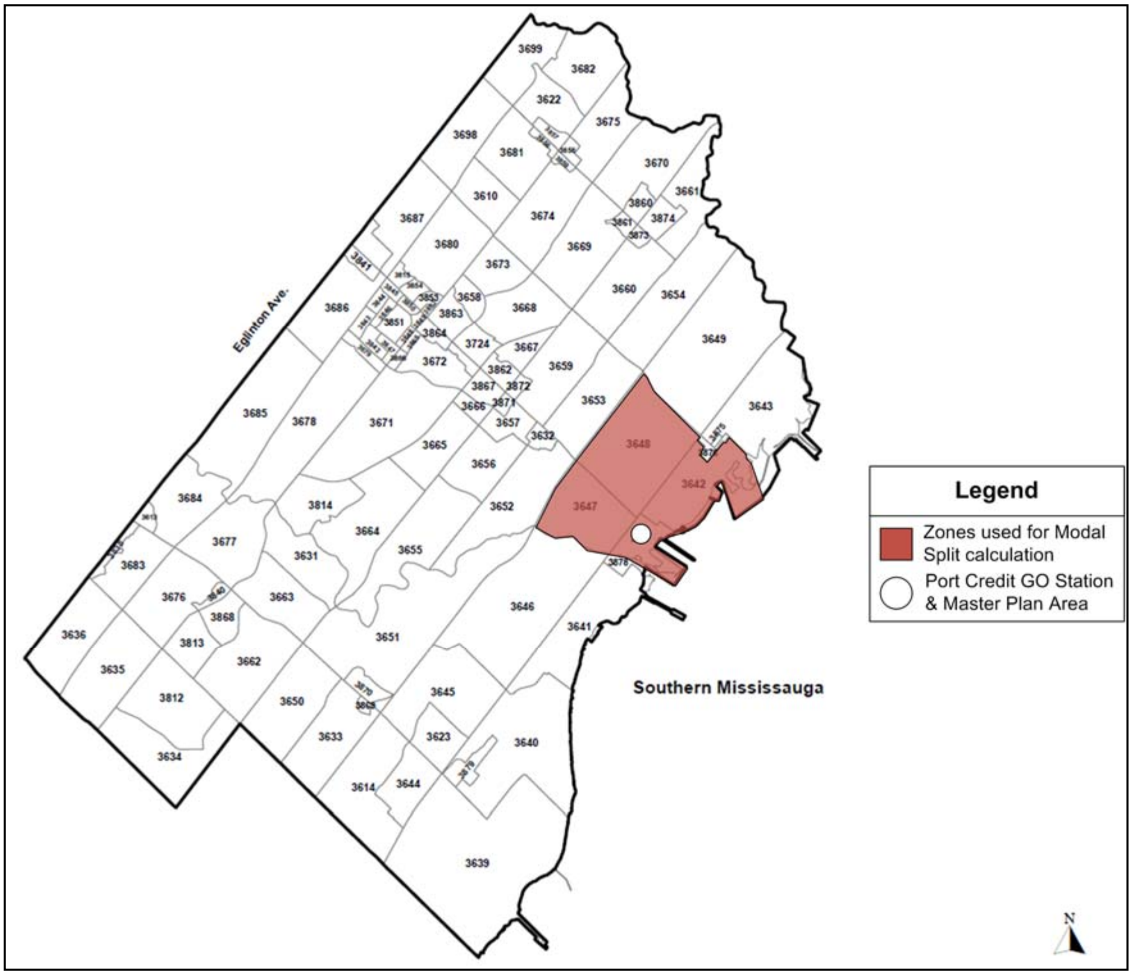
Note: Based on planned (approved) development applications, active development proposals, estimates provided by the City of Mississauga in March 2015 for potential redevelopment Sites (6 – 9 and 11) and estimates prepared by IBI Group for Sites 1-4. An updated redevelopment proposal for Site 5 no longer includes retail.

*For the purposes of testing potential traffic growth, it was assumed that approximately half of the proposed redevelopment for site 13 (Canada Lands/Inspiration Port Credit) would be built by 2031.

2.3 Modal Split

The modal split for the study area was determined using trip information from the study area (red zones in Exhibit 6) surrounding the Port Credit GO Station. The areas surrounding the GO Station were chosen to dilute the impact of the GO Station, which would likely result in a modal split with a representatively high proportion of non-auto trips.

Exhibit 6: Zones Used for the Modal Split



The total existing number of trips to and from the study area by primary mode of transport was then determined. The modal splits used for analysis, summarized in Exhibit 7, were calculated by dividing the number of auto driver trips by the total number of trips. The numbers were rounded down to be conservative. The raw 2011 Transportation Trip Study (TTS) data used is available in **Appendix C**.

Exhibit 7: Existing Modal Split

Peak Period	Primary Mode of Travel
	Auto Driver
AM	65%
PM	75%

Metrolinx and MMM Group prepared a document entitled *Hurontario / Main Street Corridor Master Plan* in October 2010.This report examined the existing transit mode share between the Queen Elizabeth Way (QEW) and Port Credit GO Station, which was found to be approximately 20% in both directions. With an LRT in 2031, it is estimated this transit mode share could increase to over 50%, with another projection estimating a mode share as high as 67% for southbound transit.

From the 2011 TTS information presented in Exhibit 7, the non-auto mode share is approximately 35% for trips in the AM peak hour and 25% in the PM peak hour. Given the increased transit options expected to be implemented by 2031, including the HMLRT line, the non-auto mode share is expected to increase. This is confirmed by the traffic estimates found in the October 2010 report completed by Metrolinx and MMM Group. Based on a review of the information, it is appropriate to use a non-auto mode share of 50% for future trips in the AM peak hour, and 45% in the PM peak hour (to recognize the existing higher auto share in the PM), as shown in Exhibit 8. This assumption was confirmed with the City of Mississauga.

Exhibit 8: 2031 Modal Split / Non-Auto Trip Reduction

Peak Period	Primary Mode of Travel in 2031	Non-Auto Trip Reduction Proposed for Trip Generation in 2031
	Auto Driver	
AM	50%	50%
PM	55%	45%

It should be noted that the proposed improvements to the Lakeshore West rail line, to provide 15-minute all-day service, will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

2.4 Trip Generation

At the request of the City of Mississauga, IBI Group undertook trip generation surveys at two proxy sites. These locations were:

- 15 Elizabeth Street in Mississauga (near Port Credit GO Station); and
- 3865 Lake Shore Boulevard West in Toronto (near Long Branch GO Station).

The results of the other surveys are outlined below.

<u>15 Elizabeth Street (Residential Development)</u>

The trip generation survey took place on June 3, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of auto inbound/outbound trips is summarized in Exhibit 9.

Exhibit 9: Inbound/Outbound Auto Trips at 15 Elizabeth Street

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	54	1	0.02	9	0.17	10	0.19
PM		9	0.17	5	0.09	14	0.26

*Source: City of Mississauga planning staff

As shown in Exhibit 9, there are 10 auto trips during the AM peak hour and 15 auto trips during the PM peak hour. Given that there are 54 units at 15 Elizabeth Street, this equates to an auto trip rate of 0.19 in the AM peak hour and 0.26 in the PM peak hour.

3865 Lake Shore Boulevard West (Residential and Small Commercial/Professional Services Development)

The trip generation survey took place on May 21, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The amount of inbound/outbound auto trips associated with the residential component of the site are summarized in Exhibit 10. The commercial/professional services component of the site is a small medical clinic that does not have any parking spaces on the site. Surveyors monitored the parking spaces to ensure that any commercial/professional services trips were discounted against the residential trip rate calculation.

Exhibit 10: Inbound/Outbound Auto Trips at 3865 Lake Shore Boulevard West

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	185*	7	0.04	40	0.21	47	0.25
PM		41	0.22	22	0.12	63	0.34

*Source: http://www.condominium.ca/3865-lake-shore-blvd-w

As shown in Exhibit 10, there are 47 auto trips during the AM peak hour and 63 auto trips during the PM peak hour. Given that there are 185 units at 3865 Lake Shore Boulevard West, this equates to an auto trip rate of 0.25 trips/unit in the AM peak hour and 0.34 trips/unit in the PM peak hour.

Institute of Transportation Engineers (ITE) Trip Generation Manual

A comparison was undertaken between the two surveyed auto trip rates, and the equivalent trip rates in the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition publication. This comparison, which can be found in Exhibit 11, shows that the auto trip rates for the two proxy sites are far lower than those assumed by the ITE Trip Generation manual.

Exhibit 11: Trip Generation Survey Comparison with ITE Trip Generation Manual

Peak Hour	# of Units	Source	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
AM	54	Survey - 15 Elizabeth St	0.02	0.17	0.19
		ITE	0.10	0.48	0.58
		Survey - 3865 Lake Shore Blvd	0.04	0.21	0.25
		ITE	0.08	0.38	0.46
PM	185	Survey - 15 Elizabeth St	0.17	0.09	0.26
		ITE	0.45	0.22	0.67
		Survey - 3865 Lake Shore Blvd	0.22	0.12	0.34
		ITE	0.36	0.18	0.54

*ITE source was the fitted curve equation, not the rate, as this was more conservative. This is why it was different for the 2 sites, as the curve is non-linear

Summary

Given the location and nature of the two proxy surveys, it is inherent that any trip reduction due to transit and other non-auto modes will be captured in the surveyed rate. This is because vehicle trips were surveyed, as opposed to people trips (due to the logistics of undertaking such a survey at these sites).

A review of the surveyed and ITE trip rates in Exhibit 11 shows that the ITE trip rates are higher than the surveyed trip rates. Additionally, the site in Port Credit had a lower auto trip rate than the site in Long Branch in Toronto. This is unexpected, given the slightly higher non-auto mode share in Port Credit (as per a comparison of TTS data).

Based on the results of the trip generation surveys, and the modal split in the areas surrounding the two survey sites, a trip generation rate similar to the trip survey rates was used, but closer to that found in Port Credit. It is not recommended to use the exact surveyed trip rate in Port Credit, rather something near the middle of the two surveyed rates due to the:

- Small sample size (one survey date); and
- Building age (the 15 Elizabeth Street building is older than the 3865 Lake Shore Boulevard W building).

Exhibit 12 summarizes the following:

- Recommended existing trip generation rates, which could be used for short term analysis or any analysis should the modal split not be achieved; and
- Recommended 2031 trip generation rates, which includes a conservative 10% trip reduction to the recommended existing trip generation rates (which shows that the auto driver mode share could drop up to 20% by 2031). This reduction accounts for the increased non-auto mode share from the time of surveys (2015) to the study horizon (2031), as discussed in the discussion on mode share.

Exhibit 12: Recommended Existing and 2031 Auto Trip Generation Rate

Peak Hour	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
Existing AM	0.03	0.19	0.22
2031 AM (includes increased non-auto mode share)	0.03	0.17	0.20
Existing PM	0.19	0.10	0.29
2031 PM (includes increased non-auto mode share)	0.17	0.09	0.26

The 2031 horizon year analysis will consider residential trip rates to be 0.20 trips per unit in the AM peak hour and 0.26 trips per unit in the PM peak hour, as shown in Exhibit 12 and confirmed with the City of Mississauga.

Interaction Trips

A 5% interaction trip reduction was applied to sites that contain retail, restaurant, or financial uses on the same site as an office or residential land use. A trip reduction was not applied to these uses for adjacent sites.

GO Station Parking Structure

The trip generation for the additional GO Station parking spaces are based on the observed trip generation rates for the existing GO Station parking lots at Port Credit. These rates were calculated based on the October 14th, 2014 survey of the parking lot driveways. The survey took into account the north and south lots, but not the west lot between Stavebank Road and Elizabeth Street, due to the distance from the proposed parking structure. Exhibit 13 summarizes the observed GO parking trip generation.

Exhibit 13: Observed GO Parking Trip Generation

	TRIP GEN ENTERING		TRIP GEN EXITING		Total		
	# Trips	Trip Gen	# Trips	Trip Gen	# Trips	# Spaces	Trip Gen (trips / space)
AM	484	0.67	58	0.08	542	725	0.75
PM	65	0.09	245	0.34	310	725	0.43

As shown in Exhibit 13, the existing trip generation rate for the GO Station is 0.75 trips per parking space in the AM peak hour, and 0.43 trips per parking space in the PM peak hour. This rate is expected to be comparable to the future parking spaces. Using the observed GO Station parking trip generation, the trips for the additional 400 parking spaces were calculated and are summarized in Exhibit 14.

Exhibit 14: Trips for Additional GO Parking Spaces

	# New Peak Hour Trips	
	Inbound	Outbound
AM	268	32
PM	36	136

2.5 Trip Distribution

Trip distributions for the AM and PM peak periods were calculated for the following land uses: retail (includes financial), office, and residential. The study area (depicted in red in Exhibit 15) is within zone[1] 3877. When extracting data from the 2011 TTS for residential and office land uses, it was assumed that:

- For traffic with destinations west of the study area, development traffic could take Lakeshore Road (to access West Mississauga, Mississauga Road, and Queen Elizabeth Way) or Hurontario Street (to Queen Elizabeth Way);
    - o The traffic accessing the Queen Elizabeth Way via Hurontario Street and Lakeshore Road / Mississauga Road would be split evenly;
- For traffic with destinations east of the study area but within Mississauga, development traffic could take Lakeshore Road (to Cawthra Road or Dixie Road) or Hurontario Street (to an east-west arterial e.g. Eglinton Avenue). It was assumed that the traffic using Hurontario Street and Lakeshore Road / Cawthra Road / Dixie Road would be split evenly;
- For traffic with destinations east of the study area outside of Mississauga, development traffic would travel north on Hurontario Street to access the QEW; and
- All traffic with destinations north of the study area would travel north on Hurontario Street.

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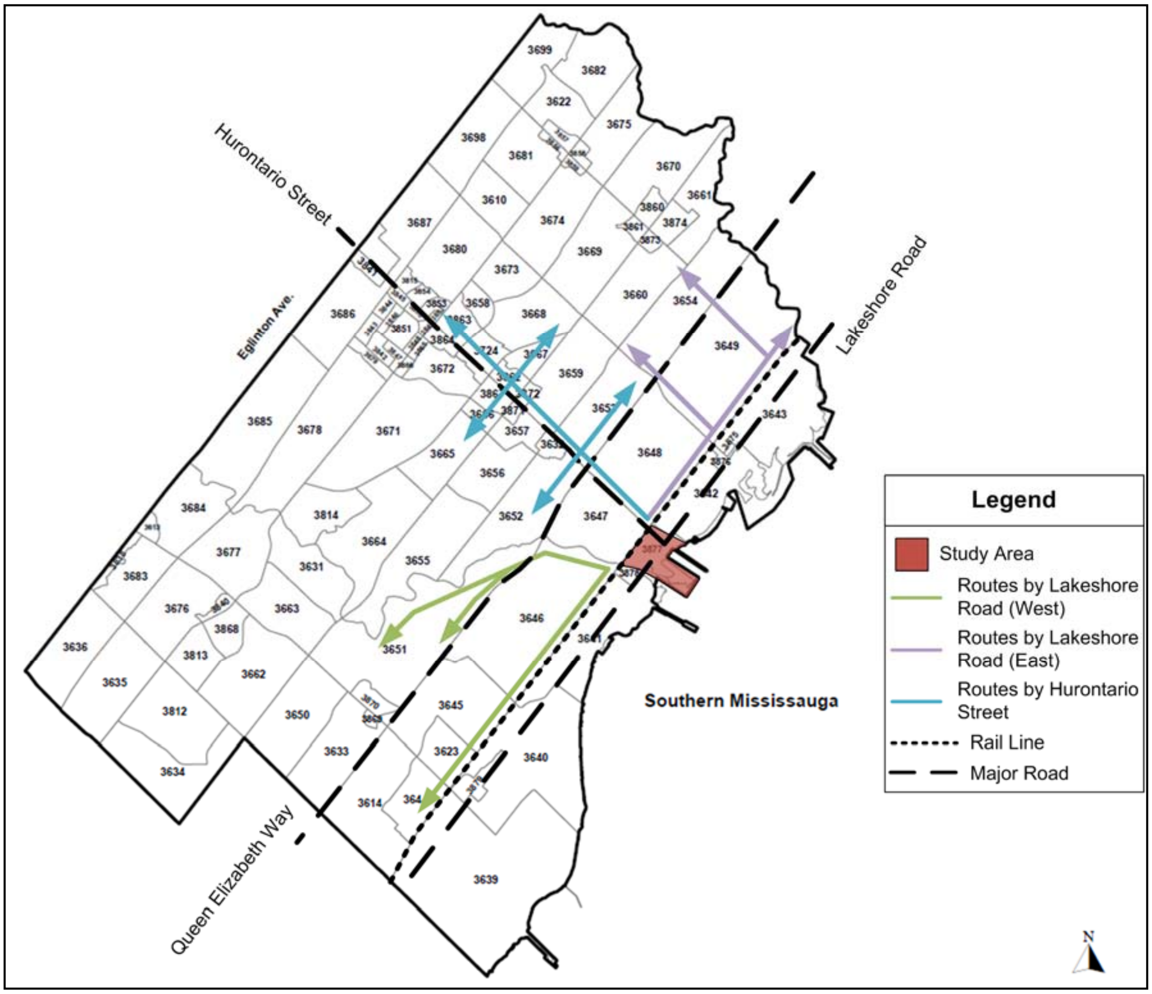
[1] University of Toronto. (2009). 2006 Traffic Zone Boundaries – Zone Numbers and Detailed Definitions. Retrieved June 1st, 2015 from: http://www.dmg.utoronto.ca/pdf/reports/2006to2010/znbdy2006/boundary2006_A.pdf

Exhibit 15: Study Area and Travel Routes



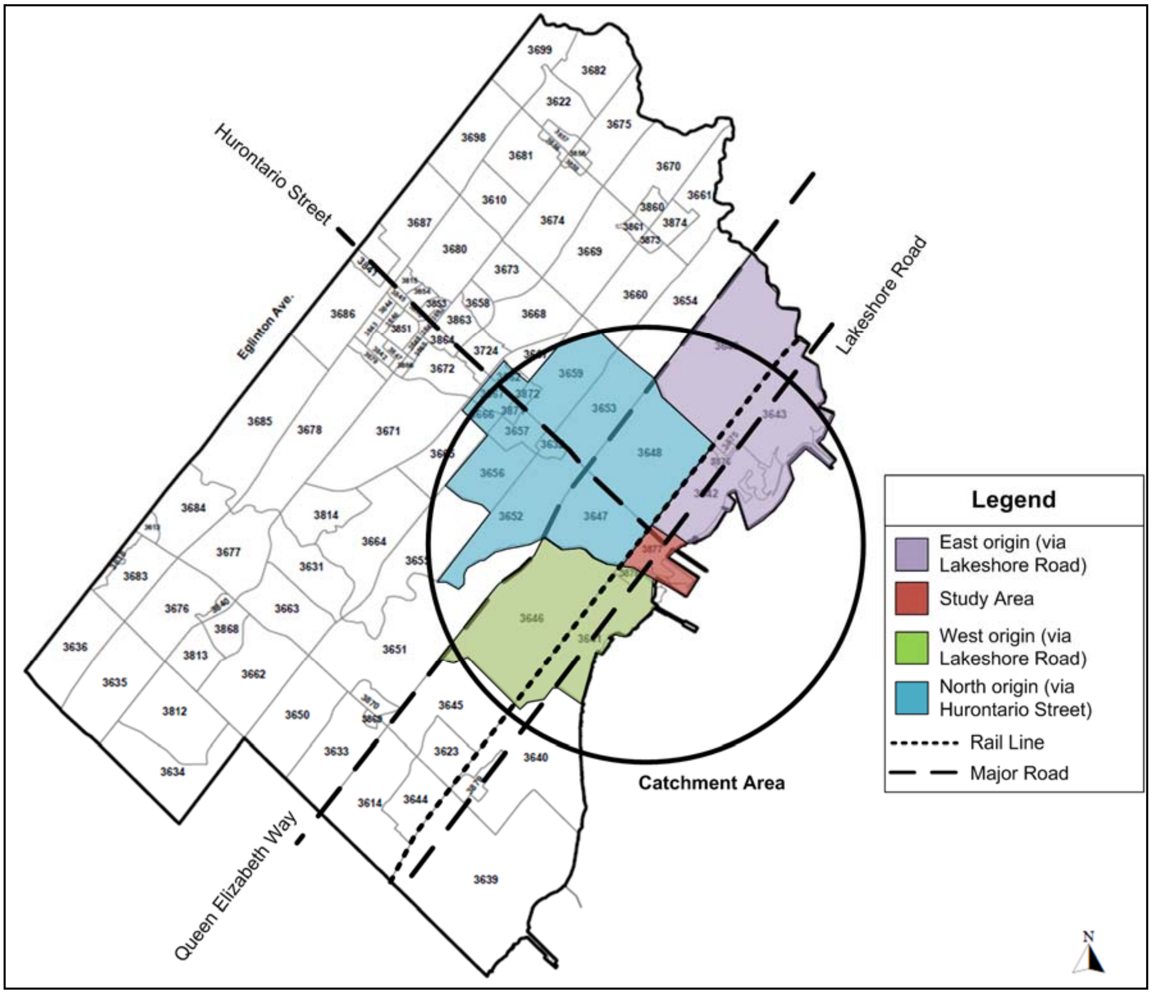
Trip distributions for residential and office land uses were calculated by taking a weighted average of the trip distributions for the inbound and outbound trips in each peak period. The resulting trip distributions are summarized in Exhibit 16, and were rounded to the nearest 5%.

Exhibit 16: Residential and Office Land Use Trip Distribution

Land Use	Peak Period	Lakeshore West	Lakeshore East	Hurontario Street
Residential	AM	20%	10%	70%
	PM	15%	10%	75%
Office	AM	25%	5%	70%
	PM	25%	5%	70%

The trip distributions for retail and financial land uses were determined based on the population distribution within a catchment area around the study area (approximately 4 km in radius), illustrated in Exhibit 17.

Exhibit 17: Retail and Financial Land Use Catchment Area



The population distribution, and subsequently the trip distribution, for retail and financial land uses are summarized in Exhibit 18. Trip distributions were rounded to the nearest 5%.

Exhibit 18: Retail and Financial Land Use Trip Distribution

	West	East	North
Retail Trip Distribution	20%	20%	60%

The trip distributions presented in Exhibit 16 and Exhibit 18 were confirmed with the City of Mississauga.

2.6 Planned Capital Road Improvements

The City of Mississauga noted that the only planned capital road works project that it is aware of within the Transportation Impact Study Area is the realignment of the Stavebank Road and Lakeshore Road East intersection, which is to become a standard four-legged intersection.

2.7 Hurontario-Main Light Rapid Transit (HMLRT)

Another study parameter is that the HMLRT, which recently received full provincial funding, is operational for the 2031 traffic horizon analysis year. According to the HMLRT Environmental Project Report (2013), the path of the HMLRT impacts three existing intersections within the study area:

1) Hurontario Street / Inglewood Drive: The east leg of Inglewood Drive will be removed as a result of the removal of the Old River Road bridge. This intersection is no longer an intersection per se, as the remaining east leg is a driveway providing ingress and egress to a plaza. As a result, the control type at this location will also be downgraded from a signalized one to a stop-controlled for the westbound leg.

Additional changes to this intersection include:

- The removal of the northbound left turning lane;
- The removal of the southbound right turning lane; and
- The conversion of the southbound left turning lane to a shared through-left lane.

2) Hurontario Street / Eaglewood Boulevard: With the removal of the Old River Road bridge at Inglewood Drive, a new bridge and eastbound leg will be installed at Eaglewood Boulevard to provide access between Oriole Avenue and Hurontario Street. This leg will consist of one left-through-right shared approach lane and one receiving lane. The control type of this intersection will also be converted from stop-controlled to signalized.

Additional changes to this intersection include:

- The conversion of the northbound through lane to a shared through-left lane;
- The removal of the southbound left turning lane;
- The conversion of the southbound inside through lane to a shared through-left lane;
- The conversion of the southbound outside through lane to a shared through-right lane; and
- The conversion of the westbound right lane to a shared through-right lane.

3) Hurontario Street / Park Street: Several lane configuration changes are to be made to the southbound approach at the intersection of Hurontario Street and Park Street, including:
   - The removal of the southbound right turn lane;
   - The conversion of the curbside southbound through lane to a shared through-right lane; and
   - An increase in the amount of storage for the southbound left turn lane from 20m to 60m.

These geometric changes are reflected in the analysis for 2031. The design prepared in 2013 illustrates the intersection layout for these three intersections, and is included in **Appendix D**.

3 Background Growth and Development

The 2031 future traffic conditions are comprised of two main factors: background growth outside of Port Credit, and development growth within the Port Credit community node. This section explains the source of the information for these contributors, as well as the traffic volumes associated with each factor.

3.1 Background Growth Rates for Developments Outside of Port Credit

The City of Mississauga provided AM and PM peak hour per annum growth rate assumptions for developments outside of Port Credit that will impact the Traffic Influence Area of the Special Site 12 Master Plan Study. These are summarized below in Exhibit 19.

Exhibit 19: City-Identified Per Annum Growth Rates for Lakeshore Road and Hurontario Street

ROADWAY	AM PEAK HOUR	PM PEAK HOUR
Lakeshore Road Eastbound	0.0%	2.0%
Lakeshore Road Westbound	2.0%	0.0%
Hurontario Street Northbound	0.0%	0.5%
Hurontario Street Southbound	0.5%	1.0%

3.2 Future Development within Port Credit Community Node

The 2031 traffic impact analysis examined the impact of different staging of planned, proposed and potential future developments within the Port Credit Community Node Character Area (i.e. Sites 1 through 13, which are illustrated in Exhibit 3 and shown in Exhibit 5). The owners of Sites 10 and 12 have zoning approval for new developments, but still have to go through the Site Plan Approval process. The owners of Sites 1, 5, and 13 have proposed developments. The City has identified the remaining 8 sites as locations where development may potentially occur by 2031.

The City provided residential and non-residential yield estimates for Sites 5 through 13 (memo dated November 2014). The City's memo estimates that 1,937 residential units could be built on Sites 5 through 13 by 2031. IBI Group estimates that between 50,000 and 60,000 sq. m. of development (excluding above or below-grade parking) could be accommodated within the Master Plan Study Area (i.e. Sites 1-3, with no new development or uses assumed for Site 3), if full land assembly occurs on Sites 2 and 4. For the purposes of testing a worst case scenario traffic impact, IBI Group assumed a very large amount of office will be developed within the Master Plan Area (i.e. 13,200 sq. m.), along with 1,950 sq. m. of retail, and approximately 486 units. This represents a total of 2,423 new residential units and an absorption of 161 units per year for the Community Node portion of Port Credit alone (thousands of new units are anticipated to be constructed in the adjacent neighbourhood areas of Port Credit).

These development estimates for the Port Credit Community Node Character Area are aggressive. Data from both the Canada Mortgage and Housing Corporation (CMHC) and the City show that over the past decade approximately 100 residential units have been built/absorbed by the market per year within the larger Port Credit area. A moderate amount of new retail/commercial and little office has been built in recent years.

For the purposes of estimating traffic impacts from future development, IBI Group has assumed all planned, proposed and potential development discussed in the City's 2014 memo will occur on Sites 5 through 12, but that only half of the residential and non-residential development proposed for Site 13 will occur by 2031. This is consistent with the Master Plan prepared for Canada Lands that assumes full build out for Site 13 will take between 20 and 30 years. IBI Group has assumed full build out on the Master Plan Study Area blocks by 2031. Due to the lack of actual development applications, as well as the collaboration needed between adjacent landowners (i.e. land assembly), the 2031 traffic analysis represents a worst case scenario, should the lands develop as assumed. The new development site trips from development assumed to be complete for all 13 sites by 2031 is shown in Exhibit 20.

Exhibit 20: Trip Generation Summary for New Trips on Sites 1 to 13, by 2031

	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
	AM Peak Hour (new trips)			**PM Peak Hour (new trips)**		
Site 1	392	109	501	104	262	366
Site 2	5	23	28	21	11	32
Site 3	0	0	0	0	0	0
Site 4	13	34	47	29	17	46
Site 5	4	14	18	13	7	20
Site 6	4	12	16	11	7	18
Site 7	2	12	14	12	6	18
Site 8	2	12	14	12	6	18
Site 9	3	5	8	5	3	8
Site 10	51	46	97	27	37	64
Site 11	18	35	53	25	17	42
Site 12	38	17	55	62	63	125
Site 13	106	192	298	159	121	280
Net Trips	**638**	**511**	**1149**	**480**	**557**	**1037**

Exhibit 20 shows that there is anticipated to be 1,149 new trips in the AM peak hour, and 1,037 new trips in the PM peak hour should all 13 sites redevelop by 2031. Approximately 26.5% and 16.6% of the new AM and PM peak hour trips in 2031 are related to the GO Station parking structure development on Site 1, respectively.

4 2015 Existing Traffic Operations

The intersections were analyzed using the Synchro 9.0 analysis software which uses the Highway Capacity Manual methodology. We have identified any volume to capacity ratios greater than 0.85, any level of service (LOS) that is an E or an F, and any queue (95th percentile) that exceeds its storage length. The HCM delay thresholds are summarized in Exhibit 21. The 2015 existing analysis results are presented below in Exhibit 22 for signalized intersections and Exhibit 23 for unsignalized intersections. Full Synchro reports for the 2015 Exisiting Conditions are provided in **Appendix E**. Volume diagrams for all scenarios and conditions can be found in **Appendix J**, while queuing reports are provided in **Appendix K**.

Exhibit 21: Highway Capacity Manual (HCM) Delay Thresholds

LEVEL OF SERVICE (LOS)	DELAY AT SIGNALIZED INTERSECTION (S)	DELAY AT UNSIGNALIZED INTERSECTION (S)
A	≤10 sec	≤10 sec
B	10–20 sec	10–15 sec
C	20–35 sec	15–25 sec
D	35–55 sec	25–35 sec
E	55–80 sec	35–50 sec
F	≥80 sec	≥50 sec

Exhibit 22: Existing Traffic Operations – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.75	NBL NBT SBL SBT	F E E E	0.69 0.11 0.05 0.11	24 13 6 15	- - - -
	PM	C	0.87	EBT NBL	C E	0.90 0.77	144 42	- -
Lakeshore Road / Elizabeth Street	AM	A	0.71	NBL NBT SBL SBT	E E E E	0.21 0.16 0.51 0.12	13 14 20 15	- - - -
Lakeshore Road / Hurontario Street	AM	C	0.71	SBL	E	0.86	93	30
	PM	C	0.78	SBL	D	0.78	73	30
Hurontario Street / Park Street	AM	C	0.77	EBL SBL SBR	F C C	0.96 0.66 0.23	77 60 38	55 20 8
	PM	B	0.47	EBL SBL SBR	E B C	0.79 0.35 0.26	46 42 57	55 20 8
Hurontario Street / Inglewood Drive	AM	B	0.41	EBT WBT	E E	0.56 0.22	36 17	- -

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 22, there are no movements currently operating over capacity (with a volume to capacity ratio greater than 1.00). Additionally, the overall v/c ratio for all signalized intersections does not exceed 0.87. There are a few movements with a LOS of F.

Exhibit 23: Existing Traffic Operations – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Hurontario St & Eaglewood Blvd	AM	WBL	E	0.37	10.9
	PM	WBL	F	0.43	13

There is only one intersection with critical movements in the existing conditions, as demonstrated in Exhibit 23. The westbound left-turn from Eaglewood Boulevard to Hurontario Street has a LOS of F both AM and PM peak hours. However, the 95th percentile queue length is

13 metres, which is less than two vehicles lengths. Additionally, the v/c ratio shows the movement is well under capacity. The delays stem from high volumes of conflicting northbound and southbound traffic on Hurontario Street.

5 2031 Total Traffic Operations

The 2031 total analysis results are presented in this section for four development scenarios. Analysis scenarios A through D include varying levels of development within Port Credit in an attempt to identify the impacts of specific groups of development.

5.1 Scenario A (Sites 5-13)

Scenario A assumes that Sites 5 through 12 and a portion of Site 13 are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 24 for signalized intersections. The intersections were analyzed using the Synchro 9.0 analysis software which uses the Highway Capacity Manual methodology. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. No exhibit is provided for unsignalized intersections, as there are no critical movements identified for these intersections in Scenario A. Full Synchro reports for Scenario A are provided in **Appendix F**.

Exhibit 24: 2031 Total Traffic Operations – Scenario A – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.81	NBL SBT	F E	0.79 0.53	38 46	- -
	PM	E	1.17	EBT WBT NBL SBT	F D F E	1.18 0.99 1.11 0.81	219 178 63 78	- - - -
Lakeshore Road / Elizabeth Street	AM	B	0.77	NBL NBT SBL SBT	E E E E	0.44 0.61 0.55 0.12	29 45 21 16	- - - -
Lakeshore Road / Hurontario Street	AM	C	0.91	EBL WBR SBL	D D D	0.90 0.37 0.87	134 49 50	- 35 30
	PM	C	0.92	EBL SBL	E C	0.93 0.83	102 75	- 30
Hurontario Street / Park Street	AM	D	0.88	EBL SBL	F D	0.96 0.81	86 68	55 60
	PM	B	0.71	EBL	E	0.83	59	55
Hurontario Street / Eaglewood Boulevard	AM	B	0.66	EBT WBL WBT	E E E	0.62 0.36 0.32	35 24 29	- - -
	PM	C	0.88	SBT	C	0.95	208	-

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 24, the 2031 total traffic operations for Scenario A are not anticipated to have any movements operating over capacity (volume to capacity ratio greater than 1.00) with the exception of the eastbound through, and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 30 metres in the AM peak hour, while the southbound left-turn storage at the Hurontario Street / Lakeshore Road intersection is exceeded by approximately 45 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

The operations at the Lakeshore Road / Stavebank Road intersection are associated primarily with background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario A (13 vehicles).

5.1.1 Scenario A Summary

Scenario A demonstrates that there are some capacity, delay, and queuing problems throughout the network before Special Site 12 is developed, with some of the problems attributed to development outside of Port Credit.

5.2 Scenario B (Sites 2-13)

Scenario B assumes that all of the sites within the Port Credit Community Node Character Area are built and occupied by 2031, with the exception of the Metrolinx site on Site 1. The 2031 total analysis results are presented below in Exhibit 25 for signalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95^{th} percentile) that exceeds its storage length. No exhibit is provided for unsignalized intersections, as there were no critical movements identified for these intersections in Scenario B. Full Synchro reports for Scenario B are provided in **Appendix G**.

Exhibit 25: 2031 Total Traffic Operations – Scenario B – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.81	NBL SBT	F E	0.79 0.54	38 47	- -
	PM	E	1.17	EBT WBT NBL SBT	F D F E	1.19 0.99 1.11 0.81	221 179 63 78	- - - -
Lakeshore Road / Elizabeth Street	AM	B	0.77	NBL NBT SBL SBT	E E E E	0.45 0.61 0.56 0.12	29 45 22 17	- - - -
Lakeshore Road / Hurontario Street	AM	C	0.92	EBL WBR SBL	D D D	0.91 0.39 0.87	136 51 54	- 35 30
	PM	C	0.92	EBL SBL	E C	0.93 0.84	104 76	- 30
Hurontario Street / Park Street	AM	D	0.92	EBL SBL	F D	0.97 0.87	103 78	55 60
	PM	B	0.74	EBL	E	0.84	65	55
Hurontario Street / Eaglewood Boulevard	AM	B	0.68	EBT WBL WBT	E E E	0.62 0.36 0.35	35 24 31	- - -
	PM	C	0.90	SBT	C	0.98	215	-

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 25, the 2031 total traffic operations for Scenario B are not anticipated to have any movements operating over capacity with the exception of the eastbound through and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 50 metres in the AM peak hour, while the southbound left-turn storage at Hurontario Street / Lakeshore Road is exceeded by approximately 45 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario B (21 vehicles).

5.2.1 Scenario B Summary

Scenario B demonstrates that as more developments within Port Credit are completed (Sites 2-4, compared to Scenario A), there are some capacity, delay, and queuing problems that appear throughout the network even before the Metrolinx parking structure and mixed-use development on Site 1 is developed. Some of these problems are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.3 Scenario C (Sites 1, 5-13)

Scenario C assumes that the Metrolinx site (Site 1) and Sites 5 through 13 within the Port Credit Community Node Character Area are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 26 for signalized intersections and Exhibit 27 for unsignalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. Full Synchro reports for Scenario C are provided in **Appendix H**.

Exhibit 26: 2031 Total Traffic Operations – Scenario C – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.86	EBT NBL NBT SBT	B F E E	0.86 0.83 0.17 0.54	224 41 20 47	- - - -
	PM	F	1.21	EBT WBT NBL SBT	F D F E	1.23 1.03 1.18 0.85	227 192 64 84	- - - -
Lakeshore Road / Elizabeth Street	AM	C	0.82	NBL NBT SBL SBT	E E E E	0.45 0.63 0.55 0.12	30 47 22 17	- - - -
Lakeshore Road / Hurontario Street	AM	D	0.97	EBL WBR SBL SBR	E D E F	0.97 0.49 0.91 0.24	160 62 101 39	- 35 30 -
	PM	C	0.97	EBL WBT WBR SBL	E D C D	0.98 0.89 0.35 0.89	111 127 36 92	- - 35 30
Hurontario Street / Park Street	AM	D	0.85	EBL WBL WBT NBL SBL	E E E E D	0.83 0.10 0.39 0.67 0.80	70 8 24 51 84	55 50 - 35 60
	PM	C	0.88	EBL SBT	E C	0.92 0.85	103 148	55 -
Hurontario Street / Eaglewood Boulevard	AM	B	0.70	EBT WBL WBT	E E E	0.62 0.36 0.37	35 24 32	- - -
	PM	C	0.94	EBT SBT	E D	0.66 0.99	47 251	- -

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 26, the 2031 total traffic operations for Scenario C are not anticipated to have any movements operating over capacity with the exception of the eastbound through, westbound through, and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 50 metres in the PM peak hour, while the southbound left-turn storage at the Hurontario Street / Lakeshore Road intersection is exceeded by approximately 60 metres. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario C (37 vehicles). The same is true for the AM peak hour operations expected at the Hurontario Street / Lakeshore Road intersection.

Exhibit 27: 2031 Total Traffic Operations – Scenario C – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Ann St & Park St	AM	EB	E	N/A	N/A
Ann St & Queen St & GO Parking Access	AM	NB	D	0.86	75.8

*note: There is no v/c ratio or queue length available from HCM for an all-way stop controlled intersection.

There are only two intersections with critical movements in the 2031 total traffic conditions for Scenario C, as demonstrated in Exhibit 27. The eastbound movement in the AM peak hour at Ann Street / Park Street has a LOS of E with a delay of 45 seconds. Additionally, the 95th percentile northbound queue at Ann Street / Queen Street is almost 11 vehicles long, which could on occasion block the other Site 1 entrance on Ann Street.

Given that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses, the results for this movement are not considered problematic. As the Port Credit area is developed, drivers will take other routing options where there is available capacity, which would further lower the anticipated results.

5.3.1 Scenario C Summary

Scenario C demonstrates that as Site 1, and 5-13 are developed, there are some capacity, delay, and queuing problems that appear throughout the network. The Scenario C results are comparable, but slightly more congested, than the Scenario B traffic operations. As for Scenario B, some of the problems in Scenario C are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.4 Scenario D (Sites 1-13)

Scenario D assumes that all 13 sites within the Port Credit Community Node, including the Metrolinx site (Site 1), are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 28 for signalized intersections and Exhibit 29 for unsignalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. Full Synchro reports for Scenario D are provided in **Appendix I**.

Exhibit 28: 2031 Total Traffic Operations – Scenario D – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.86	EBT NBL NBT SBT	B F E E	0.86 0.83 0.16 0.55	225 41 20 48	- - - -
	PM	F	1.22	EBT WBT NBL SBT	F D F E	1.24 1.04 1.18 0.86	229 194 64 85	- - - -
Lakeshore Road / Elizabeth Street	AM	C	0.82	EBT NBL NBT SBL SBT	A E E E E	0.85 0.45 0.63 0.55 0.12	10 30 47 22 17	- - - - -
Lakeshore Road / Hurontario Street	AM	D	0.98	EBL WBR SBL SBR	E D F F	0.99 0.50 0.91 0.24	162 62 104 46	- 35 30 -
	PM	C	0.99	EBL WBT WBR SBL	E D C D	1.00 0.89 0.36 0.89	112 127 37 93	- - 35 30
Hurontario Street / Park Street	AM	D	0.87	EBL WBL WBT SBL	F E E D	0.98 0.10 0.39 0.77	90 8 24 77	55 50 - 60
	PM	C	0.91	EBL SBT	E C	0.94 0.89	112 167	55 -
Hurontario Street / Eaglewood Boulevard	AM	B	0.72	EBT WBL WBT	E E E	0.62 0.36 0.40	35 24 33	- - -
	PM	C	0.96	EBT SBT	E D	0.66 1.02	47 261	- -

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 28, the 2031 total traffic operations for Scenario D are not anticipated to have any movements operating over capacity with the exception of the eastbound through, westbound through, and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection, the eastbound left-turn in the PM peak hour at the Lakeshore Road / Hurontario Street intersection, and the southbound through movement in the PM peak hour at the Hurontario Street / Eaglewood Boulevard intersection. The overall intersection at the Lakeshore Road / Stavebank Road intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at Hurontario Street / Park Street is exceeded by approximately 55 metres in the PM peak hour, while the southbound left-turn storage at Hurontario Street / Lakeshore Road is exceeded by approximately 60 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present in existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario D (45 vehicles). The same is true for the AM peak hour operations expected at the Hurontario Street / Lakeshore Road intersection.

As noted before, given that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses, the results for the eastbound through movement are not considered problematic. As the Port Credit area is developed, drivers will take other routing options where there is available capacity, which would further lower the anticipated results.

Exhibit 29: 2031 Total Traffic Operations – Scenario D – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Ann Street & Park Street	AM	EB	F	N/A	N/A
		NB	E	N/A	N/A
		Overall	E	N/A	N/A
Ann Street & Queen Street & GO Parking Access	AM	NB	D	0.86	75.8

*note: There is no v/c ratio or queue length available from HCM for an all-way stop controlled intersection.

There are only two intersections with critical movements in the 2031 total traffic conditions for Scenario D, as demonstrated in Exhibit 29. The eastbound movement in the AM peak hour at Ann Street / Park Street has a LOS of F with a delay of 64 seconds, while the northbound movement has a LOS of E and a delay of 41 seconds. Additionally, the 95th percentile northbound queue at Ann Street / Queen Street is almost 11 vehicles long, which could on occasion block the other Site 1 entrance on Ann Street. These results are not considered to be problematic.

5.4.1 Scenario D Summary

Scenario D demonstrates that as all 13 sites within Port Credit are developed, there are some capacity, delay, and queuing problems throughout the network. As noted previously, some of the problems are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.5 Mitigation Measures

The 2031 total traffic operations discussed in the previous sections include signal timing optimization and the increase of cycle lengths, where appropriate. Some additional mitigation measures were also tested and implemented in the analysis. These measures include:

- Implementing an eastbound advanced left-turn protected phase at Hurontario Street / Park Street; and
- Implementing a northbound advanced left-turn protected phase at Hurontario Street / Park Street.

Despite these mitigation measures, there are still some intersections that are operating at or near capacity, or have lengthy delays, under the development assumptions. It should be stressed that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses estimated. For the unsignalized intersections, the results are generally not considered problematic. As the Port Credit area is developed, drivers are expected to take other routing options through the interior road network where there is available capacity, which would further lower the anticipated results. It should also be noted that the proposed improvements to the Lakeshore West rail line, to provide 15-minute all-day service, will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

For the few signalized intersections with capacity problems (i.e. a volume to capacity ratio greater than 0.85 or a LOS of E or F), one of the sources of the operational concerns stem from the large background growth volumes outside of Port Credit.

Due to the development in and around the existing Port Credit GO Station, a high level examination was undertaken to assess the impacts to the MiWay buses. The three critical movements for these buses would be the:

- Northbound movement at Ann Street / Park Street;
- Northbound movement at Ann Street / Queen Street; and
- Southbound left and through-right turn movements at Elizabeth Street / Park Street.

The worst-case scenario, Scenario D, was compared to the 2015 Existing Conditions, to see the change in delay for these movements. The movements at Elizabeth Street / Park Street only experience an increase of 1 to 2 seconds, which will not impact the buses. It is anticipated that there will be fewer buses in 2031 with the future HMLRT, so the delay impacts to passengers accessing the Port Credit GO station will be minor.

The northbound delay at Ann Street / Queen Street increases by 10 to 15 seconds over the 16 year period. This is an acceptable amount of delay over a 16 year period, and should not have a significant impact to bus operations.

The largest impact to buses is at the Ann Street / Park Street intersection in the AM peak hour. The change in delay to the northbound movement is approximately 30 additional seconds of delay. Granted this is over a 16 year period, looking at the worst-case scenario, but it is still a large increase. Options to reduce this delay include:

- Redesigning the intersection as part of the Site 1 development to include a queue jump lane to be used by transit vehicles only; and
- Converting Queen Street to two-way, east-west operations (instead of one-way, westbound operations only), with eastbound movements for transit vehicles only. This would need to be tested and designed in a manner to accommodate buses and their turning movements.

6 Conclusions and Recommendations

Based on a review of the anticipated 2031 traffic operations, the proposed GO parking structure (with a net increase of 400 spaces) and full build out land development scenario tested for the Master Plan Study Area (i.e. 486 residential units. 13,200 sq. m. of office and 1,750 sq. m. of retail) can be accommodated, provided minor mitigation measures are implemented. These results are subject to future traffic analysis to be undertaken once actual development proposals come forth, and rezoning and site plan approval is sought by developers.

The analysis presented in this report represents a worst case scenario, based on assumed development sizes and potential development accesses. Consequently, traffic operations for intersections and movements identified as over capacity or with poor levels of service should not necessarily be considered problematic. As the Port Credit area is developed, drivers are expected to take other routing options where there is available capacity, which would further reduce the identified issues. Additionally, many of the problematic intersection movements are a result of the background growth associated with development outside of Port Credit.

Appendix A

Analysis Parameters and Assumptions

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Memorandum

To/Attention	Norbert Orzel - City of Mississauga	**Date**	June 11, 2015
From	Peter Richards - IBI Group	**Project No**	37342
cc	Evie Przybyla - City of Mississauga Paul Stewart - City of Mississauga Joe Perrotta - City of Mississauga Leslie Green - City of Mississauga Li Dong - Metrolinx Amy Shepherd - IBI Group Anthony Lui - IBI Group		
Subject	**Special Site 12 Master Plan Study Modal Split, Trip Generation, and Trip Distribution Assumptions Draft Memorandum**		

Introduction

This memorandum summarizes the modal split, trip generation, and trip distribution assumptions that will be used for the traffic impact analysis portion of the Special Site 12 Master Plan Study.

Background Growth – Traffic Influence Area

The City of Mississauga provided AM and PM peak hour per annum growth rate assumptions for developments outside of Port Credit, but would impact the Traffic Influence Area of the Special Site 12 Master Plan Study. These are summarized below in Figure 1.

Figure 1: City-Identified Per Annum Growth Rates for Lakeshore Road and Hurontario Street –

AM Peak Hour

Lakeshore Road Annual Growth

	2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area	
	Eastbound	Westbound
Annual Growth Rate	0.0%	2.0%

Hurontario Street Annual Growth

	2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area	
	Northbound	Southbound
Annual Growth Rate	0.0%	0.5%

PM Peak Hour

Lakeshore Road Annual Growth

	2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area	
	Eastbound	Westbound
Annual Growth Rate	2.0%	0.0%

Hurontario Street Annual Growth

	2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area	
	Northbound	Southbound
Annual Growth Rate	0.5%	1.0%

Future Development – (Port Credit Community Node)

The traffic impact analysis will examine the impact of different staging of planned, proposed and potential future developments on sites 1 through 13, which are illustrated in Figure 2. The owners of sites 10 and 12 have approved development plans. The owners of sites 5, 13 and 1 have proposed developments. The City has identified the remaining 8 sites as locations where development may potentially occur by 2031.

The future developments consist of commuter parking, residential, office, retail/commercial and financial land uses. The City provided residential and non-residential yield estimates for sites 5 through 13 (memo dated November 2014) and IBI Group is preparing estimates for the Master Plan Study Area (i.e. sites 1-4). The City's memo estimates that 1,937 residential units could be built on sites 5 through 13 by 2031. IBI Group estimates approximately 486 units could be accommodated on the Master Plan Study blocks. This represents a total of 2,423 new residential units and an absorption of 161 units per year for the Community Node portion of Port Credit alone (thousands of new units are anticipated to be constructed in the adjacent Neighbourhood areas of Port Credit). A very large amount of non-residential (almost 50,000 sq. m.) has also been identified for Sites 1 through 13.

Data from both the Canada Mortgage and Housing Corporation (CMHC) and the City show that over the past decade approximately 100 residential units built/absorbed by the market per year within the larger Port Credit Area. A moderate amount of new retail/commercial has been built.

For the purposes of estimating traffic impacts from future development, IBI Group has assumed all planned, proposed and potential development shown in the City's 2014 memo will occur on sites 5 through 12, but that only half of the residential and non-residential development proposed for site 13 will occur by 2031. This is consistent with the Master Plan prepared for Canada Lands that assumes full build out for site 13 will take between 20 and 30 years. IBI Group has assumed full build out on the Master Plan Study Area blocks by 2031.

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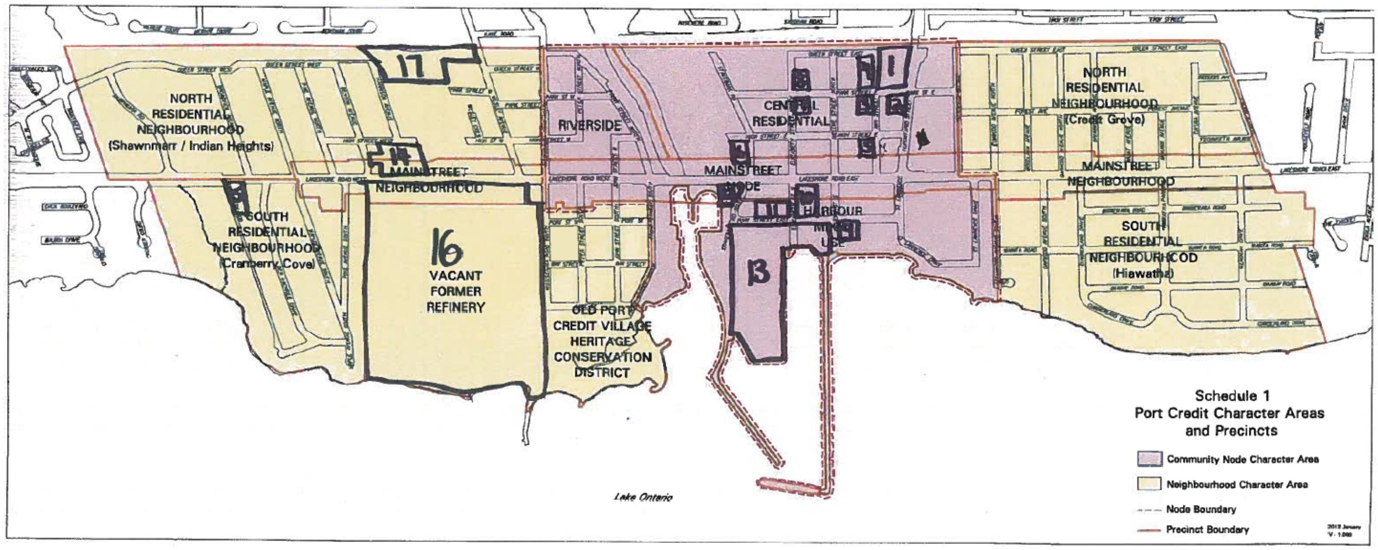
Figure 2: City-Identified Planned, Proposed and Potential Developments within Port Credit (by 2031)



Trip distribution and modal split data from the 2011 Transportation Tomorrow Survey (TTS) were reviewed, and trip generation surveys at proxy sites were undertaken to augment the Institute of Transportation Engineers publication, Trip Generation, 9th Edition, to better reflect conditions within the study area (e.g. existing and planned rapid transit, high walk-in rates to the GO station).

Modal Split

The modal split for the study area was determined using trip information from the study area (red zones in Figure 3) surrounding the Port Credit GO Station. The areas surrounding the GO Station were chosen to dilute the impact of the GO Station, which would likely result in a modal split with a representatively high proportion of non-auto trips.

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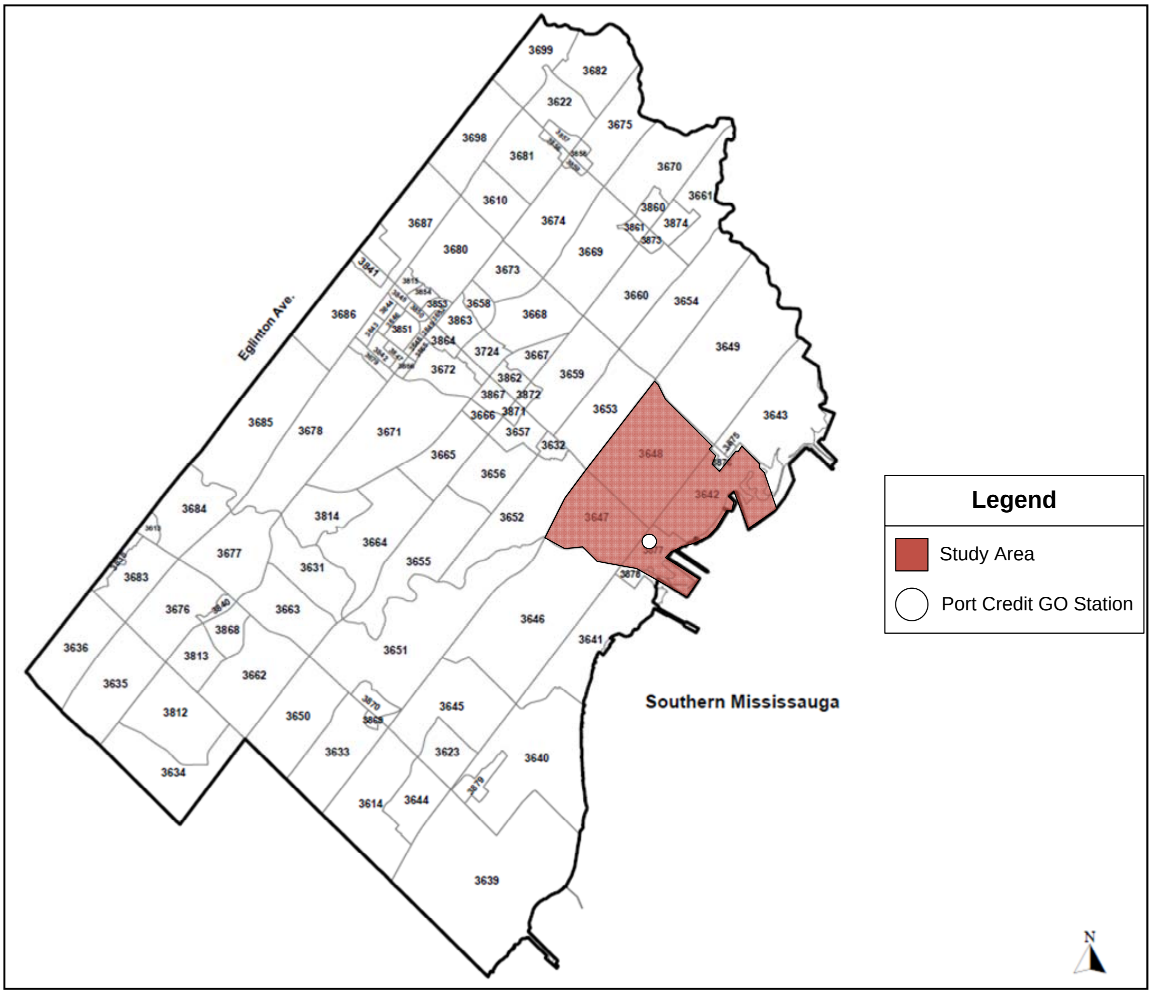
Figure 3: Zones used for Modal Split



The total number of trips to and from the study area by primary mode of transport was determined. The modal splits, summarized in Figure 4, were calculated by dividing the number of auto driver trips by the total number of trips. The numbers were rounded down to be conservative. The raw 2011 TTS data used is available in **Attachment A**.

Figure 4: Existing Modal Split

Peak Period	Primary Mode of Travel
	Auto Driver
AM	65%
PM	75%

Metrolinx and MMM Group prepared a document entitled *Hurontario / Main Street Corridor Master Plan* in October 2010. This report looked at the existing transit mode share between the QEW and Port Credit GO Station, which was approximately 20% in both directions. With an LRT in 2031, it is estimated this transit mode share could increase to over 50%, with another projection estimating as high as 67% for the southbound transit mode share.

From the 2011 TTS information presented in Figure 4, the non-auto mode share is approximately 35% for trips in the AM peak hour and 25% in the PM peak hour. Given the increased transit options expected to be in place by 2031, including the Hurontario-Main LRT line, we would expect the non-auto mode share to increase. This is confirmed by the traffic estimates found in the October 2010 report completed by Metrolinx and MMM Group. Based on a review of the information, we propose to use a non-auto mode share of 50% for future trips in the AM peak hour, and 45% for the PM peak hour (to recognize the existing higher auto share in the PM).

Note: The electrification of the Lakeshore West rail line, to provide 15-minute all-day service, will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

Figure 5: 2031 Modal Split / Non-Auto Trip Reduction Proposed

Peak Period	Primary Mode of Travel in 2031	Non-Auto Trip Reduction Proposed for Trip Generation in 2031
	Auto Driver	
AM	**50%**	**50%**
PM	**55%**	**45%**

Trip Generation

As per the *Special Site 12 Master Plan Study - Trip Generation Surveys at Proxy Sites* memorandum submitted to the City of Mississauga on April 23, 2015, IBI Group proposed to undertake trip generation surveys. Through discussions with the City, three locations were confirmed to be surveyed:

- 1/33 Hurontario Street in Mississauga (near Port Credit GO Station)
- 15 Elizabeth Street in Mississauga (near Port Credit GO Station)
- 3865 Lake Shore Boulevard West in Toronto (near Long Branch GO Station)

Due to property management concerns, the trip generation surveys at 1/33 Hurontario Street did not take place. The results of the other surveys are outlined below.

<u>15 Elizabeth Street (Residential Development)</u>

The trip generation survey took place on June 3, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of auto inbound/outbound trips is summarized in Figure 6.

Figure 6: Inbound/Outbound Auto Trips at 15 Elizabeth Street

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	54	1	0.02	9	0.17	10	0.19
PM		9	0.17	5	0.09	14	0.26

*Source: City of Mississauga planning staff

As shown in Figure 6, there are 10 auto trips during the AM peak hour and 15 auto trips during the PM peak hour. Given there are 54 units at 15 Elizabeth Street, this equates to an auto trip rate of 0.19 in the AM peak hour and 0.26 during the PM peak hour.

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3865 Lake Shore Boulevard West (Residential and Small Retail Development)

The trip generation survey took place on May 21, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of inbound/outbound auto trips associated with the residential is summarized in Figure 7. The retail component of the site is a small medical clinic which does not have any parking spaces on the site. Surveyors monitored the parking spaces to ensure that any retail trips were discounted against the residential trip rate calculation.

Figure 7: Inbound/Outbound Auto Trips at 3865 Lake Shore Boulevard West

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	185*	7	0.04	40	0.21	47	0.25
PM		41	0.22	22	0.12	63	0.34

*Source: http://www.condominium.ca/3865-lake-shore-blvd-w

As shown in Figure 7, there are 47 auto trips during the AM peak hour and 63 auto trips during the PM peak hour. Given there are 185 units at 3865 Lake Shore Boulevard West, this equates to an auto trip rate of 0.25 trips/unit in the AM peak hour and 0.34 trips/unit during the PM peak hour.

ITE Trip Generation manual

A comparison was undertaken between the two surveyed auto trip rates, and the equivalent trip rates in the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition publication. This comparison can be found Figure 8.

Figure 8: Trip Generation Survey Comparison with ITE Trip Generation manual

Peak Hour	# of Units	Source	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
AM	54	Survey - 15 Elizabeth St	0.02	0.17	0.19
		ITE	0.10	0.48	0.58
		Survey - 3865 Lake Shore Blvd	0.04	0.21	0.25
		ITE	0.08	0.38	0.46
PM	185	Survey - 15 Elizabeth St	0.17	0.09	0.26
		ITE	0.45	0.22	0.67
		Survey - 3865 Lake Shore Blvd	0.22	0.12	0.34
		ITE	0.36	0.18	0.54

*ITE source was the fitted curve equation, not the rate, as this was more conservative. This is why it was different for the 2 sites, as the curve is non-linear

Summary

Given the location and nature of the two proxy surveys, it is inherent that the any trip reduction due to transit and other non-auto modes will be captured in the surveyed rate. This is because vehicle trips were surveyed, and not people trips (due to the logistics of undertaking such a survey at these sites).

A review of the surveyed and ITE trip rates in Figure 8 shows that the ITE trip rates are higher than the surveyed trip rates. Additionally, the site in Port Credit had a lower auto trip rate than the site in Long Branch in Toronto. This is unexpected, given the slightly higher non-auto mode share in Port Credit (as per TTS comparison).

Based on the results of the trip generation surveys, and the modal split in the areas surrounding the two survey sites, we propose to use a trip generation rate similar to the trip survey rates, but closer to that found in Port Credit. We are not recommending using the exact surveyed trip rate in Port Credit, but something near the middle of the two surveyed rates because of the:

- Small sample size (one survey date)
- Building age (the 15 Elizabeth St. building is older than the 3865 Lake Shore Blvd. W building)

Figure 9 summarizes the following:

- Recommended existing trip generation rates, which could be used for short term analysis or any analysis should the modal split not be achieved; and
- Recommended 2031 trip generation rates, which includes a conservative 10% trip reduction to the recommended existing trip generation rates (as shows that the auto driver mode share could drop up to 20% in the . This reduction accounts for the increased non-auto mode share from the time of surveys (2015) to the study horizon (2031), as discussed in the mode share section.

Figure 9: Recommended Existing and 2031 Auto Trip Generation Rate

Peak Hour	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
Existing AM	0.03	0.19	0.22
2031 AM (includes increased non-auto mode share)	0.03	0.17	0.20
AM	0.19	0.10	0.29
2031 PM (includes increased non-auto mode share)	0.17	0.09	0.26

The 2031 horizon year analysis will consider residential trip rates to be 0.20 trips per unit during the AM peak hour and 0.26 trips per unit in the PM peak hour, as shown in Figure 9.

Interaction Trips

We propose to use a 5% interaction trip reduction for sites that contain retail, restaurant, or financial uses on the same site as an office or residential land use. We have not applied a trip reduction to these uses for adjacent sites.

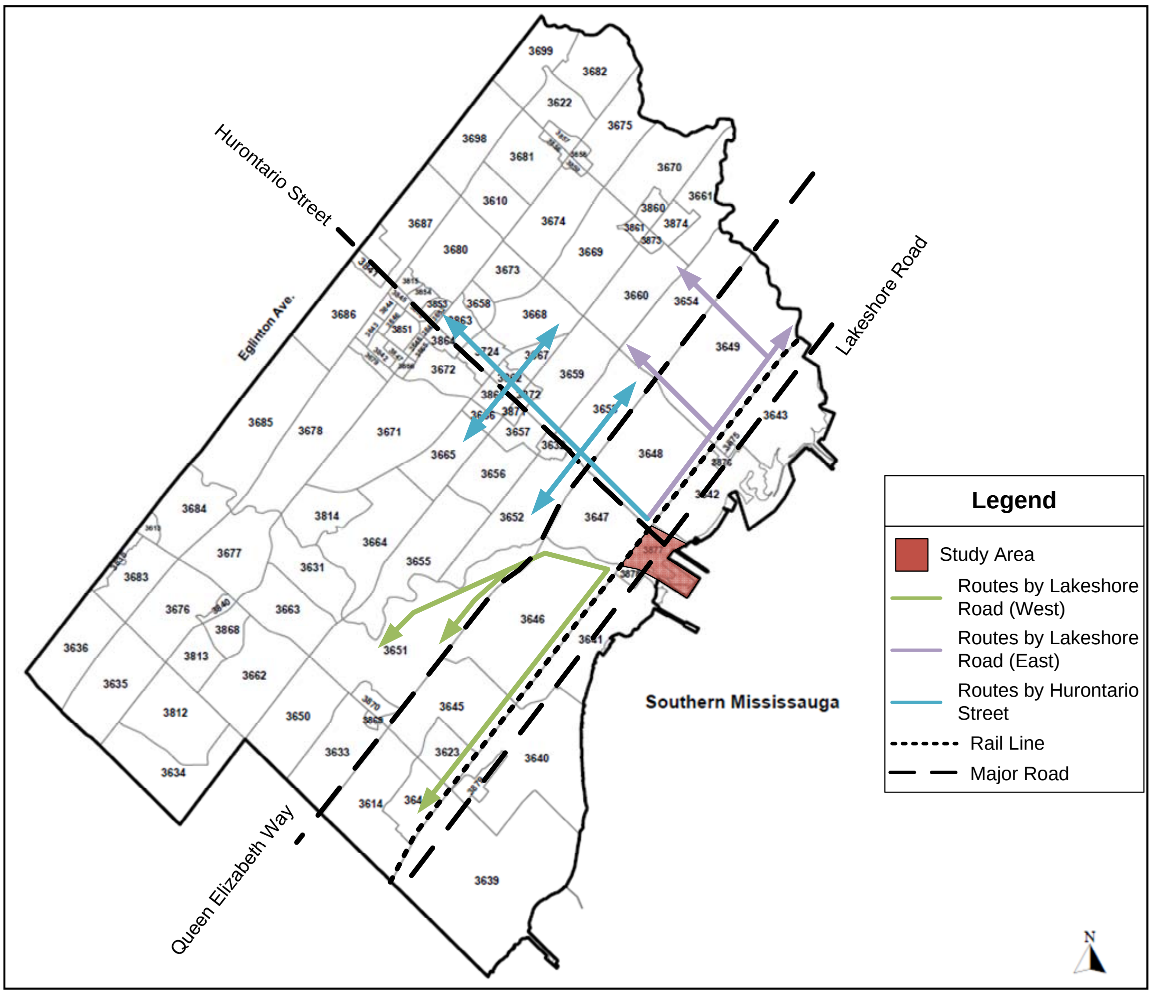
Trip Distributions

Trip distributions for the AM and PM peak periods were calculated for the following land uses: retail (includes financial), office, and residential. The study area (depicted in red in Figure 10) is within zone[1] 3877. When extracting data from the 2011 TTS for residential and office land uses, it was assumed that:

[1] University of Toronto. (2009). 2006 Traffic Zone Boundaries – Zone Numbers and Detailed Definitions. Retrieved June 1st, 2015 from: http://www.dmg.utoronto.ca/pdf/reports/2006to2010/znbdy2006/boundary2006_A.pdf

- For traffic with destinations west of the study area, development traffic could take Lakeshore Road (to access West Mississauga, Mississauga Road, and Queen Elizabeth Way) or Hurontario Street (to Queen Elizabeth Way);
    - The traffic accessing the Queen Elizabeth Way via Hurontario Street and Lakeshore Road / Mississauga Road would be split evenly;
- For traffic with destinations east of the study area but within Mississauga, development traffic could take Lakeshore Road (to Cawthra Road or Dixie Road) or Hurontario Street (to an east-west arterial e.g. Eglinton Avenue). It was assumed that the traffic using Hurontario Street and Lakeshore Road / Cawthra Road / Dixie Road would be split evenly;
- For traffic with destinations east of the study area outside of Mississauga, development traffic would head north on Hurontario Street to access the Queen Elizabeth Way; and
- All traffic with destinations north of the study area would travel north on Hurontario Street.

Figure 10: Study Area and Travel Routes



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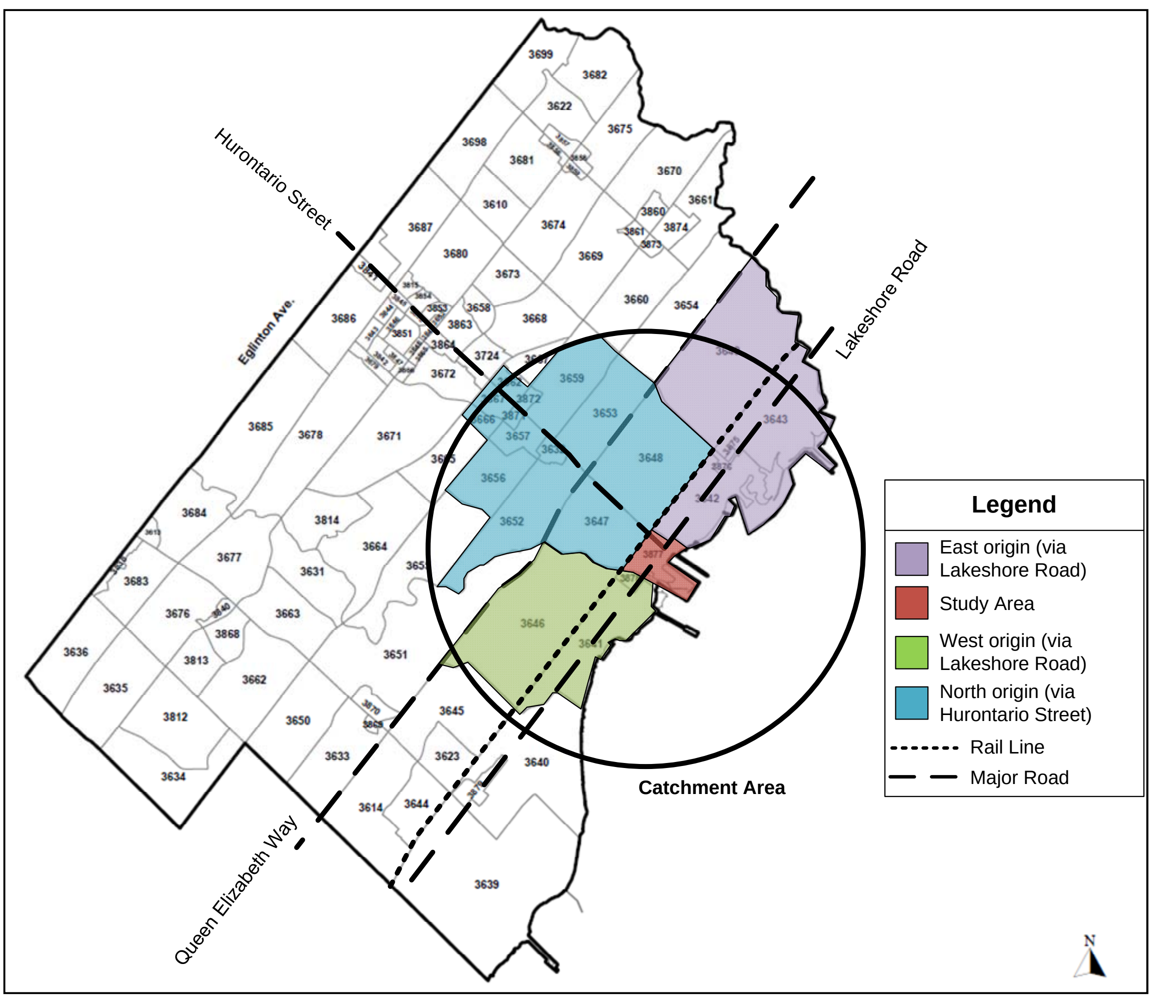
Trip distributions for residential and office land uses were calculated by taking a weighted average of the trip distributions for the inbound and outbound trips in each peak period. The trip distributions are summarized in Figure 11. Trip distributions were rounded to the nearest 5%.

Figure 11: Residential and Office Land Use Trip Distribution

Land Use	Peak Period	Lakeshore West	Lakeshore East	Hurontario Street
Residential	AM	20%	10%	70%
	PM	15%	10%	75%
Office	AM	25%	5%	70%
	PM	25%	5%	70%

The trip distributions for retail and financial land uses are determined based on the population distribution within a catchment area around the study area (approximately 4 km), illustrated in Figure 12.

Figure 12: Retail and Financial Land Use Catchment Area



The population distribution, and subsequently the trip distribution, for retail and financial land uses are summarized in Figure 13. Trip distributions were rounded to the nearest 5%. The raw 2011 TTS data used is available in **Attachment B**.

Figure 13: Retail and Financial Land Use Trip Distribution

	West	East	North
Retail Trip Distribution	20%	20%	60%

Appendix B

Potential Future Developments in Port Credit

City of Mississauga

Memorandum

File: **CD.03.POR**

DATE: **November 12, 2014**

TO: **Evie Przybyla, Leslie Green, and Joe Perrotta**

FROM: **Paul Stewart**

CC: **Susan Tanabe**

RE: **Potential Developments In Port Credit In The Future**

As requested I have reviewed material that was sent to Leslie Green dated July 3, 2013 provided as part of the traffic analysis for the redevelopment of the Port Credit Marina. Specifically I have updated the memo and table, as it relates to the development potential for a number of sites in Port Credit. The following should be noted:

- Purpose: Table has been prepared to assist Transportation and Works Department better understand future traffic demands in Port Credit. It is important to understand the limitations of producing these figures as outlined below. The table represents a starting point for discussions related to transportation infrastructure in Port Credit.

- For sites where there is an active development application we have included statistics provided by the applicant even though and OPA and/or ZBA may be required. Once the planning process for sites is completed the unit count and commercial space may change. In some cases unit counts/space may be reduced as figures used in the above table reflect aspirations of applicants (i.e. Canada Lands, Benson&High) and in other cases the space may be increased once a development application is submitted (e.g. lands in the vicinity of the GO station parking lot development may accommodate additional commercial space).

- Traffic impact from some sites may be reduced as existing space being redeveloped currently generates some traffic (e.g. No Frills supermarket being redeveloped generates traffic which should offset some of the traffic being generated by new space).

- Some of the sites identified in the table may have been included in the previous City growth forecasts (e.g. No Frills redevelopment) whereas other sites may not have (e.g. Benson and High property). Not sure how you are using these figures but you should be careful to not double count in any transportation modelling. I believe previous growth forecasts did not assume all development potential would be accommodated by end of forecast (i.e. City has a lot of sites that can accommodate high density development, however, the market does not necessarily exist to absorb all these sites).

- The sites identified in the table are properties where there is some expectation that a development application may occur, or interest has been expressed. The degree of certainty ranges from some sites that have been approved for development (e.g. NoFrills site has reasonably high degree of certainty it will be developed as described), to sites where community meetings have been held or applications submitted (Benson &High and the Ann&High sites have reasonably high degree of certainty for redevelopment although unit counts and commercial space are likely to change), to sites that will be subject to a design/redevelopment study (properties in vicinity of GO station have a lower degree of certainty as a design study is required to confirm built form), and sites which generally seem likely to get redeveloped given locational attributes (Ports Hotel has a very low degree of certainty as to-date there has been no interest on the part of the property owner to redevelop the site).

- The table does not include a number of sites which could potentially be redeveloped at some point, but lack the development interest or site has significant constraints that make it difficult to identify with any degree of certain future development. We should discuss sensitivity of certain areas to additional traffic and whether the analysis can address or at least speak to this issue or look at sensitivity if other unanticipated sites come on stream. Sites that may be redeveloped but have not been included given uncertainty include:

    - **Credit Landing**. This plaza has additional development rights in the official plan as the site is designated for mixed-use development with a height of 4 storeys. At some point this plaza may get redeveloped, and given size of the site it could potentially accommodate height even greater than 4 storeys. However, it is not possible to provide a realistic estimate as to the amount of space and timing of development. Issues of permitting sensitive land uses on previous industrial site may also be a constraint to redevelopment.

    - **Gas Stations, Auto-dealerships, parking lots, small strip plazas, single storey main street commercial buildings that are not designated/listed on**

the heritage registry. All of these sites could theoretically be redeveloped (examples exist in Toronto and elsewhere in Mississauga) with buildings in the 3 to 4 storey height range (as permitted in most cases by the Official Plan) or higher if able to demonstrate appropriateness. The timing and likelihood of this occurring within say a 20 year timeframe is questionable.

- **High Density Residential sites that have been built below the height limit**. The apartment district surrounding the GO station contains a number of sites that have buildings on them that are below the permitted height (typically 15 storeys). It is possible someone may purchase or combine properties that have say a 5 storey building with surface parking and a duplex to redevelop these sites with a taller apartment building. However, the likelihood of this occurring and identifying various combinations of properties to create development lots goes beyond what can reasonably be assumed in this high level review for reasons such as:

  - Many of the sites that have the greatest difference between existing heights and permitted heights are small, sometimes include heritage designated buildings and would require a detailed review to determine whether a building footprint could be realistically accommodated given appropriate setbacks and separation distances from existing apartment buildings.
  - The city is concerned with the loss of its rental housing stock, and any application pertaining to redevelopment of existing apartment buildings will be complicated by this issue (retention of rental units may impact financial viability of redevelopment).
  - New development on surface parking lots will have to provide additional underground parking to compensate for lost surface parking which may increase cost of development.
  - In some cases, sites are improved with a significant building (e.g. 8 storeys or more) and the financial case for removal of this building and rental stream of revenue may make it difficult to justify redevelopment. Further work would be required to determine likelihood of redeveloping some of the buildings.

- **Parks & Open Space**: Additional development of Marina Park West (if boat launch relocated and site developed with buildings) would increase traffic; however, amount of space and likelihood of relocating boat launch are too uncertain to provide any type of realistic figure.

- **School Sites**: It is possible some public or private schools may get redeveloped and/or partially redeveloped (e.g. build new school if part of site is redeveloped), however, we do not have any information at this time to determine if this is likely to occur.

- **Residential Low Density II designation**: Most of the residential lands north of Port Credit are designated Low Density II which permits, singles, semi's duplex, triplex and other forms of low-rise dwellings. Although most of the lots are developed with single detached dwellings, Port Credit is beginning to see some of these lots being redeveloped with semi-detached units. The extent to which this continues (as opposed to people simply building a larger home) and increases the overall number of dwellings in the area has not been factored into the analysis, although to some extent this trend and the implications on vehicles is likely offset by reduced household sizes and therefore reduced car ownership .

- **Development Outside Port Credit:** With the general planning emphasis in the Province towards directing greater amounts of growth to inside existing urban areas, it is possible that development outside Port Credit (both in Mississauga and surrounding municipalities) will result in additional vehicular traffic that is not factored into the table

- It should be noted that Official Plan policy 5.1.9 states that Development proposals may be refused if existing or planned servicing and/or infrastructure are inadequate to support additional growth. Further Official Plan policy 8.1.16 states that in reviewing development applications, Mississauga will require area wide or site specific transportation studies to ensure development does not precede necessary road, transit, cycling and pedestrian improvements. As such, if applications come forward that were not anticipated in this table there is still potential to examine traffic impacts in the future. In addition, the Official Plan does not require sites to be developed to the maximum height permission and the Local Area Plan recognizes that there could be some variation in building heights for the area; as such not every site has to be developed to the maximum permitted height.

- Port Credit contains a Community Node and Neighbourhood elements of the City's urban structure. While Community Nodes are intensification areas and some intensification is intended for Neighbourhoods, I would suggest that generally speaking, the City wants to direct more of the growth to the Urban Growth Centre, Major Nodes and Intensification Corridors. However, the Growth Plan for the Greater Golden Horseshoe and the Regional Transit Plan "The Big Move" do speak to Major Transit Station Areas (which includes Port Credit GO station) as a location for intensification. As such the planning challenge in Port Credit is to achieve the proper balance. This analysis attempts to provide a realistic assessment of new development and not a worse case scenario which could result in an over investment in infrastructure for potential development that may not occur. It is not possible for me to estimate accurately the timing of when these sites may ultimately be developed.

- If the City is going to invest in additional infrastructure (e.g. bridge for cars and/or LRT) to support Inspiration Port Credit and Lakeview initiatives, it may be necessary to re-evaluate the planned function of Port Credit as well as the urban structure for the City and the likelihood that sites not included on the table will become more viable. For example, if a new bridge across the Credit River is proposed, including LRT to Imperial Oil, it is likely that some of the sites not included may become more realistic (e.g. Credit Landing Plaza). As such, it is important to ensure that decisions made regarding investments in infrastructure and decisions regarding the manner in which growth is accommodated in the City complement each other and are not working at cross-purposes. It is also important to ensure that the city does not over invest in infrastructure that is not required by assuming sites will be redeveloped when there are significant constraints.

- The traffic analysis needs to consider the issues in and around the GO station, especially around peak periods. Although there are examples in planning where the city does not accommodate the absolute peak demand (e.g. we don't require parking spaces to satisfy demand on boxing day), in the case of Port Credit, given peak demand likely happens five out of seven days a week, likely in the morning and evening, and ultimate success of the area will be measure on peoples impressions during peak period I suggest it is important to ensure traffic congestion is thoroughly addressed and if necessary design of redevelopment modified, with particular emphasis on how parking structure will function and the necessary number of parking spaces.

- Updates to the previous table "July 3, 2013 - Summary of Future Development Potential" include the following:

    - Property at 5,6 and 8 Ann St has had the number of units reduced from 140 apartment units to 69 units (66 apartment and 3 townhouses). The reduction reflects OMB decision which found FRAM application for 140 units did not represent good planning. The revised unit count of 69 units reflects most recent submission to City. Staff have not yet made a recommendation on the appropriateness of the revised submission.

    - Properties at 41&45 Park St, and 17 Elizabeth Street have been included. As part of the Port Credit Local Area Plan, the owner indicated that they would like to develop their property (currently improved with single detached dwellings) with a high-rise apartment building. No applications submitted, and site has constraints associated with size of lot, proximity to other buildings, setbacks etc. However, as a place holder we assumed 66 units (same number as FRAM application), give similar lot area. Ultimate development may be a smaller building, but the unit count could also increase depending on the size and mix of the units.

    - Properties at 42, 44, 46 Park Street and 23 Elizabeth Street have been included. Although property owners have not indicated any interest in redevelopment, this site is across the street from 41,45, Park Street and exhibits many of the same opportunities and constraints. As such, as a place holder, we have included this site and used same assumptions, as those across the street.

  - Properties in the general vicinity of the northeast corner of Benson Avenue and Lakeshore Road, south of High Street West now have an application for a seniors oriented development including retirement residence, seniors supported housing, townhouses and commercial space.

  - Property behind Credit Landing Plaza has been included. Recently application has been submitted to develop medical offices on the site.

- I recommend you share this information with the consultants undertaking the traffic and servicing analysis and request their professional opinion as to whether this information is sufficient to reasonably assess future traffic demands or whether we need to undertake more detailed review to try and establish an ultimate “worse case” scenario that includes redevelopment of existing apartment buildings etc.

November 12, 2014
DRAFT – SUMMARY OF FUTURE DEVELOPMENT POTENTIAL IN PORT CREDIT

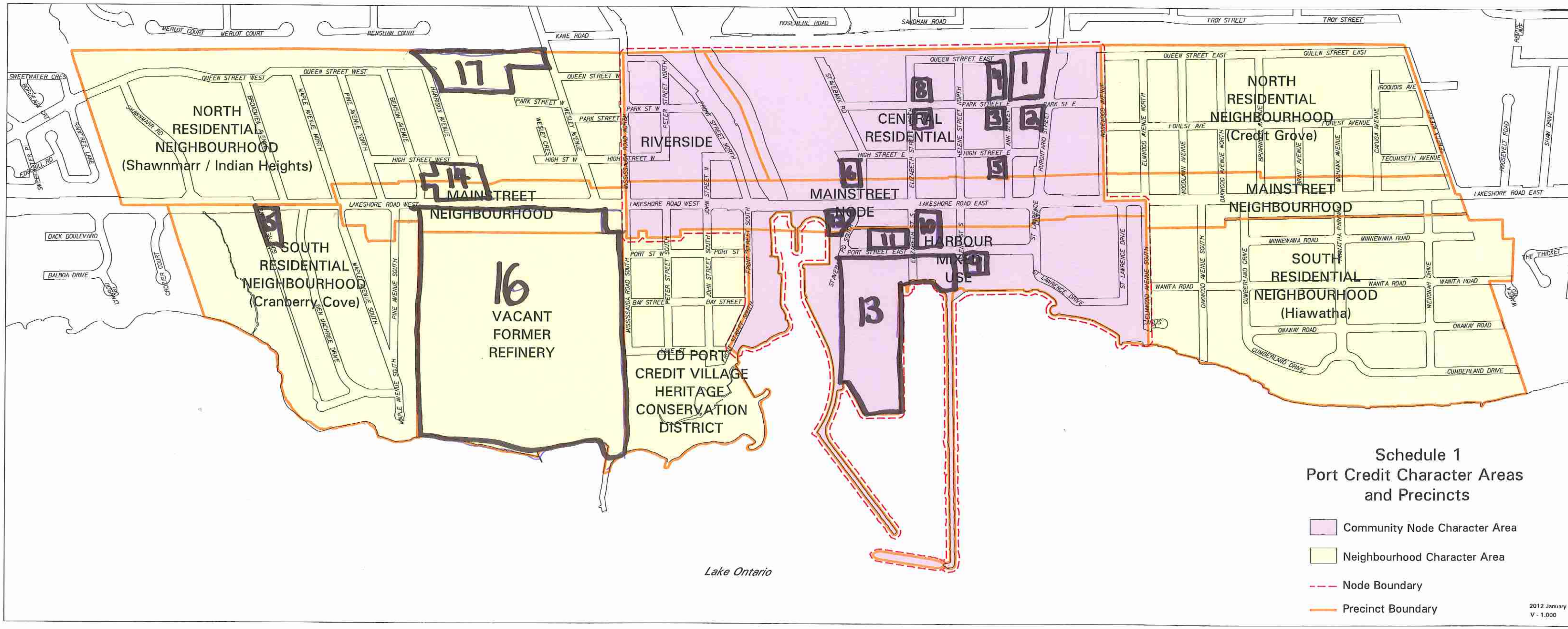
Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
Potential Development In Vicinity of GO Station In Community Node Study required to confirm appropriate development on lands in vicinity of Ann and Queen (see Local Area Plan for specific area)									
Site 1: GO Transit Lot	Mixed Use Redevelopment	7718	500	-	-	-	2000	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail plus office. Site may be able to accommodate additional development; however, detail study is required. **IBI / Metrolinx should examine ability to accommodate second tower and/or additional mid-rise on site. If appropriate factor additional units into traffic analysis.**
Site 1: GO Transit Lot	Parking Structure	1877							In addition to residential, retail and office uses on the parking lot, the GO Transit is interested in adding an additional 300 to 500 parking spaces. Additional spaces will generate more traffic in the area. Traffic study is required to confirm impacts of development in this area. Parking lot likely located adjacent to railway, at least partially on Queen St. road allowance. **IBI / Metrolinx should consider benefits of TOD development and reduce number of spaces in the parking garage.**
Site 2: Former Lawn Bowling Green	Residential	2750	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail/office; however detail study required and additional property acquisition may be necessary to create developable parcel.
Site 3: 80 High St. East	Residential	2000	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail/office; however

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
(Bell substation)									detail study required on the Bell Telephone parking lot. Potential constraint to redevelopment may be location of telephone infrastructure (e.g. if cables located below parking lot it may be difficult to redevelop).
Site 4: 30-78 Ann St.	Residential	3100	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) developed on this block, along with some ground floor retail/office; however, detail study required.
Additional Potential Development Sites North of Lakeshore Road But Outside of GO station / LRT immediate area									
Site 5: 6, 8 and 10 Ann St.	Residential	1930	180	-	-	-	-	66 unit condo plus 3 townhouses	Based on application submitted by FRAM in November 2014. Application has been revised down from 22 storeys to 15 storeys as a result of previous Council and OMB decision. Application currently being processed by staff. No decision made on application.
Site 6: 6 to 22 Stavebank	Mixed –Use	2800	180					60	Assumes a 6 storey building similar to 70 Port Street. As part of Local Area Plan land owner has requested permission additional development rights above current permission of 4 storeys.
Site 7: 41&45 Park St and 17 Elizabeth And on other side of the street **Site 8**: 42, 44, 46 Park St and 23 Elizabeth St.	Residential	2000 And 2000						66 66 132 units	No application, however, property owner of 41&45 Park have expressed interest in developing site with a 15+ storey apartment building. Area Plan permits up to 15 storeys. Lands across the street exhibit similar characteristics. Sites are relatively small, may require consolidation and don't meet guidelines for separation distances between tall buildings; however, the sites would meet guideline if developed with 6 storey buildings. It is assumed that the sites would be developed at 15 storeys as placeholder. Unit count based

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
									on revised FRAM submission at Ann Street. Potentially aggressive assumption regarding unit count is balanced by other sites along Park Street that have theoretical ability to accommodate development but have not been included (see below).
Other smaller sites in the Area	There are a number of other sites in the area that could theoretically be intensified, including: - low rise 5-7 storey apartment buildings with significant surface parking at 12 and 26 Park Street East; however, issue of rental unit protection and how parking would be accommodated for existing buildings plus new units seems significant enough to not include. Planned function of site is currently being achieved with low rise apartment units. - single detached homes at 21,25, 27 Park Street East; however, one building is listed on heritage registry and Community Services suggest it may be an important building. Further, property consolidation is required and site is located adjacent to heritage site which may require further review to determine appropriate setbacks, etc. Issues seem significant enough not to include. - there are two 2.5 storey apartment buildings at 14 Elizabeth St; however, the lot is small and narrow and surrounding apartment buildings represent a challenge from the perspective of building separation. Issues seem significant enough to not include. Depending on sensitivity and capacity of the system, traffic analysis may want to consider this additional development or identify what excess capacity is still available.								
Potential Developments In The Community Node south of Lakeshore Road									
Site 9: 55 Port Street East	Residential	2300	180	-	-	-	-	20	Represents current approvals in place for land beside Regatta building that FRAM has not yet built (i.e. OP permits 95 units on the block whereas only 75 have been constructed according to City data). Site designated Mixed Use so assume small amount of commercial as most of the units in this area do not have a lot of retail space.
Site 10:. 91-99 Lakeshore Road E.	Dr. James/No Frills redevelopment	5790	1905	-	-	-	2301	56	Based on application approved by Council
Site 11: 30 Port Street East (Ports Hotel)	Mixed-Use	3700	900	-	-	-	-	110	Assumes 10 storey building stepping down to the 6 storey, as proposed in the Local Area Plan. Unit count reflects general assumptions based on surrounding development, including

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
									NO Frills redevelopment, 70 Port Street, and 65 Port Street.
Site 12: Post Office – 31 Lakeshore Road East	Commercial	1937		583	-	670	2109	-	Assumes site is redeveloped with mixture of uses.
Site 13: Canada Lands Marina	Mixed-Use		19774 to 24973 (see notes)					1200 to 1500 (see notes)	Figures from Canada Lands Master Plan, which estimates 400 jobs and between 2,280 and 2,850 people. Retail figures represent non-residential or live/work space. Inspiration Port Credit figures are still under review but could be lower than those proposed by CLC. Should speak with Ruth Marland.
Potential Developments In The Port Credit Neighbourhood									
Site 14: Vicinity of the northeast corner of Benson Avenue and Lakeshore Road, south of High Street	Seniors Oriented Mixed-Use Development	11,183	523	-	-	228		173 units retirement res. 136 seniors supportive units 16 townhouses 325 units total	Statistics are from development application currently in circulation. A staff position is not established. An OPA / ZBA would be required.
Site 15: 375 Lakeshore Road (Godfrey's Lane)	Residential townhouses	4100						18	Represent redevelopment of vacant low rise apartment buildings.

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
Site 16: Imperial Oil	Mixed Use		See notes					See notes	Stoss draft provides two scenarios: Scenario 1: 6891 population & 4531 employees Scenario 2: 5057 population & 3363 employees Should confirm with Ruth Marland that these are the most recent figures.
Site 17: Land behind Credit Landing Plaza	Business Employment				5999				Submission of Nov 29, 2013 from Pen Equity, indicates intention to develop 90,000 square foot medical office with 415 parking stalls. Most recent site plan submission indicates the GFA for medical office is 5,999 square metres with 406 parking spaces. Previous plans have called for self storage use.


NORTH RESIDENTIAL NEIGHBOURHOOD (Shawnmarr / Indian Heights)
17
14
MAINSTREET NEIGHBOURHOOD
15
SOUTH RESIDENTIAL NEIGHBOURHOOD (Cranberry Cove)
16
VACANT FORMER REFINERY
OLD PORT CREDIT VILLAGE HERITAGE CONSERVATION DISTRICT
RIVERSIDE
CENTRAL RESIDENTIAL
MAINSTREET NODE
HARBOUR MIXED USE
13
NORTH RESIDENTIAL NEIGHBOURHOOD (Credit Grove)
MAINSTREET NEIGHBOURHOOD
SOUTH RESIDENTIAL NEIGHBOURHOOD (Hiawatha)
Lake Ontario
QUEEN STREET WEST
LAKESHORE ROAD WEST
LAKESHORE ROAD EAST
QUEEN STREET EAST
Schedule 1
Port Credit Character Areas and Precincts
Community Node Character Area
Neighbourhood Character Area
Node Boundary
Precinct Boundary
2012 January
V - 1.000

Appendix C

TTS Raw Data

2011 TTS Data for RETAIL/FINANCIAL land use

West	**Date** : Jun 4, 2015 11:47:40 **Data** : 2011 TTS V1.0 Persons **Filter 1** : gta06_hhld => 3646, 3641, 3878 **Number of Observations = 678** **Total Expanded Number = 13521**

East	**Date** : Jun 4, 2015 11:47:40 **Data** : 2011 TTS V1.0 Persons **Filter 1** : gta06_hhld => 3642, 3876, 3875, 3643, 3649 **Number of Observations = 823** **Total Expanded Number = 17228**

North	**Date** : Jun 4, 2015 11:47:40 **Data** : 2011 TTS V1.0 Persons **Filter 1** : gta06_hhld => 3647, 3648, 3652, 3653, 3632, 3656, 3659, 3666, 3871, 3872, 3867, 3862 **Number of Observations = 2162** **Total Expanded Number = 45528**

2011 TTS Data for RESIDENTIAL land use

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_hhld => 3877
FILTER 2 : gta06_orig => 3877
FILTER 3 : trip_day => Monday - Friday
FILTER 4 : mode_prime => Auto driver
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : gta06_dest

North via Hurontario Street
West via Lakeshore Road
East via Lakeshore Road

	37	285	290	323	353	359	484	2070	3330	3343	3385	3601	3614	3627	3631	3632	3634	3639
Group 1	20	0	20	0	23	43	23	20	23	20	19	0	20	20	18	37	18	20
Group 2	0	18	0	23	0	0	0	0	0	0	0	20	0	0	0	0	30	0
												*	*		*		*	

	3640	3642	3643	3645	3651	3673	3700	3702	3703	3704	3713	3831	3871	3877	3878	4023	4024
Group 1	20	46	20	18	18	19	30	20	23	20	23	20	15	0	23	0	30
Group 2	0	20	0	0	15	0	0	0	0	0	0	0	0	23	0	38	20
				*	*											*	*

Outbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	689	119	66	504
PM	184	90.5	20	73.5
AM	689	17%	10%	73%
PM	184	49%	11%	40%

*Proportion of those going along Lakeshore vs Hurontario 0.5

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_hhld => 3877
FILTER 2 : gta06_dest => 3877
FILTER 3 : trip_day => Monday - Friday
FILTER 4 : mode_prime => Auto driver
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : gta06_orig

North via Hurontario Street
West via Lakeshore Road
East via Lakeshore Road

	36	37	223	294	323	353	359	484	2072	2243	3631	3634	3639	3642
Group 1	0	0	0	0	0	0	0	0	0	0	0	0	20	0
Group 2	21	20	20	18	23	23	43	38	20	20	18	18	0	23
											*	*		

	3643	3648	3651	3653	3700	3702	3703	3713	3831	3843	3857	3867	3877	4023
Group 1	0	23	0	0	0	0	0	0	0	0	0	0	0	0
Group 2	20	0	20	30	30	20	23	23	20	18	23	18	23	20
			*											*

Inbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	43	20	0	23
PM	570	38	43	489
AM	43	47%	0%	53%
PM	570	7%	8%	86%

*Proportion of those going along Lakeshore vs Hurontario 0.5

2011 TTS Data for OFFICE land use

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_emp => 3877
FILTER 2 : gta06_dest => 3877
FILTER 3 : trip_day => Monday - Friday
FILTER 4 : mode_prime => Auto driver
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : gta06_orig

North via Hurontario Street
West via Lakeshore Road
East via Lakeshore Road

	109	238	307	319	602	3192	3612	3616	3632	3635	3644	3649	3655	3667	3669	3670	3675	3680	3689	3694	3810	3847	3878	4023	4026	4186	6015
Route	North	North	North	North	North	North	North	West	North	West	West	East	North	North	East	East	East	North	North	North	West	North	West	West	West	West	West
Group 1	16	33	34	17	12	23	18	18	22	22	35	23	17	22	28	28	19	0	20	23	21	21	19	18	33	62	22
Group 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0
								*		*		*			*	*	*				*			*	*	*	*

Inbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	626	152	37.5	436.5
PM	22	0	0	22
AM	626	24%	6%	70%
PM	22	0%	0%	100%

*Proportion of those going along Lakeshore vs Hurontario 0.5

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_emp => 3877
FILTER 2 : gta06_orig => 3877
FILTER 3 : trip_day => Monday - Friday
FILTER 4 : mode_prime => Auto driver
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : gta06_dest

North via Hurontario Street
West via Lakeshore Road
East via Lakeshore Road

	45	204	238	295	319	3192	3372	3612	3616	3632	3634	3635	3640	3644	3646	3649	3653	3655	3670	3673	3674	3686	3689	3694	3878	4023	4024	4186	6015
Route	North	North	North	North	North	North	North	North	West	North	West	West	West	West	West	East	North	North	East	North	East	North	North	North	West	West	West	West	West
Group 1	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	19	0	0	0	0	0	0	0	30	0	0
Group 2	12	11	33	15	17	23	23	18	18	22	30	22	0	19	28	23	22	17	28	22	28	22	20	23	19	18	53	62	22
									*		*	*			*	*			*		*					*	*	*	*

Outbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	69	20	0	49
PM	670	164.5	39.5	466
AM	69	29%	0%	71%
PM	670	25%	6%	70%

*Proportion of those going along Lakeshore vs Hurontario 0.5

MODAL SPLIT DATA (PORT CREDIT)

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 3647, 3648, 3877, 3642
FILTER 3 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Auto driver
Group 1	590	464	917	295	242	64	87	6603
Group 2	131	18	1072	61	116	44	22	4447

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 4 2015 (11:47:40)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 3647, 3648, 3877, 3642
FILTER 3 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Taxi passenger	Auto driver
Group 1	0	477	1637	89	322	64	657	0	4826
Group 2	375	110	1074	225	175	64	0	20	5360

MODAL SPLIT DATA (LONG BRANCH)

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (10:55:32)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 295
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Schoolbus	Taxi passenger	Auto driver
Group 1	49	139	218	22	279	18	15	1163
Group 2	0	0	161	0	112	0	0	965

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 295
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Taxi passenger	Auto driver
Group 1	0	13	96	0	0	0	21	15	689
Group 2	101	35	117	44	83	35	0	0	1080

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (10:55:32)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 294
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver	GO rail only	Walk	Motorcycle
Group 1	414	483	31	35	1302	53	229	15
Group 2	312	68	18	0	859	0	18	0

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 294
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Auto driver
Group 1	0	88	93	0	0	0	533
Group 2	31	70	276	70	339	15	1312

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (10:55:32)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 298
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver
Group 1	75	44	309	262	35	106	1317
Group 2	35	13	168	148	0	0	625

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 298
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	GO rail only	Walk	Auto passenger	Transit excluding GO rail	Cycle	Auto driver
Group 1	0	88	140	107	28	586
Group 2	44	0	268	222	35	1086

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 3643
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver
Group 1	44	73	178	75	0	22	577
Group 2	0	0	123	22	23	0	924

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 3643
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Auto driver
Group 1	0	0	35	0	0	785
Group 2	23	73	221	86	23	726

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (10:55:32)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_orig => 296
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Auto passenger	Transit excluding GO rail	Auto driver
Group 1	26	0	244
Group 2	157	57	980

USER : Peter Richards - IBI Group - Transportation Engineer
DATE : Jun 9 2015 (14:24:17)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : gta06_dest => 296
FILTER 2 : trip_day => Monday - Friday
ROW : start_time
Group 1 : 700-900
Group 2 : 1630-1830
COLUMN : mode_prime

	Walk	Auto passenger	Transit excluding GO rail	Auto driver
Group 1	22	140	50	1046
Group 2	0	43	0	278

Appendix D

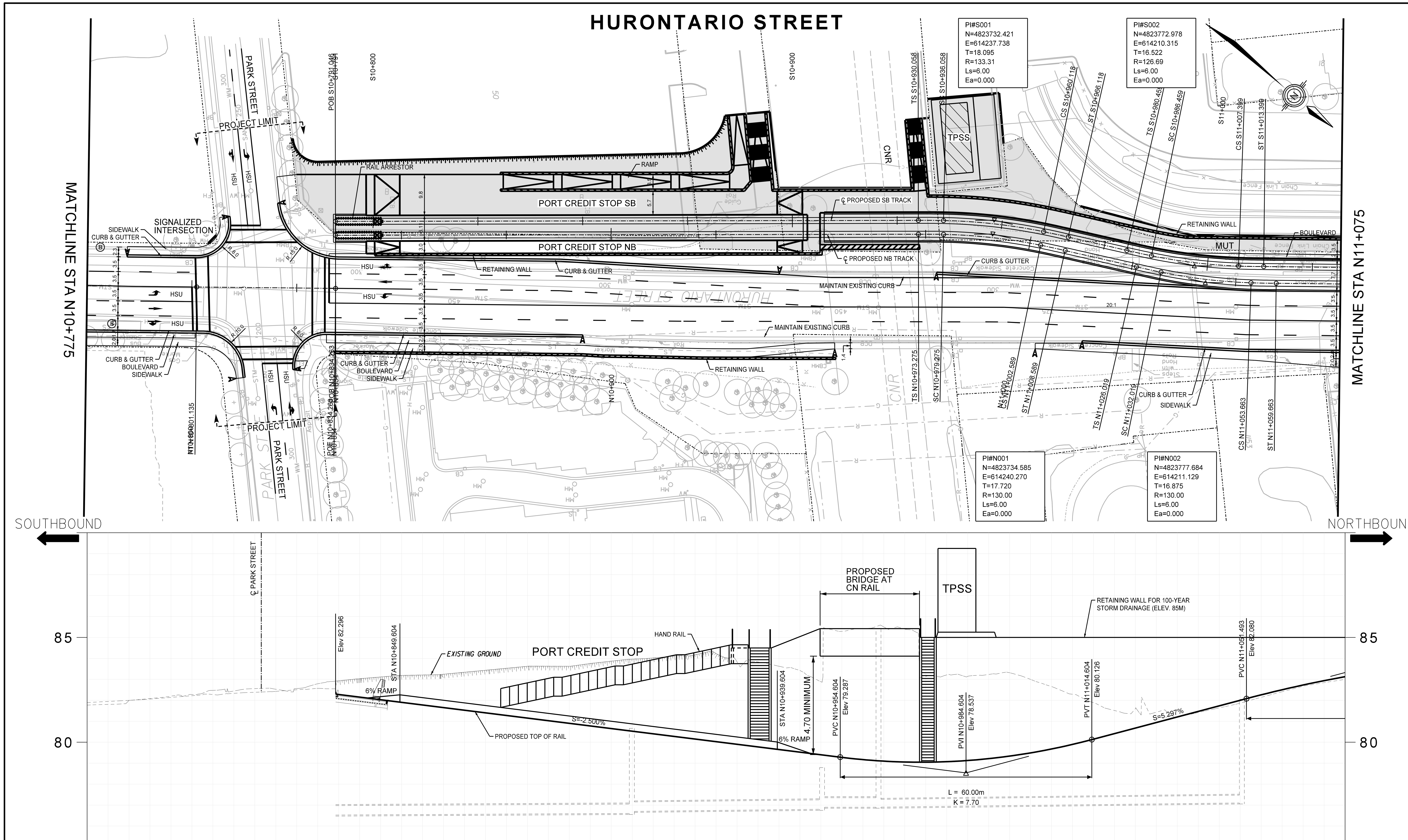
Preliminary Drawings of Intersections along Hurontario Street Affected by LRT

FILE No.	CONTRACT No.	SHEET No.
	508956	LRT-RD-NC004

DIMENSIONS SHOWN ON THIS PLAN ARE IN METRES UNLESS OTHERWISE NOTED

Notes:

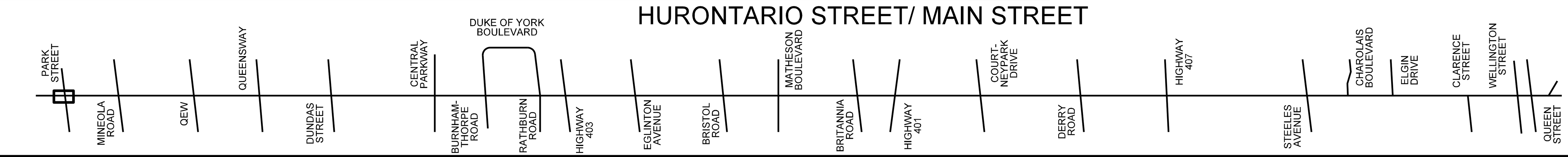
HURONTARIO STREET



NOT FOR CONSTRUCTION

81.895	82.218	82.502	83.189 / 81.902	83.529 / 81.277	83.869 / 80.652	84.237 / 80.027	82.885 / 79.402	83.147 / 79.047	83.000 / 79.491	81.599 / 80.677	81.871 / 82.001	82.998 / 83.127	EXISTING GROUND ELEVATION / PROPOSED TOP OF RAIL PROFILE
N10+775	N10+800	N10+825	N10+850	N10+875	N10+900	N10+925	N10+950	N10+975	N11+000	N11+025	N11+050	N11+075	DESIGN ℄ CHAINAGE

HURONTARIO STREET/ MAIN STREET



No.	REVISIONS	INITIAL	DATE

REFERENCE MATERIAL:
Surveyed Plans : HMLRT-CombinedSurvey.dgn, CityCentre.dgn, HMLRT-HWY401.dgn, Topo-LRT@QEW.dgn, LRT.dtm, CityCentre.dtm, LRT@QEW.dtm
Design Plans : HMLRT - Alignment.dgn, HMLRT - Roadway.dgn, HMLRT - Profile.dgn
Sewer Plans :
Water Plans :
Geodetic Bench Mark Index Elevation=
Borehole Report -

SCALES
HORIZONTAL 1:500 (0 5m 10m 20m)
VERTICAL 1:100 (0 1m 2m 4m)

SNC·LAVALIN steer davies gleave LEA DIALOG

DESIGNED B.KIM/ E.WONG
CHECKED A.DELCHEV
APPROVED
DATE 2014/06/04

MISSISSAUGA Leading today for tomorrow
BRAMPTON Flower City brampton.ca

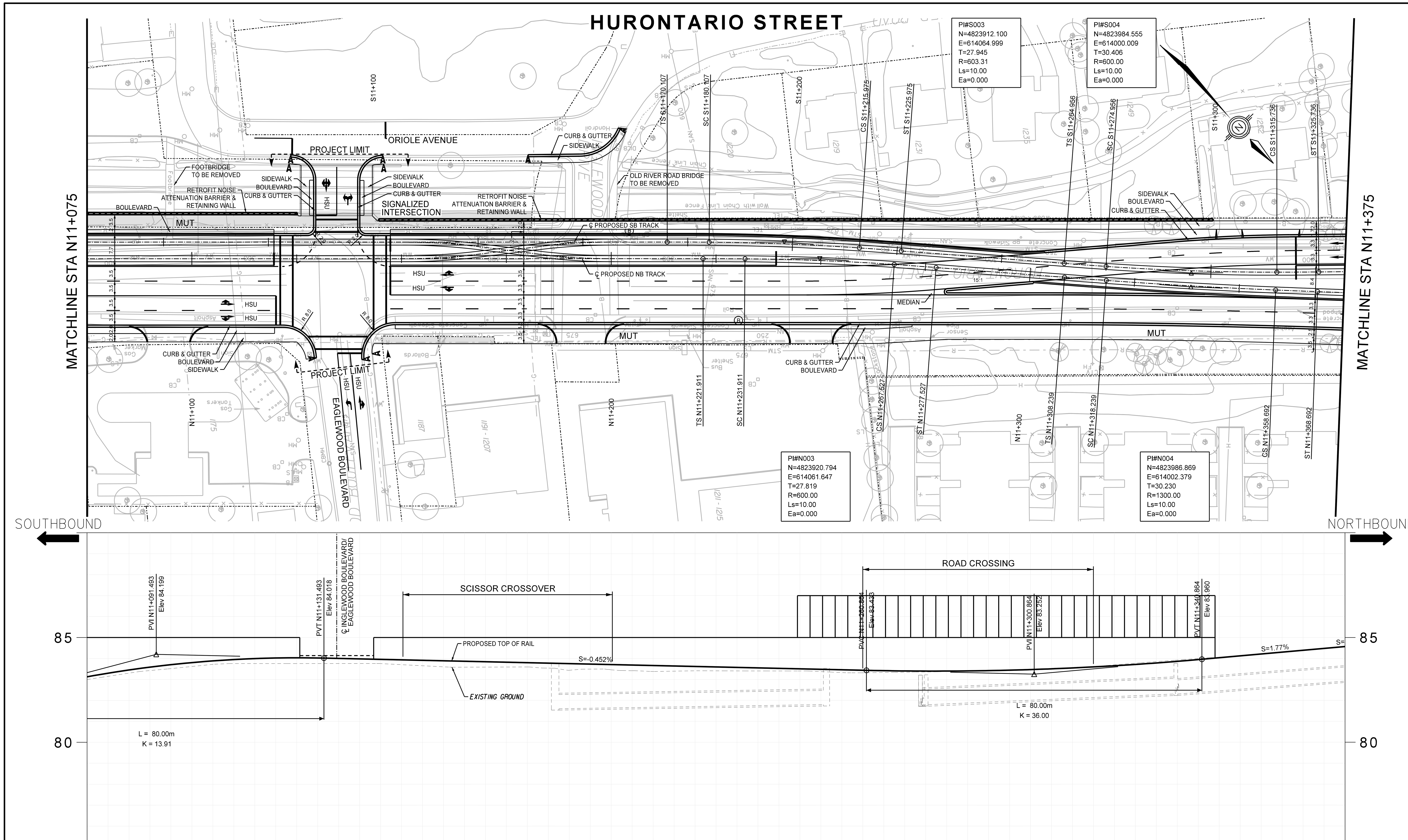
HURONTARIO-MAIN LRT PROJECT
PRELIMINARY DESIGN/TPAP
PLAN AND PROFILE
STA N10+775 TO STA N11+075

FILE No.	CONTRACT No.	SHEET No.
	508956	LRT-RD-NC005

DIMENSIONS SHOWN ON THIS PLAN ARE IN METRES UNLESS OTHERWISE NOTED

Notes:

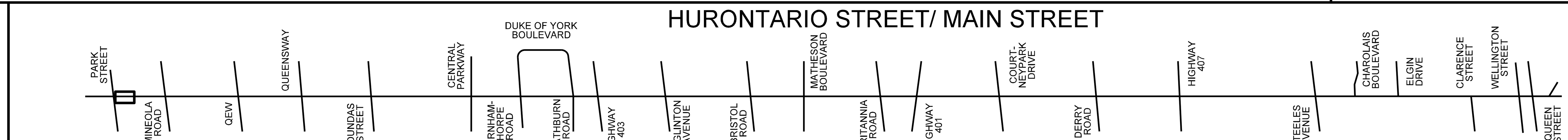
HURONTARIO STREET



NOT FOR CONSTRUCTION

82.998 / 83.127	83.620 / 83.804	83.758 / 84.032	83.705 / 83.934	83.593 / 83.821	83.459 / 83.708	83.410 / 83.595	83.372 / 83.482	83.355 / 83.397	83.481 / 83.469	83.774 / 83.714	84.126 / 84.122	84.581 / 84.564	EXISTING GROUND ELEVATION / PROPOSED TOP OF RAIL PROFILE
N11+075	N11+100	N11+125	N11+150	N11+175	N11+200	N11+225	N11+250	N11+275	N11+300	N11+325	N11+350	N11+375	DESIGN ℄ CHAINAGE

HURONTARIO STREET/ MAIN STREET



No.	REVISIONS	INITIAL	DATE

REFERENCE MATERIAL:
Surveyed Plans : HMLRT-CombinedSurvey.dgn, CityCentre.dgn, HMLRT-HWY401.dgn, Topo-LRT@QEW.dgn, LRT.dtm, CityCentre.dtm, LRT@QEW.dtm
Design Plans : HMLRT - Alignment.dgn, HMLRT - Roadway.dgn, HMLRT - Profile.dgn
Sewer Plans :
Water Plans :
Geodetic Bench Mark Index Elevation=
Borehole Report -

SCALES
0 5m 10m 20m HORIZONTAL 1:500
0 1m 2m 4m VERTICAL 1:100

SNC·LAVALIN | steer davies gleave | LEA | DIALOG

DESIGNED B.KIM/ E.WONG
CHECKED A.DELCHEV
APPROVED
DATE 2014/06/04

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HURONTARIO-MAIN LRT PROJECT
PRELIMINARY DESIGN/TPAP
PLAN AND PROFILE
STA N11+075 TO STA N11+375

Appendix E

Existing Traffic Intersection Operations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	1126	9	22	570	217	9	49	22	211	86	232
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.96	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1674	3515	1360	1557	3544	1317	1545	1821		1720	1780	1376
Flt Permitted	0.34	1.00	1.00	0.21	1.00	1.00	0.69	1.00		0.70	1.00	1.00
Satd. Flow (perm)	598	3515	1360	350	3544	1317	1127	1821		1275	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	351	1294	10	25	655	249	10	56	25	243	99	267
RTOR Reduction (vph)	0	0	3	0	0	100	0	12	0	0	0	208
Lane Group Flow (vph)	351	1294	7	25	655	149	10	69	0	243	99	59
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	96.0	96.0	96.0	75.3	75.3	75.3	31.0	31.0		31.0	31.0	31.0
Effective Green, g (s)	96.0	96.0	96.0	75.3	75.3	75.3	31.0	31.0		31.0	31.0	31.0
Actuated g/C Ratio	0.69	0.69	0.69	0.54	0.54	0.54	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	546	2410	932	188	1906	708	249	403		282	394	304
v/s Ratio Prot	c0.08	0.37			0.18			0.04			0.06	
v/s Ratio Perm	c0.36		0.01	0.07		0.11	0.01			c0.19		0.04
v/c Ratio	0.64	0.54	0.01	0.13	0.34	0.21	0.04	0.17		0.86	0.25	0.19
Uniform Delay, d1	9.8	10.9	6.9	16.1	18.3	16.9	42.8	44.1		52.4	44.9	44.3
Progression Factor	1.30	1.31	1.00	1.00	1.00	1.00	1.00	1.00		0.65	0.60	0.99
Incremental Delay, d2	2.6	0.6	0.0	1.5	0.5	0.7	0.1	0.4		24.1	0.7	0.6
Delay (s)	15.4	15.0	7.0	17.6	18.8	17.5	43.0	44.5		58.0	27.5	44.5
Level of Service	B	B	A	B	B	B	D	D		E	C	D
Approach Delay (s)		15.1			18.5			44.4			47.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1612	75	13	805	19	45	16	11	6	0	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.94		1.00	0.85	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3289			3185		1782	1721		1794	1556	
Flt Permitted		0.95			0.89		0.37	1.00		0.74	1.00	
Satd. Flow (perm)		3115			2838		685	1721		1393	1556	
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)	11	1771	82	14	885	21	49	18	12	7	0	174
RTOR Reduction (vph)	0	2	0	0	1	0	0	11	0	0	156	0
Lane Group Flow (vph)	0	1862	0	0	919	0	49	19	0	7	18	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		110.3			110.3		14.7	14.7		14.7	14.7	
Effective Green, g (s)		110.3			110.3		14.7	14.7		14.7	14.7	
Actuated g/C Ratio		0.79			0.79		0.10	0.10		0.10	0.10	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2454			2235		71	180		146	163	
v/s Ratio Prot								0.01			0.01	
v/s Ratio Perm		c0.60			0.32		c0.07			0.01		
v/c Ratio		0.76			0.41		0.69	0.11		0.05	0.11	
Uniform Delay, d1		7.8			4.7		60.5	56.7		56.4	56.7	
Progression Factor		1.00			1.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.3			0.5		30.9	0.6		0.3	0.6	
Delay (s)		10.1			5.9		91.3	57.3		56.6	57.4	
Level of Service		B			A		F	E		E	E	
Approach Delay (s)		10.1			5.9			78.4			57.4	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.7%	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												
Volume (vph)	82	0	21	17	5	33	10	540	15	19	496	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.98	1.00		0.97	1.00	
Frt		0.97			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1691			1670		1592	3427		1656	3344	
Flt Permitted		0.73			0.89		0.44	1.00		0.43	1.00	
Satd. Flow (perm)		1284			1504		743	3427		748	3344	
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)	87	0	22	18	5	35	11	574	16	20	528	29
RTOR Reduction (vph)	0	40	0	0	31	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	69	0	0	27	0	11	588	0	20	554	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		9.8			8.8		48.2	48.2		48.2	48.2	
Effective Green, g (s)		9.8			8.8		48.2	48.2		48.2	48.2	
Actuated g/C Ratio		0.14			0.13		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		179			189		511	2359		515	2302	
v/s Ratio Prot								c0.17			0.17	
v/s Ratio Perm		c0.05			0.02		0.01			0.03		
v/c Ratio		0.38			0.14		0.02	0.25		0.04	0.24	
Uniform Delay, d1		27.4			27.2		3.4	4.1		3.5	4.1	
Progression Factor		1.00			1.00		1.37	1.67		1.90	1.92	
Incremental Delay, d2		2.8			0.7		0.1	0.2		0.1	0.2	
Delay (s)		30.2			28.0		4.8	7.1		6.8	8.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.2			28.0			7.0			8.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	39.8%	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												
Volume (vph)	156	28	29	10	25	214	20	609	39	251	465	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.91		1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.96	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	1719		1703	1481		1545	3367		1726	3318	1401
Flt Permitted	0.40	1.00		0.71	1.00		0.44	1.00		0.26	1.00	1.00
Satd. Flow (perm)	704	1719		1276	1481		719	3367		481	3318	1401
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	188	34	35	12	30	258	24	734	47	302	560	247
RTOR Reduction (vph)	0	25	0	0	186	0	0	3	0	0	0	43
Lane Group Flow (vph)	188	44	0	12	102	0	24	778	0	302	560	204
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	38.8	38.8		38.8	38.8		66.3	66.3		87.2	87.2	87.2
Effective Green, g (s)	38.8	38.8		38.8	38.8		66.3	66.3		87.2	87.2	87.2
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.47	0.47		0.62	0.62	0.62
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	195	476		353	410		340	1594		458	2066	872
v/s Ratio Prot		0.03			0.07			0.23		c0.08	0.17	
v/s Ratio Perm	c0.27			0.01			0.03			c0.33		0.15
v/c Ratio	0.96	0.09		0.03	0.25		0.07	0.49		0.66	0.27	0.23
Uniform Delay, d1	49.9	37.5		36.9	39.3		20.1	25.2		14.2	12.0	11.7
Progression Factor	1.00	1.00		1.00	1.00		1.14	1.22		1.55	1.39	1.75
Incremental Delay, d2	54.5	0.2		0.1	0.7		0.4	1.1		4.5	0.3	0.6
Delay (s)	104.4	37.7		37.0	39.9		23.3	32.0		26.5	17.0	21.0
Level of Service	F	D		D	D		C	C		C	B	C
Approach Delay (s)		86.5			39.8			31.7			20.5	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1650	12	10	757	10	21	19	13	35	7	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.94		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3322			3223		1704	1614		1183	1386	
Flt Permitted		0.93			0.91		0.71	1.00		0.73	1.00	
Satd. Flow (perm)		3086			2931		1271	1614		914	1386	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1833	13	11	841	11	23	21	14	39	8	66
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	60	0
Lane Group Flow (vph)	0	1872	0	0	863	0	23	22	0	39	14	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		116.2			116.2		11.8	11.8		11.8	11.8	
Effective Green, g (s)		116.2			116.2		11.8	11.8		11.8	11.8	
Actuated g/C Ratio		0.83			0.83		0.08	0.08		0.08	0.08	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2561			2432		107	136		77	116	
v/s Ratio Prot								0.01			0.01	
v/s Ratio Perm		c0.61			0.29		0.02			c0.04		
v/c Ratio		0.73			0.35		0.21	0.16		0.51	0.12	
Uniform Delay, d1		5.1			2.9		59.8	59.5		61.3	59.3	
Progression Factor		0.06			2.37		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3			0.4		2.1	1.2		10.5	0.9	
Delay (s)		1.6			7.2		61.9	60.7		71.9	60.2	
Level of Service		A			A		E	E		E	E	
Approach Delay (s)		1.6			7.2			61.2			64.2	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.5%	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												
Volume (vph)	61	1	28	26	2	10	39	950	22	21	703	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.98		1.00	1.00		1.00	0.98	
Flpb, ped/bikes		0.95			0.99		0.98	1.00		0.98	1.00	
Frt		0.96			0.96		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603			1603		1744	3366		1755	3153	
Flt Permitted		0.77			0.75		0.30	1.00		0.26	1.00	
Satd. Flow (perm)		1279			1249		560	3366		483	3153	
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)	65	1	30	28	2	11	41	1011	23	22	748	154
RTOR Reduction (vph)	0	13	0	0	10	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	83	0	0	31	0	41	1033	0	22	893	0
Confl. Peds. (#/hr)	41		9	9		41	21		20	20		21
Heavy Vehicles (%)	2%	0%	11%	12%	0%	0%	0%	8%	0%	0%	10%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2			16.2		109.8	109.8		109.8	109.8	
Effective Green, g (s)		16.2			16.2		109.8	109.8		109.8	109.8	
Actuated g/C Ratio		0.12			0.12		0.78	0.78		0.78	0.78	
Clearance Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		147			144		439	2639		378	2472	
v/s Ratio Prot								c0.31			0.28	
v/s Ratio Perm		c0.06			0.03		0.07			0.05		
v/c Ratio		0.56			0.22		0.09	0.39		0.06	0.36	
Uniform Delay, d1		58.6			56.1		3.5	4.7		3.4	4.5	
Progression Factor		1.00			1.00		0.78	1.60		1.00	1.00	
Incremental Delay, d2		7.9			1.6		0.4	0.4		0.3	0.4	
Delay (s)		66.4			57.7		3.1	7.9		3.7	5.0	
Level of Service		E			E		A	A		A	A	
Approach Delay (s)		66.4			57.7			7.7			4.9	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
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	
Volume (vph)	2	5	3	45	18	36	7	33	11	6	131	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	57	23	46	9	42	14	8	166	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	125	65	199
Volume Left (vph)	3	57	9	8
Volume Right (vph)	4	46	14	25
Hadj (s)	-0.14	-0.11	0.00	-0.03
Departure Headway (s)	4.5	4.4	4.4	4.3
Degree Utilization, x	0.02	0.15	0.08	0.24
Capacity (veh/h)	734	766	772	808
Control Delay (s)	7.6	8.2	7.8	8.6
Approach Delay (s)	7.6	8.2	7.8	8.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	66	31	61	4	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	78	36	72	5	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	218	87			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218	87			86	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	90	96			99	
cM capacity (veh/h)	749	958			1454	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	114	76	118
Volume Left	78	0	13
Volume Right	36	5	0
cSH	805	1700	1454
Volume to Capacity	0.14	0.04	0.01
Queue Length 95th (m)	3.4	0.0	0.2
Control Delay (s)	10.2	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	183	29
Volume Left	0	93	0
Volume Right	4	0	0
cSH	1700	1611	457
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.4
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	6	1	3	0	159	9	37	2	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	2	9	2	5	0	248	14	58	3	2	0
Pedestrians		24			86			7			182	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		2			7			1			16	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	187			18			46	203	99	347	208	211
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	187			18			46	203	99	347	208	211
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			68	98	93	99	100	100
cM capacity (veh/h)	1182			1602			784	584	886	384	581	690

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	11	6	320	5
Volume Left	0	2	248	3
Volume Right	9	0	58	0
cSH	1700	1602	789	433
Volume to Capacity	0.01	0.00	0.41	0.01
Queue Length 95th (m)	0.0	0.0	13.9	0.2
Control Delay (s)	0.0	1.8	12.6	13.4
Lane LOS		A	B	B
Approach Delay (s)	0.0	1.8	12.6	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1524	752	33	2	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1712	845	37	2	12
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.90				0.84	0.90
vC, conflicting volume	914				1852	476
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	677				1085	190
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	93				99	98
cM capacity (veh/h)	729				163	720

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	856	856	563	319	15
Volume Left	48	0	0	0	0	2
Volume Right	0	0	0	0	37	12
cSH	729	1700	1700	1700	1700	471
Volume to Capacity	0.07	0.50	0.50	0.33	0.19	0.03
Queue Length 95th (m)	1.5	0.0	0.0	0.0	0.0	0.7
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	12.9
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		12.9
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	53.1%	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	
Volume (vph)	6	85	3	9	20	8	3	97	26	3	7	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	98	3	10	23	9	3	111	30	3	8	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	108	43	145	16
Volume Left (vph)	7	10	3	3
Volume Right (vph)	3	9	30	5
Hadj (s)	-0.01	0.03	0.40	-0.01
Departure Headway (s)	4.3	4.4	4.7	4.4
Degree Utilization, x	0.13	0.05	0.19	0.02
Capacity (veh/h)	797	764	744	769
Control Delay (s)	8.0	7.7	8.8	7.5
Approach Delay (s)	8.0	7.7	8.8	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	23.0%	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	
Volume (vph)	38	212	3	14	64	103	2	81	18	10	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	307	4	20	93	149	3	117	26	14	1	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	367	113	149	146	17
Volume Left (vph)	55	20	0	3	14
Volume Right (vph)	4	0	149	26	1
Hadj (s)	0.04	0.16	-0.70	0.50	0.12
Departure Headway (s)	4.9	5.5	4.7	5.9	5.8
Degree Utilization, x	0.50	0.17	0.19	0.24	0.03
Capacity (veh/h)	711	622	736	552	537
Control Delay (s)	12.6	8.5	7.6	10.7	9.0
Approach Delay (s)	12.6	8.0		10.7	9.0
Approach LOS	B	A		B	A

Intersection Summary			
Delay	10.6		
Level of Service	B		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1533	4	2	746	7	0	0	9	2	0	47
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)	182	1666	4	2	811	8	0	0	10	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.91			0.76			0.81	0.81	0.76	0.81	0.81	0.91
vC, conflicting volume	854			1687			2509	2906	852	2062	2905	446
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	642			1277			1890	2382	183	1336	2379	193
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	78			99			100	100	98	97	100	93
cM capacity (veh/h)	840			414			26	21	627	70	21	708

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1015	838	408	413	10	53
Volume Left	182	0	2	0	0	2
Volume Right	0	4	0	8	10	51
cSH	840	1700	414	1700	627	517
Volume to Capacity	0.22	0.49	0.01	0.24	0.02	0.10
Queue Length 95th (m)	5.7	0.0	0.1	0.0	0.3	2.4
Control Delay (s)	5.5	0.0	0.2	0.0	10.8	12.8
Lane LOS	A		A		B	B
Approach Delay (s)	3.0		0.1		10.8	12.8
Approach LOS					B	B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
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	
Volume (vph)	9	42	4	4	13	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	47	4	4	14	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	61	24	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.06	0.00	0.01
Departure Headway (s)	4.6	4.7	4.2	4.4
Degree Utilization, x	0.08	0.03	0.28	0.08
Capacity (veh/h)	724	704	840	787
Control Delay (s)	8.0	7.9	8.8	7.7
Approach Delay (s)	8.0	7.9	8.8	7.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
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	
Volume (vph)	2	100	4	16	40	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	128	5	21	51	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	136	79	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.07	-0.26	0.14
Departure Headway (s)	5.0	5.2	4.4	4.9
Degree Utilization, x	0.19	0.11	0.34	0.20
Capacity (veh/h)	651	625	778	682
Control Delay (s)	9.2	8.9	9.7	9.2
Approach Delay (s)	9.2	8.9	9.7	9.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.4		
Level of Service	A		
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												
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
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			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	11.1		
Intersection Capacity Utilization	33.1%	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	
Volume (vph)	0	31	15	9	52	4	27	13	7	10	92	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	39	19	11	66	5	34	16	9	13	116	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	58	82	59	143
Volume Left (vph)	0	11	34	13
Volume Right (vph)	19	5	9	14
Hadj (s)	-0.16	0.04	0.06	0.35
Departure Headway (s)	4.3	4.5	4.5	4.6
Degree Utilization, x	0.07	0.10	0.07	0.18
Capacity (veh/h)	788	753	769	742
Control Delay (s)	7.7	8.0	7.8	8.7
Approach Delay (s)	7.7	8.0	7.8	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		

Existing 2015 AM Unsignalized Results
31: Elizabeth St & Park St

7/22/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	36	13	15	68	1	6	0	11	33	78	16
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	39	14	16	74	1	7	0	12	36	85	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	53	91	18	36	102
Volume Left (vph)	0	16	7	36	0
Volume Right (vph)	14	1	12	0	17
Hadj (s)	-0.05	0.08	-0.22	0.55	0.33
Departure Headway (s)	4.4	4.4	4.3	5.4	5.2
Degree Utilization, x	0.06	0.11	0.02	0.05	0.15
Capacity (veh/h)	793	781	797	640	671
Control Delay (s)	7.7	8.0	7.4	7.5	7.9
Approach Delay (s)	7.7	8.0	7.4	7.8	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	7.8		
Level of Service	A		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	47	114	1001	72	34	799
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	53	128	1125	81	38	898
Pedestrians	22		6			2
Lane Width (m)	3.7		3.7			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	2		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			312			66
pX, platoon unblocked	0.89	0.86			0.86	
vC, conflicting volume	1718	627			1228	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1193	224			927	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	63	80			94	
cM capacity (veh/h)	142	647			610	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	53	128	750	456	38	449	449
Volume Left	53	0	0	0	38	0	0
Volume Right	0	128	0	81	0	0	0
cSH	142	647	1700	1700	610	1700	1700
Volume to Capacity	0.37	0.20	0.44	0.27	0.06	0.26	0.26
Queue Length 95th (m)	10.9	5.1	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	44.7	11.9	0.0	0.0	11.3	0.0	0.0
Lane LOS	E	B			B		
Approach Delay (s)	21.5		0.0		0.5		
Approach LOS	C						

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	5	198	46	0	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	8	7	279	65	0	7
Pedestrians	9		1			5
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	328	325			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	325			353	
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	99			100	
cM capacity (veh/h)	664	712			1208	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	15	344	7
Volume Left	8	0	0
Volume Right	7	65	0
cSH	685	1700	1208
Volume to Capacity	0.02	0.20	0.00
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	31	221	185	90	2	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	40	283	237	115	3	1
Pedestrians			1		9	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			57			
pX, platoon unblocked						
vC, conflicting volume	362				668	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362				668	304
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	100
cM capacity (veh/h)	1199				409	735

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	323	353	4
Volume Left	40	0	3
Volume Right	0	115	1
cSH	1199	1700	480
Volume to Capacity	0.03	0.21	0.01
Queue Length 95th (m)	0.7	0.0	0.2
Control Delay (s)	1.3	0.0	12.6
Lane LOS	A		B
Approach Delay (s)	1.3	0.0	12.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	686	13	52	1002	256	10	111	38	259	92	320
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.96	1.00	1.00	0.96	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1666	3614	1415	1721	3614	1440	1718	1828		1726	1921	1455
Flt Permitted	0.15	1.00	1.00	0.39	1.00	1.00	0.70	1.00		0.66	1.00	1.00
Satd. Flow (perm)	272	3614	1415	698	3614	1440	1259	1828		1200	1921	1455
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)	247	700	13	53	1022	261	10	113	39	264	94	327
RTOR Reduction (vph)	0	0	5	0	0	98	0	14	0	0	0	181
Lane Group Flow (vph)	247	700	8	53	1022	163	10	138	0	264	94	146
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	58.9	58.9	58.9	43.8	43.8	43.8	28.1	28.1		28.1	28.1	28.1
Effective Green, g (s)	58.9	58.9	58.9	43.8	43.8	43.8	28.1	28.1		28.1	28.1	28.1
Actuated g/C Ratio	0.59	0.59	0.59	0.44	0.44	0.44	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	328	2128	833	305	1582	630	353	513		337	539	408
v/s Ratio Prot	c0.09	0.19			0.28			0.08			0.05	
v/s Ratio Perm	c0.35		0.01	0.08		0.11	0.01			c0.22		0.10
v/c Ratio	0.75	0.33	0.01	0.17	0.65	0.26	0.03	0.27		0.78	0.17	0.36
Uniform Delay, d1	14.3	10.5	8.5	17.1	22.0	17.8	26.1	28.0		33.1	27.2	28.7
Progression Factor	1.74	1.31	1.00	1.00	1.00	1.00	1.00	1.00		0.68	0.50	1.17
Incremental Delay, d2	10.6	0.4	0.0	1.2	2.1	1.0	0.1	0.6		12.6	0.3	1.1
Delay (s)	35.5	14.1	8.5	18.3	24.1	18.8	26.1	28.6		35.3	13.9	34.8
Level of Service	D	B	A	B	C	B	C	C		D	B	C
Approach Delay (s)		19.5			22.8			28.4			32.1	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	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												
Volume (vph)	93	925	103	19	1286	36	111	8	24	24	4	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.89		1.00	0.85	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3354		1764	1640		1762	1523	
Flt Permitted		0.60			0.92		0.41	1.00		0.74	1.00	
Satd. Flow (perm)		1984			3092		765	1640		1364	1523	
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)	97	964	107	20	1340	38	116	8	25	25	4	251
RTOR Reduction (vph)	0	7	0	0	2	0	0	20	0	0	30	0
Lane Group Flow (vph)	0	1161	0	0	1396	0	116	13	0	25	225	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		65.2			65.2		19.8	19.8		19.8	19.8	
Effective Green, g (s)		65.2			65.2		19.8	19.8		19.8	19.8	
Actuated g/C Ratio		0.65			0.65		0.20	0.20		0.20	0.20	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1293			2015		151	324		270	301	
v/s Ratio Prot								0.01			0.15	
v/s Ratio Perm		c0.59			0.45		c0.15			0.02		
v/c Ratio		0.90			0.69		0.77	0.04		0.09	0.75	
Uniform Delay, d1		14.6			11.0		37.9	32.4		32.8	37.7	
Progression Factor		1.00			0.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2		10.0			1.7		23.8	0.1		0.3	11.5	
Delay (s)		24.7			11.1		61.7	32.5		33.1	49.2	
Level of Service		C			B		E	C		C	D	
Approach Delay (s)		24.7			11.1			55.3			47.8	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	119.3%	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												
Volume (vph)	102	5	55	20	6	44	15	599	18	25	608	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.98	1.00		0.95	1.00	
Frt		0.95			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1702			1654		1749	3482		1624	3468	
Flt Permitted		0.77			0.87		0.39	1.00		0.41	1.00	
Satd. Flow (perm)		1345			1467		718	3482		693	3468	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	105	5	57	21	6	45	15	618	19	26	627	43
RTOR Reduction (vph)	0	21	0	0	37	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	146	0	0	35	0	15	635	0	26	666	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		17.8			16.8		70.2	70.2		70.2	70.2	
Effective Green, g (s)		17.8			16.8		70.2	70.2		70.2	70.2	
Actuated g/C Ratio		0.18			0.17		0.70	0.70		0.70	0.70	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		239			246		504	2444		486	2434	
v/s Ratio Prot								0.18			c0.19	
v/s Ratio Perm		c0.11			0.02		0.02			0.04		
v/c Ratio		0.61			0.14		0.03	0.26		0.05	0.27	
Uniform Delay, d1		37.9			35.4		4.5	5.4		4.6	5.5	
Progression Factor		1.00			1.00		1.91	1.71		0.10	0.35	
Incremental Delay, d2		6.6			0.5		0.1	0.2		0.2	0.3	
Delay (s)		44.5			36.0		8.8	9.5		0.7	2.2	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		44.5			36.0			9.5			2.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.1%	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												
Volume (vph)	164	37	36	14	34	175	15	677	22	130	697	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.95		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.97	1.00		0.98	1.00		0.98	1.00		0.98	1.00	1.00
Frt	1.00	0.93		1.00	0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1748		1749	1604		1753	3485		1738	3544	1464
Flt Permitted	0.52	1.00		0.71	1.00		0.35	1.00		0.35	1.00	1.00
Satd. Flow (perm)	942	1748		1301	1604		646	3485		639	3544	1464
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)	174	39	38	15	36	186	16	720	23	138	741	281
RTOR Reduction (vph)	0	29	0	0	112	0	0	2	0	0	0	42
Lane Group Flow (vph)	174	48	0	15	110	0	16	742	0	138	741	239
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	23.5	23.5		23.5	23.5		62.5	62.5		62.5	62.5	62.5
Effective Green, g (s)	23.5	23.5		23.5	23.5		62.5	62.5		62.5	62.5	62.5
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.62	0.62		0.62	0.62	0.62
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	221	410		305	376		403	2178		399	2215	915
v/s Ratio Prot		0.03			0.07			0.21			0.21	
v/s Ratio Perm	c0.18			0.01			0.02			c0.22		0.16
v/c Ratio	0.79	0.12		0.05	0.29		0.04	0.34		0.35	0.33	0.26
Uniform Delay, d1	35.9	30.1		29.6	31.4		7.2	8.9		9.0	8.9	8.4
Progression Factor	1.00	1.00		1.00	1.00		0.41	0.47		1.90	1.89	2.40
Incremental Delay, d2	19.1	0.3		0.1	0.9		0.2	0.4		2.2	0.4	0.6
Delay (s)	55.0	30.4		29.7	32.3		3.1	4.6		19.2	17.2	20.8
Level of Service	E	C		C	C		A	A		B	B	C
Approach Delay (s)		47.4			32.2			4.6			18.3	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	896	31	7	1173	44	46	42	21	52	21	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.95		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.87	1.00	
Frt		1.00			0.99		1.00	0.95		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3355			3344		1719	1738		1164	1588	
Flt Permitted		0.88			0.95		0.69	1.00		0.71	1.00	
Satd. Flow (perm)		2959			3176		1248	1738		874	1588	
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)	28	953	33	7	1248	47	49	45	22	55	22	82
RTOR Reduction (vph)	0	2	0	0	2	0	0	19	0	0	42	0
Lane Group Flow (vph)	0	1012	0	0	1300	0	49	48	0	55	62	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		74.2			74.2		13.8	13.8		13.8	13.8	
Effective Green, g (s)		74.2			74.2		13.8	13.8		13.8	13.8	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2195			2356		172	239		120	219	
v/s Ratio Prot								0.03			0.04	
v/s Ratio Perm		0.34			c0.41		0.04			c0.06		
v/c Ratio		0.46			0.55		0.28	0.20		0.46	0.28	
Uniform Delay, d1		5.1			5.6		38.7	38.2		39.7	38.7	
Progression Factor		0.09			0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.8		1.9	0.9		5.7	1.5	
Delay (s)		0.8			4.1		40.6	39.1		45.4	40.1	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		0.8			4.1			39.7			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	14	21	30	5	13	21	1075	22	13	1119	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00		0.99	1.00	
Frt		0.98			0.96		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1736		1783	3527		1773	3525	
Flt Permitted		0.75			0.77		0.20	1.00		0.22	1.00	
Satd. Flow (perm)		1373			1379		379	3527		412	3525	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	111	14	22	31	5	13	22	1108	23	13	1154	42
RTOR Reduction (vph)	0	8	0	0	11	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	139	0	0	38	0	22	1130	0	13	1194	0
Confl. Peds. (#/hr)	13		12	12		13	3		14	14		3
Heavy Vehicles (%)	1%	0%	0%	3%	0%	0%	0%	3%	5%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		17.3			17.3		68.7	68.7		68.7	68.7	
Effective Green, g (s)		17.3			17.3		68.7	68.7		68.7	68.7	
Actuated g/C Ratio		0.17			0.17		0.69	0.69		0.69	0.69	
Clearance Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		237			238		260	2423		283	2421	
v/s Ratio Prot								0.32			c0.34	
v/s Ratio Perm		c0.10			0.03		0.06			0.03		
v/c Ratio		0.59			0.16		0.08	0.47		0.05	0.49	
Uniform Delay, d1		38.0			35.2		5.2	7.2		5.1	7.4	
Progression Factor		1.00			1.00		0.78	1.06		1.00	1.00	
Incremental Delay, d2		5.6			0.7		0.6	0.6		0.3	0.7	
Delay (s)		43.7			35.8		4.7	8.3		5.4	8.1	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		43.7			35.8			8.2			8.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
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	
Volume (vph)	19	42	1	38	20	23	28	85	28	13	205	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	43	23	26	32	97	32	15	233	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	92	160	281
Volume Left (vph)	22	43	32	15
Volume Right (vph)	1	26	32	33
Hadj (s)	0.05	-0.08	-0.06	-0.06
Departure Headway (s)	5.1	4.9	4.6	4.5
Degree Utilization, x	0.10	0.13	0.20	0.35
Capacity (veh/h)	635	657	744	772
Control Delay (s)	8.7	8.7	8.8	9.8
Approach Delay (s)	8.7	8.7	8.8	9.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	74	30	103	27	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	82	33	114	30	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	381	159			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381	159			163	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	96			98	
cM capacity (veh/h)	604	868			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	116	144	207
Volume Left	82	0	26
Volume Right	33	30	0
cSH	662	1700	1404
Volume to Capacity	0.17	0.08	0.02
Queue Length 95th (m)	4.4	0.0	0.4
Control Delay (s)	11.6	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	1	11	46	0	149	6	4	2	5	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	1	15	62	0	201	8	5	3	7	11
Pedestrians					5			93			107	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			8			9	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	169			94			200	293	99	214	293	169
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169			94			200	293	99	214	293	169
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			64	98	99	100	99	99
cM capacity (veh/h)	1290			1392			567	514	882	575	514	799

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1	77	215	20
Volume Left	0	15	201	3
Volume Right	1	0	5	11
cSH	1700	1392	570	646
Volume to Capacity	0.00	0.01	0.38	0.03
Queue Length 95th (m)	0.0	0.2	12.2	0.7
Control Delay (s)	0.0	1.5	15.1	10.8
Lane LOS		A	C	B
Approach Delay (s)	0.0	1.5	15.1	10.8
Approach LOS			C	B

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	957	1247	56	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	33	1075	1401	63	2	9
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.78				0.81	0.78
vC, conflicting volume	1531				2104	799
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1105				1530	161
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	91				97	99
cM capacity (veh/h)	375				76	630

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	33	538	538	934	530	11
Volume Left	33	0	0	0	0	2
Volume Right	0	0	0	0	63	9
cSH	375	1700	1700	1700	1700	257
Volume to Capacity	0.09	0.32	0.32	0.55	0.31	0.04
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	15.5	0.0	0.0	0.0	0.0	19.6
Lane LOS	C					C
Approach Delay (s)	0.5			0.0		19.6
Approach LOS						C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	46.5%	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	
Volume (vph)	10	134	4	5	47	7	14	67	29	13	31	8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	138	4	5	48	7	14	69	30	13	32	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	153	61	113	54
Volume Left (vph)	10	5	14	13
Volume Right (vph)	4	7	30	8
Hadj (s)	0.01	-0.03	0.21	-0.04
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.19	0.08	0.15	0.07
Capacity (veh/h)	788	761	732	748
Control Delay (s)	8.4	7.8	8.5	7.8
Approach Delay (s)	8.4	7.8	8.5	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	26.0%	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	
Volume (vph)	25	140	9	38	186	82	7	48	33	35	11	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	169	11	46	224	99	8	58	40	42	13	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	210	270	99	106	63
Volume Left (vph)	30	46	0	8	42
Volume Right (vph)	11	0	99	40	7
Hadj (s)	0.01	0.08	-0.70	0.22	0.07
Departure Headway (s)	4.9	5.3	4.5	5.6	5.5
Degree Utilization, x	0.29	0.40	0.12	0.16	0.10
Capacity (veh/h)	690	658	770	588	583
Control Delay (s)	9.9	10.5	6.9	9.7	9.1
Approach Delay (s)	9.9	9.5		9.7	9.1
Approach LOS	A	A		A	A

Intersection Summary			
Delay	9.6		
Level of Service	A		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	913	2	15	1247	47	2	1	3	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	922	2	15	1260	47	2	1	3	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.79			0.90			0.84	0.84	0.90	0.84	0.84	0.79
vC, conflicting volume	1426			996			1799	2555	534	2000	2532	776
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	998			777			1032	1937	265	1273	1909	171
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	90			98			98	98	100	86	100	94
cM capacity (veh/h)	495			717			111	41	626	74	43	598

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	513	463	645	677	6	47
Volume Left	52	0	15	0	2	10
Volume Right	0	2	0	47	3	37
cSH	495	1700	717	1700	127	239
Volume to Capacity	0.10	0.27	0.02	0.40	0.05	0.20
Queue Length 95th (m)	2.4	0.0	0.5	0.0	1.0	5.1
Control Delay (s)	3.0	0.0	0.6	0.0	34.7	23.8
Lane LOS	A		A		D	C
Approach Delay (s)	1.6		0.3		34.7	23.8
Approach LOS					D	C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
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	
Volume (vph)	11	92	12	16	48	6	28	47	48	16	45	29
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	107	14	19	56	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	134	81	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.5	4.6	4.3	4.4
Degree Utilization, x	0.17	0.11	0.17	0.13
Capacity (veh/h)	741	720	782	758
Control Delay (s)	8.5	8.2	8.3	8.1
Approach Delay (s)	8.5	8.2	8.3	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	29.0%	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	
Volume (vph)	4	77	4	59	139	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	93	5	71	167	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	253	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.7	4.6	4.7	5.0
Degree Utilization, x	0.13	0.32	0.10	0.17
Capacity (veh/h)	711	749	704	669
Control Delay (s)	8.4	9.7	8.2	9.0
Approach Delay (s)	8.4	9.7	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
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			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	291	48	0
Volume Left	0	159	47	0
Volume Right	0	36	2	0
cSH	1700	1576	396	1700
Volume to Capacity	0.00	0.10	0.12	0.00
Queue Length 95th (m)	0.0	2.4	2.9	0.0
Control Delay (s)	0.0	4.5	15.4	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	15.4	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
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	
Volume (vph)	3	68	19	25	47	6	31	31	43	5	115	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	72	20	27	50	6	33	33	46	5	122	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	96	83	112	147
Volume Left (vph)	3	27	33	5
Volume Right (vph)	20	6	46	19
Hadj (s)	-0.12	0.02	-0.17	0.24
Departure Headway (s)	4.5	4.6	4.3	4.7
Degree Utilization, x	0.12	0.11	0.13	0.19
Capacity (veh/h)	743	720	786	728
Control Delay (s)	8.1	8.2	8.0	8.8
Approach Delay (s)	8.1	8.2	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

31: Elizabeth St & Park St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	47	9	52	86	0	21	0	21	21	86	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	62	12	68	113	0	28	0	28	28	113	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	75	182	55	28	145
Volume Left (vph)	1	68	28	28	0
Volume Right (vph)	12	0	28	0	32
Hadj (s)	-0.06	0.08	-0.16	0.50	0.25
Departure Headway (s)	4.7	4.7	4.7	5.7	5.4
Degree Utilization, x	0.10	0.24	0.07	0.04	0.22
Capacity (veh/h)	718	730	711	600	632
Control Delay (s)	8.2	9.1	8.1	7.7	8.7
Approach Delay (s)	8.2	9.1	8.1	8.6	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	8.7		
Level of Service	A		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	48	45	1058	63	74	1155
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	46	1091	65	76	1191
Pedestrians	17					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			312			66
pX, platoon unblocked	0.88	0.92			0.92	
vC, conflicting volume	1888	595			1173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	381			1010	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	92			88	
cM capacity (veh/h)	115	558			628	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	49	46	727	429	76	595	595
Volume Left	49	0	0	0	76	0	0
Volume Right	0	46	0	65	0	0	0
cSH	115	558	1700	1700	628	1700	1700
Volume to Capacity	0.43	0.08	0.43	0.25	0.12	0.35	0.35
Queue Length 95th (m)	13.0	1.9	0.0	0.0	2.9	0.0	0.0
Control Delay (s)	58.4	12.0	0.0	0.0	11.5	0.0	0.0
Lane LOS	F	B			B		
Approach Delay (s)	36.0		0.0		0.7		
Approach LOS	E						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	23	12	138	4	0	21
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	30	16	182	5	0	28
Pedestrians	9		1			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	222	195			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222	195			196	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	764	843			1378	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	46	187	28
Volume Left	30	0	0
Volume Right	16	5	0
cSH	790	1700	1378
Volume to Capacity	0.06	0.11	0.00
Queue Length 95th (m)	1.3	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	4	225	331	10	16	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	250	368	11	18	14
Pedestrians		4	1		13	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			57			
pX, platoon unblocked						
vC, conflicting volume	392				646	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392				646	390
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	98
cM capacity (veh/h)	1165				432	653

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	254	379	32
Volume Left	4	0	18
Volume Right	0	11	14
cSH	1165	1700	509
Volume to Capacity	0.00	0.22	0.06
Queue Length 95th (m)	0.1	0.0	1.4
Control Delay (s)	0.2	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

2031 Total Traffic Intersection Operations
Scenario A

Scenario A 2031 AM Signalized Results
3: St Lawrence Dr/Hurontario St & Lakeshore Rd 9/30/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	405	1160	9	31	802	217	9	126	31	212	166	285
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.14	1.00	1.00	0.21	1.00	1.00	0.55	1.00		0.57	1.00	1.00
Satd. Flow (perm)	240	3515	1360	337	3544	1315	906	1856		1032	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	466	1333	10	36	922	249	10	145	36	244	191	328
RTOR Reduction (vph)	0	0	4	0	0	74	0	7	0	0	0	239
Lane Group Flow (vph)	466	1333	6	36	922	175	10	174	0	244	191	89
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	88.8	88.8	88.8	50.4	50.4	50.4	38.2	38.2		38.2	38.2	38.2
Effective Green, g (s)	88.8	88.8	88.8	50.4	50.4	50.4	38.2	38.2		38.2	38.2	38.2
Actuated g/C Ratio	0.63	0.63	0.63	0.36	0.36	0.36	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	517	2229	862	121	1275	473	247	506		281	485	375
v/s Ratio Prot	c0.23	0.38			0.26			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.13	0.01			c0.24		0.07
v/c Ratio	0.90	0.60	0.01	0.30	0.72	0.37	0.04	0.34		0.87	0.39	0.24
Uniform Delay, d1	34.9	15.1	9.4	32.1	38.8	33.1	37.4	40.9		48.5	41.5	39.6
Progression Factor	0.78	0.86	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.56	1.14
Incremental Delay, d2	14.7	0.8	0.0	6.2	3.6	2.2	0.1	0.9		24.6	1.1	0.7
Delay (s)	42.0	13.8	9.4	38.3	42.3	35.3	37.6	41.7		50.6	24.5	45.8
Level of Service	D	B	A	D	D	D	D	D		D	C	D
Approach Delay (s)		21.0			40.8			41.5			42.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.5%	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												
Volume (vph)	10	1625	107	39	1151	19	66	28	26	7	12	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3277			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.71		0.38	1.00		0.72	1.00	
Satd. Flow (perm)		3086			2279		715	1682		1357	1580	
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)	11	1786	118	43	1265	21	73	31	29	8	13	176
RTOR Reduction (vph)	0	3	0	0	1	0	0	25	0	0	82	0
Lane Group Flow (vph)	0	1912	0	0	1328	0	73	35	0	8	107	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		106.9			106.9		18.1	18.1		18.1	18.1	
Effective Green, g (s)		106.9			106.9		18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2356			1740		92	217		175	204	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.62			0.58		c0.10			0.01		
v/c Ratio		0.81			0.76		0.79	0.16		0.05	0.53	
Uniform Delay, d1		10.3			9.4		59.1	54.2		53.4	56.9	
Progression Factor		1.00			0.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2			2.4		40.4	0.7		0.2	4.6	
Delay (s)		13.5			5.2		99.5	54.9		53.6	61.5	
Level of Service		B			A		F	D		D	E	
Approach Delay (s)		13.5			5.2			79.4			61.2	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	15.5	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)	15.0
Intersection Capacity Utilization	97.1%	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												
Volume (vph)	102	0	22	17	5	33	10	717	15	19	663	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1695			1670		1599	3431		1667	3344	
Flt Permitted		0.72			0.88		0.37	1.00		0.35	1.00	
Satd. Flow (perm)		1277			1491		616	3431		615	3344	
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)	109	0	23	18	5	35	11	763	16	20	705	39
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	92	0	0	28	0	11	778	0	20	741	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		413	2303		412	2245	
v/s Ratio Prot								c0.23			0.22	
v/s Ratio Perm		c0.07			0.02		0.02			0.03		
v/c Ratio		0.46			0.13		0.03	0.34		0.05	0.33	
Uniform Delay, d1		26.8			26.2		3.8	4.9		3.9	4.9	
Progression Factor		1.00			1.00		1.20	1.46		1.61	2.05	
Incremental Delay, d2		3.5			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.3			26.8		4.7	7.4		6.5	10.3	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		30.3			26.8			7.4			10.2	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	45.2%	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												
Volume (vph)	191	28	29	10	25	214	20	806	39	251	640	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.97		1.00	0.91		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.87		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1675	1719		1703	1481		1575	3377		1733	3162	
Flt Permitted	0.43	1.00		0.71	1.00		0.28	1.00		0.14	1.00	
Satd. Flow (perm)	765	1719		1276	1481		457	3377		251	3162	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	230	34	35	12	30	258	24	971	47	302	771	269
RTOR Reduction (vph)	0	24	0	0	177	0	0	2	0	0	23	0
Lane Group Flow (vph)	230	45	0	12	111	0	24	1016	0	302	1017	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	44.0	44.0		44.0	44.0		57.6	57.6		82.0	82.0	
Effective Green, g (s)	44.0	44.0		44.0	44.0		57.6	57.6		82.0	82.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.41	0.41		0.59	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	240	540		401	465		188	1389		373	1852	
v/s Ratio Prot		0.03			0.08			0.30		c0.12	0.32	
v/s Ratio Perm	c0.30			0.01			0.05			c0.35		
v/c Ratio	0.96	0.08		0.03	0.24		0.13	0.73		0.81	0.55	
Uniform Delay, d1	47.1	33.8		33.2	35.6		25.6	34.7		27.5	17.7	
Progression Factor	1.00	1.00		1.00	1.00		0.94	1.03		0.98	1.43	
Incremental Delay, d2	46.8	0.1		0.1	0.6		1.4	3.4		11.9	1.0	
Delay (s)	93.9	33.9		33.3	36.1		25.4	38.9		38.9	26.3	
Level of Service	F	C		C	D		C	D		D	C	
Approach Delay (s)		80.1			36.0			38.6			29.2	
Approach LOS		F			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.3	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)	17.0
Intersection Capacity Utilization	88.5%	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												
Volume (vph)	23	1666	25	47	1068	10	60	24	102	37	11	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3318			3220		1704	1496		1192	1406	
Flt Permitted		0.91			0.68		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3023			2207		1262	1496		621	1406	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1851	28	52	1187	11	67	27	113	41	12	70
RTOR Reduction (vph)	0	1	0	0	0	0	0	31	0	0	62	0
Lane Group Flow (vph)	0	1904	0	0	1250	0	67	109	0	41	20	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.1			111.1		16.9	16.9		16.9	16.9	
Effective Green, g (s)		111.1			111.1		16.9	16.9		16.9	16.9	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2398			1751		152	180		74	169	
v/s Ratio Prot								c0.07			0.01	
v/s Ratio Perm		c0.63			0.57		0.05			0.07		
v/c Ratio		0.79			0.71		0.44	0.61		0.55	0.12	
Uniform Delay, d1		8.1			6.9		57.2	58.4		58.0	54.9	
Progression Factor		0.34			3.77		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			2.0		4.2	8.3		14.4	0.7	
Delay (s)		4.5			28.0		61.4	66.7		72.4	55.6	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		4.5			28.0			64.9			61.2	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.9%	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												
Volume (vph)	61	1	28	47	2	114	40	1233	72	34	1019	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.98	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3394			3318	
Flt Permitted		0.60		0.71	1.00			0.84			0.82	
Satd. Flow (perm)		1085		1277	1551			2871			2730	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1385	81	38	1145	145
RTOR Reduction (vph)	0	12	0	0	73	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	57	0	0	1504	0	0	1328	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2251			2141	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.52			0.49	
v/c Ratio		0.62		0.36	0.32			0.67			0.62	
Uniform Delay, d1		59.0		57.1	56.9			6.8			6.3	
Progression Factor		1.00		1.00	1.00			2.64			1.00	
Incremental Delay, d2		12.8		3.1	2.2			1.2			1.4	
Delay (s)		71.8		60.3	59.0			19.2			7.7	
Level of Service		E		E	E			B			A	
Approach Delay (s)		71.8			59.4			19.2			7.7	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	89.1%	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	
Volume (vph)	2	5	3	51	18	36	7	47	18	6	141	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	65	23	46	9	59	23	8	178	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	133	91	211
Volume Left (vph)	3	65	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.03
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.25
Capacity (veh/h)	711	743	769	796
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	76	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	89	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	93	118
Volume Left	89	0	13
Volume Right	36	21	0
cSH	791	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	183	29
Volume Left	0	93	0
Volume Right	4	0	0
cSH	1700	1611	457
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.4
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1	6	1	3	159	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	2	9	2	5	248	58
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		45	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		45	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		73	93
cM capacity (veh/h)			1602		905	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	6	306
Volume Left	0	2	248
Volume Right	9	0	58
cSH	1700	1602	902
Volume to Capacity	0.01	0.00	0.34
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	1.8	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	11.0
Approach LOS			B

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1658	1105	33	2	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1863	1242	37	2	15
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.77				0.84	0.77
vC, conflicting volume	1311				2324	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	818				986	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	91				99	98
cM capacity (veh/h)	552				185	819

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	931	931	828	451	17
Volume Left	48	0	0	0	0	2
Volume Right	0	0	0	0	37	15
cSH	552	1700	1700	1700	1700	562
Volume to Capacity	0.09	0.55	0.55	0.49	0.27	0.03
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	0.6
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	11.6
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		11.6
Approach LOS						B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	56.8%	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	
Volume (vph)	6	101	4	9	30	8	3	97	31	3	9	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	116	5	10	34	9	3	111	36	3	10	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	128	54	151	18
Volume Left (vph)	7	10	3	3
Volume Right (vph)	5	9	36	5
Hadj (s)	-0.01	0.04	0.37	-0.01
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.15	0.07	0.20	0.02
Capacity (veh/h)	790	753	733	748
Control Delay (s)	8.2	7.8	8.9	7.6
Approach Delay (s)	8.2	7.8	8.9	7.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	38	247	3	16	80	103	2	81	18	10	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	358	4	23	116	149	3	117	26	14	1	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	417	139	149	146	17
Volume Left (vph)	55	23	0	3	14
Volume Right (vph)	4	0	149	26	1
Hadj (s)	0.03	0.15	-0.70	0.50	0.12
Departure Headway (s)	4.9	5.6	4.7	6.1	6.0
Degree Utilization, x	0.57	0.22	0.20	0.25	0.03
Capacity (veh/h)	707	616	725	534	512
Control Delay (s)	14.2	9.0	7.7	11.1	9.2
Approach Delay (s)	14.2	8.3		11.1	9.2
Approach LOS	B	A		B	A

Intersection Summary			
Delay	11.6		
Level of Service	B		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1640	4	12	1089	7	1	0	36	2	0	47
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)	182	1783	4	13	1184	8	1	0	39	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.78			0.70			0.81	0.81	0.70	0.81	0.81	0.78
vC, conflicting volume	1227			1803			2834	3417	910	2544	3416	633
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	727			1296			1576	2294	25	1219	2292	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	73			97			97	100	95	97	100	94
cM capacity (veh/h)	669			375			42	22	728	77	22	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1073	896	605	599	40	53
Volume Left	182	0	13	0	1	2
Volume Right	0	4	0	8	39	51
cSH	669	1700	375	1700	506	583
Volume to Capacity	0.27	0.53	0.03	0.35	0.08	0.09
Queue Length 95th (m)	7.7	0.0	0.8	0.0	1.8	2.1
Control Delay (s)	7.9	0.0	1.1	0.0	12.7	11.8
Lane LOS	A		A		B	B
Approach Delay (s)	4.3		0.6		12.7	11.8
Approach LOS					B	B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
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	
Volume (vph)	9	51	4	4	21	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	23	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	33	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.08	0.00	0.01
Departure Headway (s)	4.6	4.7	4.2	4.4
Degree Utilization, x	0.09	0.04	0.28	0.08
Capacity (veh/h)	721	699	828	774
Control Delay (s)	8.1	8.0	8.9	7.8
Approach Delay (s)	8.1	8.0	8.9	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	56	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	72	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	100	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.08	-0.26	0.14
Departure Headway (s)	5.1	5.3	4.6	5.2
Degree Utilization, x	0.26	0.15	0.36	0.21
Capacity (veh/h)	644	609	738	645
Control Delay (s)	9.9	9.2	10.1	9.5
Approach Delay (s)	9.9	9.2	10.1	9.5
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.8		
Level of Service	A		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
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			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	11.1		
Intersection Capacity Utilization	33.1%	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	
Volume (vph)	0	38	15	11	58	4	27	16	9	10	100	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	73	5	34	20	11	13	127	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	92	66	153
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.20
Capacity (veh/h)	770	740	758	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.6%	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	
Volume (vph)	0	50	13	19	78	1	6	0	23	42	81	16
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	14	21	85	1	7	0	25	46	88	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	107	32	46	105
Volume Left (vph)	0	21	7	46	0
Volume Right (vph)	14	1	25	0	17
Hadj (s)	-0.01	0.09	-0.37	0.55	0.34
Departure Headway (s)	4.5	4.5	4.2	5.5	5.3
Degree Utilization, x	0.09	0.13	0.04	0.07	0.15
Capacity (veh/h)	768	754	802	627	656
Control Delay (s)	7.9	8.2	7.4	7.7	8.0
Approach Delay (s)	7.9	8.2	7.4	7.9	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	6	0	5	0	198	46	0	5	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	0	8	0	7	0	279	65	0	7	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	330	360	8	328	327	325	7			353		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	360	8	328	327	325	7			353		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	99	100			100		
cM capacity (veh/h)	611	563	1073	620	587	712	1614			1208		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	15	344	7
Volume Left	0	8	0	0
Volume Right	0	7	65	0
cSH	1700	658	1614	1208
Volume to Capacity	0.00	0.02	0.00	0.00
Queue Length 95th (m)	0.0	0.5	0.0	0.0
Control Delay (s)	0.0	10.6	0.0	0.0
Lane LOS	A	B		
Approach Delay (s)	0.0	10.6	0.0	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	31	256	0	0	203	90	0	0	0	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	328	0	0	260	115	0	0	0	3	0	1
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	385			328			727	792	329	736	735	327
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	385			328			727	792	329	736	735	327
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 %	97			100			100	100	100	99	100	100
cM capacity (veh/h)	1176			1231			328	308	712	324	333	713

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	368	376	0	4
Volume Left	40	0	0	3
Volume Right	0	115	0	1
cSH	1176	1231	1700	396
Volume to Capacity	0.03	0.00	0.00	0.01
Queue Length 95th (m)	0.7	0.0	0.0	0.2
Control Delay (s)	1.2	0.0	0.0	14.2
Lane LOS	A		A	B
Approach Delay (s)	1.2	0.0	0.0	14.2
Approach LOS			A	B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Scenario A 2031 PM Signalized Results
3: St Lawrence Dr/Hurontario St & Lakeshore Rd 10/1/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	342	972	13	62	1031	257	10	169	43	260	223	381
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1415	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.55	1.00		0.57	1.00	1.00
Satd. Flow (perm)	185	3614	1415	530	3614	1440	1011	1847		1044	1921	1455
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)	349	992	13	63	1052	262	10	172	44	265	228	389
RTOR Reduction (vph)	0	0	6	0	0	99	0	10	0	0	0	261
Lane Group Flow (vph)	349	992	7	63	1052	163	10	206	0	265	228	128
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	56.4	56.4	56.4	35.0	35.0	35.0	30.6	30.6		30.6	30.6	30.6
Effective Green, g (s)	56.4	56.4	56.4	35.0	35.0	35.0	30.6	30.6		30.6	30.6	30.6
Actuated g/C Ratio	0.56	0.56	0.56	0.35	0.35	0.35	0.31	0.31		0.31	0.31	0.31
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	377	2038	798	185	1264	504	309	565		319	587	445
v/s Ratio Prot	c0.17	0.27			0.29			0.11			0.12	
v/s Ratio Perm	c0.35		0.01	0.12		0.11	0.01			c0.25		0.09
v/c Ratio	0.93	0.49	0.01	0.34	0.83	0.32	0.03	0.37		0.83	0.39	0.29
Uniform Delay, d1	28.3	13.1	9.6	24.0	29.8	23.8	24.3	27.1		32.3	27.3	26.4
Progression Factor	1.12	1.41	1.00	1.00	1.00	1.00	1.00	1.00		0.47	0.43	0.51
Incremental Delay, d2	26.5	0.7	0.0	4.9	6.5	1.7	0.1	0.8		17.2	0.8	0.7
Delay (s)	58.0	19.2	9.6	28.9	36.3	25.5	24.4	28.0		32.2	12.6	14.3
Level of Service	E	B	A	C	D	C	C	C		C	B	B
Approach Delay (s)		29.1			33.9			27.8			19.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
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												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	220	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	250	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	298
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.06
Departure Headway (s)	5.2	5.1	4.6	4.5
Degree Utilization, x	0.10	0.15	0.23	0.37
Capacity (veh/h)	616	638	734	759
Control Delay (s)	8.8	9.0	9.0	10.2
Approach Delay (s)	8.8	9.0	9.0	10.2
Approach LOS	A	A	A	B

Intersection Summary			
Delay	9.5		
Level of Service	A		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	89	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	99	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	132	157	207
Volume Left	99	0	26
Volume Right	33	42	0
cSH	649	1700	1390
Volume to Capacity	0.20	0.09	0.02
Queue Length 95th (m)	5.3	0.0	0.4
Control Delay (s)	12.0	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	1	11	46	149	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	15	62	201	5
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		186	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		186	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		71	99
cM capacity (veh/h)			1392		702	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	77	207
Volume Left	0	15	201
Volume Right	1	0	5
cSH	1700	1392	705
Volume to Capacity	0.00	0.01	0.29
Queue Length 95th (m)	0.0	0.2	8.5
Control Delay (s)	0.0	1.5	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	12.2
Approach LOS			B

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	31	1444	1337	56	2	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	35	1622	1502	63	2	10
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.73				0.82	0.73
vC, conflicting volume	1632				2484	850
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1125				1408	53
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	90				98	99
cM capacity (veh/h)	347				91	695

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	35	811	811	1001	564	12
Volume Left	35	0	0	0	0	2
Volume Right	0	0	0	0	63	10
cSH	347	1700	1700	1700	1700	316
Volume to Capacity	0.10	0.48	0.48	0.59	0.33	0.04
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	0.9
Control Delay (s)	16.5	0.0	0.0	0.0	0.0	16.9
Lane LOS	C					C
Approach Delay (s)	0.3			0.0		16.9
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
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		✥			✥			✥			✥	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	145	5	5	64	7	14	67	31	13	33	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	149	5	5	66	7	14	69	32	13	34	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	78	115	58
Volume Left (vph)	10	5	14	13
Volume Right (vph)	5	7	32	10
Hadj (s)	0.01	-0.01	0.19	-0.06
Departure Headway (s)	4.4	4.5	4.7	4.6
Degree Utilization, x	0.20	0.10	0.15	0.07
Capacity (veh/h)	781	752	719	734
Control Delay (s)	8.5	8.0	8.6	7.9
Approach Delay (s)	8.5	8.0	8.6	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	27.0%	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	
Volume (vph)	25	160	9	42	220	82	7	48	33	35	11	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	193	11	51	265	99	8	58	40	42	13	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	234	316	99	106	63
Volume Left (vph)	30	51	0	8	42
Volume Right (vph)	11	0	99	40	7
Hadj (s)	0.01	0.08	-0.70	0.22	0.07
Departure Headway (s)	5.0	5.3	4.5	5.7	5.7
Degree Utilization, x	0.32	0.47	0.12	0.17	0.10
Capacity (veh/h)	681	655	764	557	559
Control Delay (s)	10.4	11.7	7.0	9.9	9.3
Approach Delay (s)	10.4	10.6		9.9	9.3
Approach LOS	B	B		A	A

Intersection Summary			
Delay	10.3		
Level of Service	B		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	1368	3	29	1324	47	2	1	20	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	1382	3	29	1337	47	2	1	20	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.74			0.81			0.84	0.84	0.81	0.84	0.84	0.74
vC, conflicting volume	1504			1457			2326	3121	764	2353	3099	814
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	979			1088			1157	2106	230	1189	2080	48
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	89			94			98	97	97	87	100	94
cM capacity (veh/h)	474			491			88	31	590	80	32	674

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	742	694	698	716	23	47
Volume Left	52	0	29	0	2	10
Volume Right	0	3	0	47	20	37
cSH	474	1700	491	1700	258	261
Volume to Capacity	0.11	0.41	0.06	0.42	0.09	0.18
Queue Length 95th (m)	2.5	0.0	1.3	0.0	2.1	4.6
Control Delay (s)	3.2	0.0	1.7	0.0	20.3	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	1.7		0.9		20.3	21.9
Approach LOS					C	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
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	
Volume (vph)	11	99	12	16	58	6	28	47	48	16	45	29
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	115	14	19	67	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.17	0.13
Capacity (veh/h)	737	718	770	746
Control Delay (s)	8.6	8.3	8.3	8.2
Approach Delay (s)	8.6	8.3	8.3	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.2%	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	
Volume (vph)	4	97	4	59	173	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	71	208	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	294	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.8	4.6	4.8	5.1
Degree Utilization, x	0.17	0.38	0.11	0.18
Capacity (veh/h)	700	744	670	640
Control Delay (s)	8.7	10.4	8.4	9.2
Approach Delay (s)	8.7	10.4	8.4	9.2
Approach LOS	A	B	A	A

Intersection Summary			
Delay	9.6		
Level of Service	A		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
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			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	291	48	0
Volume Left	0	159	47	0
Volume Right	0	36	2	0
cSH	1700	1576	396	1700
Volume to Capacity	0.00	0.10	0.12	0.00
Queue Length 95th (m)	0.0	2.4	2.9	0.0
Control Delay (s)	0.0	4.5	15.4	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	15.4	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
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	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	120	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	128	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	152
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.24
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.20
Capacity (veh/h)	730	710	771	716
Control Delay (s)	8.2	8.4	8.2	9.0
Approach Delay (s)	8.2	8.4	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	62	101	0	21	0	29	25	88	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	82	133	0	28	0	38	33	116	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	214	66	33	147
Volume Left (vph)	1	82	28	33	0
Volume Right (vph)	12	0	38	0	32
Hadj (s)	-0.05	0.08	-0.23	0.50	0.25
Departure Headway (s)	4.8	4.7	4.8	5.8	5.6
Degree Utilization, x	0.12	0.28	0.09	0.05	0.23
Capacity (veh/h)	699	718	691	582	612
Control Delay (s)	8.4	9.6	8.3	8.0	9.0
Approach Delay (s)	8.4	9.6	8.3	8.8	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	9.0		
Level of Service	A		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	0	0	0	23	0	12	0	138	4	0	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	0	30	0	16	0	182	5	0	28	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	230	223	29	222	221	195	28			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	230	223	29	222	221	195	28			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	96	100	98	100			100		
cM capacity (veh/h)	706	670	1045	728	672	843	1586			1378		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	46	187	28
Volume Left	0	30	0	0
Volume Right	0	16	5	0
cSH	1700	764	1586	1378
Volume to Capacity	0.00	0.06	0.00	0.00
Queue Length 95th (m)	0.0	1.3	0.0	0.0
Control Delay (s)	0.0	10.0	0.0	0.0
Lane LOS	A	B		
Approach Delay (s)	0.0	10.0	0.0	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	4	245	0	0	369	10	0	0	0	16	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	272	0	0	410	11	0	0	0	18	0	14
Pedestrians		4			1						13	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	434			272			715	715	273	711	710	433
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	434			272			715	715	273	711	710	433
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			100			100	100	100	95	100	98
cM capacity (veh/h)	1124			1291			333	351	765	343	353	618

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	277	421	0	32
Volume Left	4	0	0	18
Volume Right	0	11	0	14
cSH	1124	1291	1700	428
Volume to Capacity	0.00	0.00	0.00	0.08
Queue Length 95th (m)	0.1	0.0	0.0	1.7
Control Delay (s)	0.2	0.0	0.0	14.1
Lane LOS	A		A	B
Approach Delay (s)	0.2	0.0	0.0	14.1
Approach LOS			A	B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1283	146	64	1312	37	134	20	71	25	20	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3348		1768	1632		1767	1547	
Flt Permitted		0.61			0.67		0.36	1.00		0.70	1.00	
Satd. Flow (perm)		2019			2259		667	1632		1294	1547	
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)	97	1336	152	67	1367	39	140	21	74	26	21	252
RTOR Reduction (vph)	0	8	0	0	2	0	0	42	0	0	36	0
Lane Group Flow (vph)	0	1577	0	0	1471	0	140	53	0	26	237	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1332			1490		126	310		245	293	
v/s Ratio Prot								0.03			0.15	
v/s Ratio Perm		c0.78			0.65		c0.21			0.02		
v/c Ratio		1.18			0.99		1.11	0.17		0.11	0.81	
Uniform Delay, d1		17.0			16.6		40.5	33.9		33.5	38.7	
Progression Factor		1.00			1.24		1.00	1.00		1.00	1.00	
Incremental Delay, d2		90.7			18.0		113.1	0.5		0.4	16.8	
Delay (s)		107.7			38.6		153.6	34.5		33.9	55.6	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		107.7			38.6			105.5			53.7	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	134.1%	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												
Volume (vph)	114	5	56	20	6	44	16	798	18	25	890	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.96	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1705			1654		1765	3489		1654	3470	
Flt Permitted		0.76			0.88		0.27	1.00		0.32	1.00	
Satd. Flow (perm)		1337			1472		494	3489		549	3470	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	58	21	6	45	16	823	19	26	918	60
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	160	0	0	35	0	16	841	0	26	975	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		340	2407		378	2394	
v/s Ratio Prot								0.24			c0.28	
v/s Ratio Perm		c0.12			0.02		0.03			0.05		
v/c Ratio		0.63			0.13		0.05	0.35		0.07	0.41	
Uniform Delay, d1		37.3			34.4		5.0	6.3		5.0	6.7	
Progression Factor		1.00			1.00		1.38	1.57		0.15	0.12	
Incremental Delay, d2		6.8			0.5		0.2	0.3		0.3	0.4	
Delay (s)		44.0			34.9		7.1	10.3		1.0	1.2	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.0			34.9			10.2			1.2	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	54.3%	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												
Volume (vph)	184	37	36	14	34	175	15	895	22	130	1009	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.95		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.93		1.00	0.87		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1748		1749	1604		1777	3491		1749	3378	
Flt Permitted	0.53	1.00		0.71	1.00		0.13	1.00		0.25	1.00	
Satd. Flow (perm)	958	1748		1301	1604		246	3491		466	3378	
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)	196	39	38	15	36	186	16	952	23	138	1073	321
RTOR Reduction (vph)	0	29	0	0	78	0	0	2	0	0	25	0
Lane Group Flow (vph)	196	48	0	15	144	0	16	973	0	138	1369	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	24.7	24.7		24.7	24.7		61.3	61.3		61.3	61.3	
Effective Green, g (s)	24.7	24.7		24.7	24.7		61.3	61.3		61.3	61.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.61	0.61		0.61	0.61	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	431		321	396		150	2139		285	2070	
v/s Ratio Prot		0.03			0.09			0.28			c0.41	
v/s Ratio Perm	c0.20			0.01			0.07			0.30		
v/c Ratio	0.83	0.11		0.05	0.36		0.11	0.46		0.48	0.66	
Uniform Delay, d1	35.7	29.2		28.7	31.2		8.0	10.4		10.6	12.6	
Progression Factor	1.00	1.00		1.00	1.00		0.42	0.46		1.38	1.55	
Incremental Delay, d2	23.3	0.2		0.1	1.2		1.4	0.7		2.2	0.6	
Delay (s)	59.0	29.4		28.8	32.4		4.7	5.4		16.9	20.1	
Level of Service	E	C		C	C		A	A		B	C	
Approach Delay (s)		50.7			32.1			5.4			19.8	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	96.5%	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												
Volume (vph)	26	1281	41	35	1220	46	69	50	84	54	23	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3359			3342		1720	1579		1185	1592	
Flt Permitted		0.89			0.86		0.69	1.00		0.61	1.00	
Satd. Flow (perm)		3003			2869		1244	1579		756	1592	
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)	28	1363	44	37	1298	49	73	53	89	57	24	84
RTOR Reduction (vph)	0	2	0	0	2	0	0	46	0	0	46	0
Lane Group Flow (vph)	0	1433	0	0	1382	0	73	96	0	57	62	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2207			2108		180	228		109	230	
v/s Ratio Prot								0.06			0.04	
v/s Ratio Perm		0.48			c0.48		0.06			c0.08		
v/c Ratio		0.65			0.66		0.41	0.42		0.52	0.27	
Uniform Delay, d1		6.7			6.8		38.8	38.9		39.6	38.0	
Progression Factor		0.29			0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.2		3.1	2.6		8.4	1.3	
Delay (s)		2.1			5.1		41.9	41.5		47.9	39.4	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.1			5.1			41.7			42.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.7%	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												
Volume (vph)	108	14	21	48	5	45	21	1327	63	74	1584	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3511			3714	
Flt Permitted		0.75		0.70	1.00			0.90			0.71	
Satd. Flow (perm)		1376		1342	1629			3156			2652	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1368	65	76	1633	41
RTOR Reduction (vph)	0	7	0	0	38	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	136	0	49	13	0	0	1451	0	0	1750	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.8		16.8	16.8			69.2			69.2	
Effective Green, g (s)		16.8		16.8	16.8			69.2			69.2	
Actuated g/C Ratio		0.17		0.17	0.17			0.69			0.69	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		231		225	273			2183			1835	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.46			c0.66	
v/c Ratio		0.59		0.22	0.05			0.66			0.95	
Uniform Delay, d1		38.4		35.9	34.9			8.8			13.9	
Progression Factor		1.00		1.00	1.00			1.76			1.00	
Incremental Delay, d2		6.0		1.0	0.1			1.5			12.6	
Delay (s)		44.4		36.9	35.0			17.0			26.5	
Level of Service		D		D	D			B			C	
Approach Delay (s)		44.4			36.0			17.0			26.5	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	118.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix G

2031 Total Traffic Intersection Operations
Scenario B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	1160	9	31	802	220	9	126	31	220	166	285
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.13	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	227	3515	1360	337	3544	1315	913	1856		1039	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	467	1333	10	36	922	253	10	145	36	253	191	328
RTOR Reduction (vph)	0	0	4	0	0	75	0	6	0	0	0	236
Lane Group Flow (vph)	467	1333	6	36	922	178	10	175	0	253	191	92
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	87.8	87.8	87.8	49.1	49.1	49.1	39.2	39.2		39.2	39.2	39.2
Effective Green, g (s)	87.8	87.8	87.8	49.1	49.1	49.1	39.2	39.2		39.2	39.2	39.2
Actuated g/C Ratio	0.63	0.63	0.63	0.35	0.35	0.35	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	513	2204	852	118	1242	461	255	519		290	498	385
v/s Ratio Prot	c0.23	0.38			0.26			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.14	0.01			c0.24		0.07
v/c Ratio	0.91	0.60	0.01	0.31	0.74	0.39	0.04	0.34		0.87	0.38	0.24
Uniform Delay, d1	36.0	15.7	9.8	33.0	39.9	34.1	36.7	40.1		48.0	40.7	38.9
Progression Factor	0.79	0.80	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.57	1.03
Incremental Delay, d2	15.8	0.8	0.0	6.6	4.0	2.4	0.1	0.8		24.8	1.0	0.7
Delay (s)	44.2	13.4	9.8	39.6	43.9	36.6	36.8	40.9		50.4	24.0	40.7
Level of Service	D	B	A	D	D	D	D	D		D	C	D
Approach Delay (s)		21.3			42.3			40.7			39.8	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	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												
Volume (vph)	10	1629	107	39	1162	19	66	28	26	7	12	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3277			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.71		0.38	1.00		0.72	1.00	
Satd. Flow (perm)		3085			2277		712	1682		1357	1580	
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)	11	1790	118	43	1277	21	73	31	29	8	13	177
RTOR Reduction (vph)	0	3	0	0	1	0	0	25	0	0	80	0
Lane Group Flow (vph)	0	1916	0	0	1340	0	73	35	0	8	110	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		106.8			106.8		18.2	18.2		18.2	18.2	
Effective Green, g (s)		106.8			106.8		18.2	18.2		18.2	18.2	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2353			1737		92	218		176	205	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.62			0.59		c0.10			0.01		
v/c Ratio		0.81			0.77		0.79	0.16		0.05	0.54	
Uniform Delay, d1		10.4			9.6		59.1	54.1		53.3	57.0	
Progression Factor		1.00			0.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2			2.5		40.4	0.7		0.2	4.9	
Delay (s)		13.6			5.4		99.4	54.8		53.5	61.8	
Level of Service		B			A		F	D		D	E	
Approach Delay (s)		13.6			5.4			79.3			61.5	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	15.6	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)	15.0
Intersection Capacity Utilization	97.5%	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												
Volume (vph)	102	0	22	17	5	33	10	721	15	19	671	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1695			1670		1599	3431		1667	3344	
Flt Permitted		0.72			0.88		0.36	1.00		0.35	1.00	
Satd. Flow (perm)		1277			1491		609	3431		612	3344	
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)	109	0	23	18	5	35	11	767	16	20	714	40
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	92	0	0	28	0	11	782	0	20	750	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		408	2303		410	2245	
v/s Ratio Prot								c0.23			0.22	
v/s Ratio Perm		c0.07			0.02		0.02			0.03		
v/c Ratio		0.46			0.13		0.03	0.34		0.05	0.33	
Uniform Delay, d1		26.8			26.2		3.8	4.9		3.9	4.9	
Progression Factor		1.00			1.00		1.28	1.52		1.59	2.16	
Incremental Delay, d2		3.5			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.3			26.8		5.0	7.8		6.4	10.9	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		30.3			26.8			7.7			10.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	45.3%	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												
Volume (vph)	228	28	38	10	25	214	24	806	39	251	640	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1673	1693		1704	1481		1576	3377		1733	3157	
Flt Permitted	0.46	1.00		0.70	1.00		0.27	1.00		0.11	1.00	
Satd. Flow (perm)	811	1693		1264	1481		451	3377		205	3157	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	275	34	46	12	30	258	29	971	47	302	771	282
RTOR Reduction (vph)	0	30	0	0	168	0	0	3	0	0	26	0
Lane Group Flow (vph)	275	50	0	12	120	0	29	1015	0	302	1027	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	49.1	49.1		49.1	49.1		52.2	52.2		76.9	76.9	
Effective Green, g (s)	49.1	49.1		49.1	49.1		52.2	52.2		76.9	76.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.37	0.37		0.55	0.55	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	284	593		443	519		168	1259		349	1734	
v/s Ratio Prot		0.03			0.08			0.30		c0.13	0.33	
v/s Ratio Perm	c0.34			0.01			0.06			c0.34		
v/c Ratio	0.97	0.08		0.03	0.23		0.17	0.81		0.87	0.59	
Uniform Delay, d1	44.7	30.4		29.8	32.1		29.4	39.4		35.1	21.1	
Progression Factor	1.00	1.00		1.00	1.00		0.93	1.02		0.90	1.38	
Incremental Delay, d2	44.9	0.1		0.1	0.5		2.2	5.5		18.2	1.3	
Delay (s)	89.5	30.5		29.8	32.6		29.6	45.5		50.0	30.4	
Level of Service	F	C		C	C		C	D		D	C	
Approach Delay (s)		76.2			32.5			45.1			34.8	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.6%	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												
Volume (vph)	23	1670	25	47	1078	10	60	24	102	37	11	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3318			3220		1704	1496		1192	1405	
Flt Permitted		0.91			0.68		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3022			2208		1261	1496		617	1405	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1856	28	52	1198	11	67	27	113	41	12	71
RTOR Reduction (vph)	0	1	0	0	0	0	0	32	0	0	63	0
Lane Group Flow (vph)	0	1909	0	0	1261	0	67	108	0	41	20	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.3			111.3		16.7	16.7		16.7	16.7	
Effective Green, g (s)		111.3			111.3		16.7	16.7		16.7	16.7	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2402			1755		150	178		73	167	
v/s Ratio Prot								c0.07			0.01	
v/s Ratio Perm		c0.63			0.57		0.05			0.07		
v/c Ratio		0.79			0.72		0.45	0.61		0.56	0.12	
Uniform Delay, d1		8.0			6.9		57.4	58.5		58.2	55.1	
Progression Factor		0.39			3.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			2.0		4.4	8.4		15.2	0.7	
Delay (s)		4.9			28.5		61.7	66.9		73.4	55.8	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		4.9			28.5			65.3			61.6	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.2%	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												
Volume (vph)	61	1	28	47	2	114	40	1270	72	34	1030	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.98	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3395			3318	
Flt Permitted		0.60		0.71	1.00			0.85			0.82	
Satd. Flow (perm)		1085		1277	1551			2875			2716	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1427	81	38	1157	145
RTOR Reduction (vph)	0	12	0	0	67	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	63	0	0	1546	0	0	1340	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2254			2130	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.54			0.49	
v/c Ratio		0.62		0.36	0.35			0.69			0.63	
Uniform Delay, d1		59.0		57.1	57.1			7.0			6.4	
Progression Factor		1.00		1.00	1.00			2.50			1.00	
Incremental Delay, d2		12.8		3.1	2.5			1.1			1.4	
Delay (s)		71.8		60.3	59.5			18.8			7.9	
Level of Service		E		E	E			B			A	
Approach Delay (s)		71.8			59.7			18.8			7.9	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
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	
Volume (vph)	2	5	3	52	18	36	7	47	18	6	141	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	66	23	46	9	59	23	8	178	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	134	91	211
Volume Left (vph)	3	66	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.03
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.25
Capacity (veh/h)	711	743	768	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	76	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	89	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	93	118
Volume Left	89	0	13
Volume Right	36	21	0
cSH	791	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	183	29
Volume Left	0	93	0
Volume Right	4	0	0
cSH	1700	1611	457
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.4
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1	6	1	3	159	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	2	9	2	5	248	58
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		45	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		45	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		73	93
cM capacity (veh/h)			1602		905	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	6	306
Volume Left	0	2	248
Volume Right	9	0	58
cSH	1700	1602	902
Volume to Capacity	0.01	0.00	0.34
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	1.8	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	11.0
Approach LOS			B

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	46	1659	1105	33	2	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	52	1864	1242	37	2	26
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.77				0.84	0.77
vC, conflicting volume	1311				2332	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	809				982	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	91				99	97
cM capacity (veh/h)	554				185	816

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	52	932	932	828	451	28
Volume Left	52	0	0	0	0	2
Volume Right	0	0	0	0	37	26
cSH	554	1700	1700	1700	1700	641
Volume to Capacity	0.09	0.55	0.55	0.49	0.27	0.04
Queue Length 95th (m)	2.1	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	10.9
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		10.9
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	56.8%	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	
Volume (vph)	6	101	4	9	31	8	3	100	31	3	19	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	116	5	10	36	9	3	115	36	3	22	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	128	55	154	30
Volume Left (vph)	7	10	3	3
Volume Right (vph)	5	9	36	5
Hadj (s)	-0.01	0.04	0.37	0.00
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.16	0.07	0.20	0.04
Capacity (veh/h)	781	744	729	747
Control Delay (s)	8.2	7.9	8.9	7.7
Approach Delay (s)	8.2	7.9	8.9	7.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	24.0%	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	
Volume (vph)	38	250	3	19	89	105	2	84	18	34	8	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	362	4	28	129	152	3	122	26	49	12	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	422	157	152	151	62
Volume Left (vph)	55	28	0	3	49
Volume Right (vph)	4	0	152	26	1
Hadj (s)	0.03	0.16	-0.70	0.50	0.14
Departure Headway (s)	5.1	5.9	5.0	6.3	6.2
Degree Utilization, x	0.60	0.25	0.21	0.26	0.11
Capacity (veh/h)	674	586	684	511	500
Control Delay (s)	15.7	9.6	8.1	11.6	9.9
Approach Delay (s)	15.7	8.9		11.6	9.9
Approach LOS	C	A		B	A

Intersection Summary			
Delay	12.4		
Level of Service	B		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1644	4	12	1099	7	1	0	36	2	0	47
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)	182	1787	4	13	1195	8	1	0	39	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.78			0.70			0.81	0.81	0.70	0.81	0.81	0.78
vC, conflicting volume	1238			1807			2844	3432	913	2557	3431	638
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	731			1302			1572	2296	28	1220	2294	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	73			97			97	100	95	97	100	94
cM capacity (veh/h)	664			373			42	22	725	77	22	806

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1075	898	610	605	40	53
Volume Left	182	0	13	0	1	2
Volume Right	0	4	0	8	39	51
cSH	664	1700	373	1700	505	580
Volume to Capacity	0.27	0.53	0.03	0.36	0.08	0.09
Queue Length 95th (m)	7.8	0.0	0.8	0.0	1.8	2.1
Control Delay (s)	8.1	0.0	1.1	0.0	12.7	11.8
Lane LOS	A		A		B	B
Approach Delay (s)	4.4		0.6		12.7	11.8
Approach LOS					B	B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

24: Helene St & High St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	51	4	4	22	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	24	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	34	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.08	0.00	0.01
Departure Headway (s)	4.6	4.8	4.2	4.4
Degree Utilization, x	0.09	0.05	0.28	0.08
Capacity (veh/h)	721	698	828	774
Control Delay (s)	8.1	8.0	8.9	7.8
Approach Delay (s)	8.1	8.0	8.9	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Scenario B 2031 AM Unsignalized Results
25: Helene St & Park St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	57	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	73	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	101	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.08	-0.26	0.14
Departure Headway (s)	5.1	5.3	4.6	5.2
Degree Utilization, x	0.26	0.15	0.36	0.21
Capacity (veh/h)	643	609	737	644
Control Delay (s)	9.9	9.2	10.1	9.6
Approach Delay (s)	9.9	9.2	10.1	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.8		
Level of Service	A		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
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			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	11.1		
Intersection Capacity Utilization	33.1%	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	
Volume (vph)	0	38	15	11	59	4	27	16	9	10	101	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	75	5	34	20	11	13	128	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	94	66	154
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.20
Capacity (veh/h)	769	739	757	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.6%	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	
Volume (vph)	0	50	13	20	78	1	6	0	23	42	81	16
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	14	22	85	1	7	0	25	46	88	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	108	32	46	105
Volume Left (vph)	0	22	7	46	0
Volume Right (vph)	14	1	25	0	17
Hadj (s)	-0.01	0.09	-0.37	0.55	0.34
Departure Headway (s)	4.5	4.5	4.2	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.15
Capacity (veh/h)	768	754	801	627	655
Control Delay (s)	7.9	8.2	7.4	7.7	8.1
Approach Delay (s)	7.9	8.2	7.4	7.9	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	31	6	0	5	5	198	46	0	5	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	31	8	0	7	5	279	65	0	7	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	340	370	8	369	337	325	7			353		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	340	370	8	369	337	325	7			353		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	99	100	99	100			100		
cM capacity (veh/h)	600	554	1073	564	577	712	1614			1208		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	15	349	7
Volume Left	0	8	5	0
Volume Right	31	7	65	0
cSH	1073	623	1614	1208
Volume to Capacity	0.03	0.02	0.00	0.00
Queue Length 95th (m)	0.6	0.5	0.1	0.0
Control Delay (s)	8.5	10.9	0.1	0.0
Lane LOS	A	B	A	
Approach Delay (s)	8.5	10.9	0.1	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	31	283	0	5	213	90	4	0	19	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	363	0	5	273	115	4	0	19	3	0	1
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	397			363			784	850	364	812	792	340
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			363			784	849	364	812	792	339
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 %	97			100			99	100	97	99	100	100
cM capacity (veh/h)	1163			1196			299	284	681	279	307	702

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	403	393	23	4
Volume Left	40	5	4	3
Volume Right	0	115	19	1
cSH	1163	1196	557	349
Volume to Capacity	0.03	0.00	0.04	0.01
Queue Length 95th (m)	0.7	0.1	0.9	0.2
Control Delay (s)	1.1	0.1	11.7	15.4
Lane LOS	A	A	B	C
Approach Delay (s)	1.1	0.1	11.7	15.4
Approach LOS			B	C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	972	13	62	1031	263	10	169	43	263	223	381
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1415	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	186	3614	1415	530	3614	1440	1012	1847		1045	1921	1455
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)	352	992	13	63	1052	268	10	172	44	268	228	389
RTOR Reduction (vph)	0	0	6	0	0	102	0	10	0	0	0	261
Lane Group Flow (vph)	352	992	7	63	1052	166	10	206	0	268	228	128
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	56.3	56.3	56.3	34.8	34.8	34.8	30.7	30.7		30.7	30.7	30.7
Effective Green, g (s)	56.3	56.3	56.3	34.8	34.8	34.8	30.7	30.7		30.7	30.7	30.7
Actuated g/C Ratio	0.56	0.56	0.56	0.35	0.35	0.35	0.31	0.31		0.31	0.31	0.31
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	378	2034	796	184	1257	501	310	567		320	589	446
v/s Ratio Prot	c0.17	0.27			0.29			0.11			0.12	
v/s Ratio Perm	c0.35		0.01	0.12		0.12	0.01			c0.26		0.09
v/c Ratio	0.93	0.49	0.01	0.34	0.84	0.33	0.03	0.36		0.84	0.39	0.29
Uniform Delay, d1	28.4	13.2	9.6	24.1	30.0	24.0	24.3	27.0		32.3	27.3	26.3
Progression Factor	1.12	1.41	1.00	1.00	1.00	1.00	1.00	1.00		0.48	0.45	0.49
Incremental Delay, d2	27.4	0.7	0.0	5.0	6.7	1.8	0.1	0.8		17.8	0.8	0.7
Delay (s)	59.2	19.3	9.6	29.1	36.7	25.8	24.3	27.9		33.1	13.0	13.6
Level of Service	E	B	A	C	D	C	C	C		C	B	B
Approach Delay (s)		29.6			34.3			27.7			19.3	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.3%	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												
Volume (vph)	93	1291	146	64	1317	37	134	20	71	25	20	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3348		1768	1632		1767	1547	
Flt Permitted		0.61			0.67		0.36	1.00		0.70	1.00	
Satd. Flow (perm)		2017			2253		667	1632		1294	1547	
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)	97	1345	152	67	1372	39	140	21	74	26	21	252
RTOR Reduction (vph)	0	8	0	0	2	0	0	41	0	0	36	0
Lane Group Flow (vph)	0	1586	0	0	1476	0	140	54	0	26	237	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1331			1486		126	310		245	293	
v/s Ratio Prot								0.03			0.15	
v/s Ratio Perm		c0.79			0.66		c0.21			0.02		
v/c Ratio		1.19			0.99		1.11	0.17		0.11	0.81	
Uniform Delay, d1		17.0			16.8		40.5	33.9		33.5	38.8	
Progression Factor		1.00			1.25		1.00	1.00		1.00	1.00	
Incremental Delay, d2		94.0			19.3		113.1	0.6		0.4	17.3	
Delay (s)		111.0			40.2		153.6	34.5		33.9	56.0	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		111.0			40.2			105.5			54.1	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	76.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	134.5%	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												
Volume (vph)	114	5	56	20	6	44	16	807	18	25	893	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.96	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1705			1654		1766	3489		1655	3470	
Flt Permitted		0.76			0.88		0.26	1.00		0.31	1.00	
Satd. Flow (perm)		1337			1472		492	3489		543	3470	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	58	21	6	45	16	832	19	26	921	60
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	160	0	0	35	0	16	850	0	26	978	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		339	2407		374	2394	
v/s Ratio Prot								0.24			c0.28	
v/s Ratio Perm		c0.12			0.02		0.03			0.05		
v/c Ratio		0.63			0.13		0.05	0.35		0.07	0.41	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.0	6.7	
Progression Factor		1.00			1.00		1.38	1.57		0.16	0.12	
Incremental Delay, d2		6.8			0.5		0.2	0.3		0.3	0.4	
Delay (s)		44.0			34.9		7.1	10.3		1.1	1.2	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.0			34.9			10.3			1.2	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	54.4%	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												
Volume (vph)	204	37	39	14	34	175	24	895	22	130	1009	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.92		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1742		1749	1604		1785	3491		1749	3363	
Flt Permitted	0.54	1.00		0.70	1.00		0.12	1.00		0.25	1.00	
Satd. Flow (perm)	978	1742		1298	1604		220	3491		459	3363	
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)	217	39	41	15	36	186	26	952	23	138	1073	360
RTOR Reduction (vph)	0	30	0	0	73	0	0	2	0	0	29	0
Lane Group Flow (vph)	217	50	0	15	149	0	26	973	0	138	1404	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	26.3	26.3		26.3	26.3		59.7	59.7		59.7	59.7	
Effective Green, g (s)	26.3	26.3		26.3	26.3		59.7	59.7		59.7	59.7	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.60	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	257	458		341	421		131	2084		274	2007	
v/s Ratio Prot		0.03			0.09			0.28			c0.42	
v/s Ratio Perm	c0.22			0.01			0.12			0.30		
v/c Ratio	0.84	0.11		0.04	0.35		0.20	0.47		0.50	0.70	
Uniform Delay, d1	34.9	28.0		27.5	29.9		9.2	11.3		11.6	13.9	
Progression Factor	1.00	1.00		1.00	1.00		0.38	0.47		1.31	1.48	
Incremental Delay, d2	23.5	0.2		0.1	1.1		3.2	0.7		2.2	0.7	
Delay (s)	58.5	28.2		27.6	31.0		6.8	6.0		17.4	21.3	
Level of Service	E	C		C	C		A	A		B	C	
Approach Delay (s)		50.3			30.8			6.0			20.9	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.8%	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												
Volume (vph)	26	1289	41	35	1225	46	69	50	84	54	23	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3360			3342		1720	1579		1185	1592	
Flt Permitted		0.89			0.86		0.69	1.00		0.61	1.00	
Satd. Flow (perm)		3003			2867		1244	1579		756	1592	
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)	28	1371	44	37	1303	49	73	53	89	57	24	84
RTOR Reduction (vph)	0	2	0	0	2	0	0	45	0	0	45	0
Lane Group Flow (vph)	0	1441	0	0	1387	0	73	97	0	57	63	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2207			2107		180	228		109	230	
v/s Ratio Prot								0.06			0.04	
v/s Ratio Perm		0.48			c0.48		0.06			c0.08		
v/c Ratio		0.65			0.66		0.41	0.42		0.52	0.27	
Uniform Delay, d1		6.8			6.8		38.8	38.9		39.6	38.1	
Progression Factor		0.29			0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.2		3.1	2.6		8.4	1.3	
Delay (s)		2.1			5.1		41.9	41.6		47.9	39.4	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.1			5.1			41.7			42.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.8%	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												
Volume (vph)	108	14	21	48	5	45	21	1347	63	74	1620	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3512			3715	
Flt Permitted		0.75		0.70	1.00			0.90			0.71	
Satd. Flow (perm)		1376		1342	1629			3152			2640	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1389	65	76	1670	41
RTOR Reduction (vph)	0	7	0	0	38	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	136	0	49	13	0	0	1472	0	0	1787	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.8		16.8	16.8			69.2			69.2	
Effective Green, g (s)		16.8		16.8	16.8			69.2			69.2	
Actuated g/C Ratio		0.17		0.17	0.17			0.69			0.69	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		231		225	273			2181			1826	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.47			c0.68	
v/c Ratio		0.59		0.22	0.05			0.68			0.98	
Uniform Delay, d1		38.4		35.9	34.9			8.9			14.7	
Progression Factor		1.00		1.00	1.00			1.73			1.00	
Incremental Delay, d2		6.0		1.0	0.1			1.5			16.6	
Delay (s)		44.4		36.9	35.0			16.9			31.3	
Level of Service		D		D	D			B			C	
Approach Delay (s)		44.4			36.0			16.9			31.3	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	120.3%	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		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	220	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	250	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	298
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.06
Departure Headway (s)	5.2	5.1	4.6	4.5
Degree Utilization, x	0.10	0.15	0.23	0.37
Capacity (veh/h)	616	638	734	759
Control Delay (s)	8.8	9.0	9.0	10.2
Approach Delay (s)	8.8	9.0	9.0	10.2
Approach LOS	A	A	A	B

Intersection Summary			
Delay	9.5		
Level of Service	A		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	89	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	99	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	132	157	207
Volume Left	99	0	26
Volume Right	33	42	0
cSH	649	1700	1390
Volume to Capacity	0.20	0.09	0.02
Queue Length 95th (m)	5.3	0.0	0.4
Control Delay (s)	12.0	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	1	11	46	149	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	15	62	201	5
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		186	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		186	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		71	99
cM capacity (veh/h)			1392		702	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	77	207
Volume Left	0	15	201
Volume Right	1	0	5
cSH	1700	1392	705
Volume to Capacity	0.00	0.01	0.29
Queue Length 95th (m)	0.0	0.2	8.5
Control Delay (s)	0.0	1.5	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	12.2
Approach LOS			B

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	36	1447	1337	56	2	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	40	1626	1502	63	2	16
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.73				0.82	0.73
vC, conflicting volume	1632				2497	850
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123				1415	50
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	88				97	98
cM capacity (veh/h)	347				89	697

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	40	813	813	1001	564	18
Volume Left	40	0	0	0	0	2
Volume Right	0	0	0	0	63	16
cSH	347	1700	1700	1700	1700	376
Volume to Capacity	0.12	0.48	0.48	0.59	0.33	0.05
Queue Length 95th (m)	2.7	0.0	0.0	0.0	0.0	1.1
Control Delay (s)	16.7	0.0	0.0	0.0	0.0	15.1
Lane LOS	C					C
Approach Delay (s)	0.4			0.0		15.1
Approach LOS						C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	50.0%	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	
Volume (vph)	10	145	5	5	64	7	14	72	31	13	38	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	149	5	5	66	7	14	74	32	13	39	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	78	121	63
Volume Left (vph)	10	5	14	13
Volume Right (vph)	5	7	32	10
Hadj (s)	0.01	-0.01	0.21	-0.06
Departure Headway (s)	4.5	4.5	4.8	4.6
Degree Utilization, x	0.20	0.10	0.16	0.08
Capacity (veh/h)	774	746	715	732
Control Delay (s)	8.6	8.0	8.7	8.0
Approach Delay (s)	8.6	8.0	8.7	8.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	25	161	9	44	240	86	7	53	33	48	14	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	194	11	53	289	104	8	64	40	58	17	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	235	342	104	112	82
Volume Left (vph)	30	53	0	8	58
Volume Right (vph)	11	0	104	40	7
Hadj (s)	0.01	0.08	-0.70	0.25	0.09
Departure Headway (s)	5.2	5.4	4.7	5.9	5.9
Degree Utilization, x	0.34	0.52	0.13	0.19	0.13
Capacity (veh/h)	659	642	745	539	543
Control Delay (s)	10.8	12.9	7.2	10.3	9.8
Approach Delay (s)	10.8	11.6		10.3	9.8
Approach LOS	B	B		B	A

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

Scenario B 2031 PM Unsignalized Results
23: Helene St & Lakeshore Rd 9/30/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	1376	3	29	1329	47	2	1	20	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	1390	3	29	1342	47	2	1	20	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.74			0.80			0.84	0.84	0.80	0.84	0.84	0.74
vC, conflicting volume	1509			1465			2337	3134	768	2362	3112	817
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	984			1093			1158	2111	227	1189	2084	48
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	89			94			98	97	97	87	100	94
cM capacity (veh/h)	472			488			88	31	590	80	32	673

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	746	698	701	719	23	47
Volume Left	52	0	29	0	2	10
Volume Right	0	3	0	47	20	37
cSH	472	1700	488	1700	257	261
Volume to Capacity	0.11	0.41	0.06	0.42	0.09	0.18
Queue Length 95th (m)	2.6	0.0	1.3	0.0	2.1	4.6
Control Delay (s)	3.3	0.0	1.8	0.0	20.4	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	1.7		0.9		20.4	21.9
Approach LOS					C	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
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	
Volume (vph)	11	99	12	16	58	6	28	47	48	16	45	29
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	115	14	19	67	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.17	0.13
Capacity (veh/h)	737	718	770	746
Control Delay (s)	8.6	8.3	8.3	8.2
Approach Delay (s)	8.6	8.3	8.3	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.2%	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	
Volume (vph)	4	97	4	59	173	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	71	208	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	294	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.8	4.6	4.8	5.1
Degree Utilization, x	0.17	0.38	0.11	0.18
Capacity (veh/h)	700	744	670	640
Control Delay (s)	8.7	10.4	8.4	9.2
Approach Delay (s)	8.7	10.4	8.4	9.2
Approach LOS	A	B	A	A

Intersection Summary			
Delay	9.6		
Level of Service	A		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
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			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	291	48	0
Volume Left	0	159	47	0
Volume Right	0	36	2	0
cSH	1700	1576	396	1700
Volume to Capacity	0.00	0.10	0.12	0.00
Queue Length 95th (m)	0.0	2.4	2.9	0.0
Control Delay (s)	0.0	4.5	15.4	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	15.4	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
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	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	120	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	128	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	152
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.24
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.20
Capacity (veh/h)	730	710	771	716
Control Delay (s)	8.2	8.4	8.2	9.0
Approach Delay (s)	8.2	8.4	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	62	101	0	21	0	29	25	88	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	82	133	0	28	0	38	33	116	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	214	66	33	147
Volume Left (vph)	1	82	28	33	0
Volume Right (vph)	12	0	38	0	32
Hadj (s)	-0.05	0.08	-0.23	0.50	0.25
Departure Headway (s)	4.8	4.7	4.8	5.8	5.6
Degree Utilization, x	0.12	0.28	0.09	0.05	0.23
Capacity (veh/h)	699	718	691	582	612
Control Delay (s)	8.4	9.6	8.3	8.0	9.0
Approach Delay (s)	8.4	9.6	8.3	8.8	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	9.0		
Level of Service	A		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	16	23	0	12	9	138	4	0	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	16	30	0	16	9	182	5	0	28	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	248	241	29	256	239	195	28			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248	241	29	256	239	195	28			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	96	100	98	99			100		
cM capacity (veh/h)	685	651	1045	678	653	843	1586			1378		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	46	196	28
Volume Left	0	30	9	0
Volume Right	16	16	5	0
cSH	1045	727	1586	1378
Volume to Capacity	0.02	0.06	0.01	0.00
Queue Length 95th (m)	0.3	1.4	0.1	0.0
Control Delay (s)	8.5	10.3	0.4	0.0
Lane LOS	A	B	A	
Approach Delay (s)	8.5	10.3	0.4	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	259	0	21	393	10	2	0	9	16	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	288	0	21	437	11	2	0	9	18	0	14
Pedestrians		4			1						13	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	461			288			799	799	289	804	794	459
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461			288			799	799	289	804	794	459
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			99	100	99	94	100	98
cM capacity (veh/h)	1099			1274			288	308	750	289	311	597

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	292	469	11	32
Volume Left	4	21	2	18
Volume Right	0	11	9	14
cSH	1099	1274	581	376
Volume to Capacity	0.00	0.02	0.02	0.09
Queue Length 95th (m)	0.1	0.4	0.4	2.0
Control Delay (s)	0.2	0.5	11.3	15.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	11.3	15.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix H

2031 Total Traffic Intersection Operations
Scenario C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	432	1161	9	31	846	263	9	126	31	231	166	285
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.09	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	166	3515	1360	336	3544	1315	914	1856		1041	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	497	1334	10	36	972	302	10	145	36	266	191	328
RTOR Reduction (vph)	0	0	4	0	0	89	0	6	0	0	0	236
Lane Group Flow (vph)	497	1334	6	36	972	213	10	175	0	266	191	92
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	87.6	87.6	87.6	46.8	46.8	46.8	39.4	39.4		39.4	39.4	39.4
Effective Green, g (s)	87.6	87.6	87.6	46.8	46.8	46.8	39.4	39.4		39.4	39.4	39.4
Actuated g/C Ratio	0.63	0.63	0.63	0.33	0.33	0.33	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	513	2199	850	112	1184	439	257	522		292	500	387
v/s Ratio Prot	c0.26	0.38			0.27			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.16	0.01			c0.26		0.07
v/c Ratio	0.97	0.61	0.01	0.32	0.82	0.49	0.04	0.33		0.91	0.38	0.24
Uniform Delay, d1	41.1	15.8	9.9	34.8	42.8	37.0	36.5	39.9		48.6	40.5	38.7
Progression Factor	0.85	0.77	1.00	1.00	1.00	1.00	1.00	1.00		0.91	0.97	2.65
Incremental Delay, d2	24.0	0.8	0.0	7.4	6.5	3.8	0.1	0.8		31.2	1.0	0.6
Delay (s)	58.8	13.0	9.9	42.2	49.2	40.9	36.7	40.7		75.3	40.2	103.4
Level of Service	E	B	A	D	D	D	D	D		E	D	F
Approach Delay (s)		25.4			47.1			40.5			78.5	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.0%	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												
Volume (vph)	10	1737	107	39	1175	19	66	28	26	7	12	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3280			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.69		0.37	1.00		0.72	1.00	
Satd. Flow (perm)		3090			2199		695	1682		1357	1580	
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)	11	1909	118	43	1291	21	73	31	29	8	13	178
RTOR Reduction (vph)	0	3	0	0	1	0	0	24	0	0	82	0
Lane Group Flow (vph)	0	2035	0	0	1354	0	73	36	0	8	109	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		107.1			107.1		17.9	17.9		17.9	17.9	
Effective Green, g (s)		107.1			107.1		17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2363			1682		88	215		173	202	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.66			0.62		c0.11			0.01		
v/c Ratio		0.86			0.81		0.83	0.17		0.05	0.54	
Uniform Delay, d1		11.3			10.1		59.6	54.4		53.6	57.2	
Progression Factor		1.00			0.28		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.4			3.0		48.9	0.8		0.2	5.0	
Delay (s)		15.7			5.8		108.4	55.2		53.8	62.2	
Level of Service		B			A		F	E		D	E	
Approach Delay (s)		15.7			5.8			84.4			61.9	
Approach LOS		B			A			F			E	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.9%	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												
Volume (vph)	102	0	23	17	5	33	18	782	15	19	681	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694			1670		1600	3432		1671	3345	
Flt Permitted		0.72			0.88		0.36	1.00		0.32	1.00	
Satd. Flow (perm)		1279			1491		602	3432		566	3345	
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)	109	0	24	18	5	35	19	832	16	20	724	39
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	93	0	0	28	0	19	847	0	20	760	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		404	2304		380	2245	
v/s Ratio Prot								c0.25			0.23	
v/s Ratio Perm		c0.07			0.02		0.03			0.04		
v/c Ratio		0.47			0.13		0.05	0.37		0.05	0.34	
Uniform Delay, d1		26.8			26.2		3.9	5.0		3.9	4.9	
Progression Factor		1.00			1.00		1.21	1.51		0.95	1.02	
Incremental Delay, d2		3.6			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.4			26.8		4.9	7.9		3.9	5.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.4			26.8			7.8			5.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.1%	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												
Volume (vph)	254	28	47	10	25	214	85	806	39	251	640	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	3.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.96	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1673		1705	1477		1586	3377		1733	3082	
Flt Permitted	0.25	1.00		0.70	1.00		0.21	1.00		0.15	1.00	
Satd. Flow (perm)	454	1673		1253	1477		349	3377		280	3082	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	306	34	57	12	30	258	102	971	47	302	771	498
RTOR Reduction (vph)	0	40	0	0	234	0	0	2	0	0	60	0
Lane Group Flow (vph)	306	51	0	12	54	0	102	1016	0	302	1209	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	3	8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	41.6	41.6		13.1	13.1		61.4	61.4		84.4	84.4	
Effective Green, g (s)	41.6	41.6		13.1	13.1		61.4	61.4		84.4	84.4	
Actuated g/C Ratio	0.30	0.30		0.09	0.09		0.44	0.44		0.60	0.60	
Clearance Time (s)	3.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	368	497		117	138		153	1481		376	1858	
v/s Ratio Prot	c0.15	0.03			0.04			0.30		c0.11	0.39	
v/s Ratio Perm	c0.10			0.01			0.29			c0.37		
v/c Ratio	0.83	0.10		0.10	0.39		0.67	0.69		0.80	0.65	
Uniform Delay, d1	42.6	35.7		58.1	59.7		31.2	31.6		23.0	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.58	1.53		1.56	1.11	
Incremental Delay, d2	14.7	0.2		0.8	3.8		20.2	2.5		10.5	1.4	
Delay (s)	57.3	35.9		58.9	63.5		69.3	51.0		46.4	21.5	
Level of Service	E	D		E	E		E	D		D	C	
Approach Delay (s)		52.4			63.3			52.6			26.3	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.1%	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												
Volume (vph)	23	1778	25	47	1089	10	60	24	102	37	11	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3319			3221		1704	1496		1192	1403	
Flt Permitted		0.91			0.66		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3028			2135		1251	1496		619	1403	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1976	28	52	1210	11	67	27	113	41	12	73
RTOR Reduction (vph)	0	1	0	0	0	0	0	26	0	0	64	0
Lane Group Flow (vph)	0	2029	0	0	1273	0	67	114	0	41	21	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Effective Green, g (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2405			1695		150	179		74	168	
v/s Ratio Prot								c0.08			0.01	
v/s Ratio Perm		c0.67			0.60		0.05			0.07		
v/c Ratio		0.84			0.75		0.45	0.63		0.55	0.12	
Uniform Delay, d1		9.0			7.3		57.3	58.7		58.1	55.0	
Progression Factor		0.36			4.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			2.3		4.4	9.8		14.4	0.7	
Delay (s)		5.4			32.2		61.7	68.5		72.5	55.7	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		5.4			32.2			66.3			61.2	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.7%	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												
Volume (vph)	61	1	28	47	2	114	40	1296	72	34	1209	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.99	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3396			3322	
Flt Permitted		0.60		0.71	1.00			0.82			0.83	
Satd. Flow (perm)		1085		1277	1551			2801			2748	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1456	81	38	1358	145
RTOR Reduction (vph)	0	12	0	0	64	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	66	0	0	1575	0	0	1541	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2196			2155	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.56			0.56	
v/c Ratio		0.62		0.36	0.37			0.72			0.72	
Uniform Delay, d1		59.0		57.1	57.2			7.4			7.4	
Progression Factor		1.00		1.00	1.00			0.61			1.00	
Incremental Delay, d2		12.8		3.1	2.7			1.5			2.1	
Delay (s)		71.8		60.3	59.9			6.1			9.5	
Level of Service		E		E	E			A			A	
Approach Delay (s)		71.8			60.0			6.1			9.5	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.8%	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	
Volume (vph)	2	5	3	51	18	36	7	47	18	6	143	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	65	23	46	9	59	23	8	181	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	133	91	214
Volume Left (vph)	3	65	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.02
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.26
Capacity (veh/h)	710	742	769	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	78	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	128	93	118
Volume Left	92	0	13
Volume Right	36	21	0
cSH	790	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	85	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	96	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			345	291	30	305	295	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			345	291	30	305	295	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			538	586	1031	610	453	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	185	29
Volume Left	0	96	0
Volume Right	4	0	0
cSH	1700	1611	453
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.5
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.5
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1	6	33	7	159	305
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	2	9	52	11	248	477
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		151	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		151	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		67	46
cM capacity (veh/h)			1602		762	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	62	725
Volume Left	0	52	248
Volume Right	9	0	477
cSH	1700	1602	839
Volume to Capacity	0.01	0.03	0.86
Queue Length 95th (m)	0.0	0.7	75.8
Control Delay (s)	0.0	6.1	29.7
Lane LOS		A	D
Approach Delay (s)	0.0	6.1	29.7
Approach LOS			D

Intersection Summary			
Average Delay	27.5		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	94	1685	1105	77	3	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	106	1893	1242	87	3	37
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.75				0.81	0.75
vC, conflicting volume	1360				2479	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	806				960	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	80				98	95
cM capacity (veh/h)	539				164	791

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	106	947	947	828	500	40
Volume Left	106	0	0	0	0	3
Volume Right	0	0	0	0	87	37
cSH	539	1700	1700	1700	1700	599
Volume to Capacity	0.20	0.56	0.56	0.49	0.29	0.07
Queue Length 95th (m)	5.1	0.0	0.0	0.0	0.0	1.5
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	11.4
Lane LOS	B					B
Approach Delay (s)	0.7			0.0		11.4
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	57.5%	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	
Volume (vph)	31	101	4	9	30	16	3	192	31	4	30	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	36	116	5	10	34	18	3	221	36	5	34	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	156	63	260	44
Volume Left (vph)	36	10	3	5
Volume Right (vph)	5	18	36	5
Hadj (s)	0.03	-0.01	0.50	0.00
Departure Headway (s)	4.8	4.9	5.0	4.8
Degree Utilization, x	0.21	0.09	0.36	0.06
Capacity (veh/h)	698	677	692	694
Control Delay (s)	9.1	8.4	10.8	8.1
Approach Delay (s)	9.1	8.4	10.8	8.1
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.8		
Level of Service	A		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	47	247	3	19	81	249	2	209	18	91	20	2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	68	358	4	28	117	361	3	303	26	132	29	3

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	430	145	361	332	164
Volume Left (vph)	68	28	0	3	132
Volume Right (vph)	4	0	361	26	3
Hadj (s)	0.04	0.16	-0.70	0.64	0.15
Departure Headway (s)	7.3	7.9	7.0	8.1	8.5
Degree Utilization, x	0.88	0.32	0.70	0.75	0.38
Capacity (veh/h)	430	432	486	415	380
Control Delay (s)	42.9	13.4	23.8	31.8	16.7
Approach Delay (s)	42.9	20.8		31.8	16.7
Approach LOS	E	C		D	C

Intersection Summary			
Delay	29.5		
Level of Service	D		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	201	1718	4	12	1109	7	1	0	36	2	0	48
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)	218	1867	4	13	1205	8	1	0	39	2	0	52
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.76			0.64			0.76	0.76	0.64	0.76	0.76	0.76
vC, conflicting volume	1249			1888			3004	3598	953	2682	3596	644
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			1256			1562	2343	0	1138	2341	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	68			96			97	100	94	97	100	93
cM capacity (veh/h)	673			353			38	17	686	78	17	785

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1152	938	616	610	40	54
Volume Left	218	0	13	0	1	2
Volume Right	0	4	0	8	39	52
cSH	673	1700	353	1700	470	575
Volume to Capacity	0.32	0.55	0.04	0.36	0.09	0.09
Queue Length 95th (m)	9.9	0.0	0.8	0.0	2.0	2.2
Control Delay (s)	10.0	0.0	1.2	0.0	13.4	11.9
Lane LOS	A		A		B	B
Approach Delay (s)	5.5		0.6		13.4	11.9
Approach LOS					B	B

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
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	
Volume (vph)	9	51	4	4	21	5	28	185	36	4	46	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	23	6	31	206	40	4	51	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	33	277	66
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	40	10
Hadj (s)	-0.01	0.08	-0.06	0.01
Departure Headway (s)	4.7	4.8	4.2	4.5
Degree Utilization, x	0.09	0.04	0.32	0.08
Capacity (veh/h)	705	683	840	766
Control Delay (s)	8.2	8.1	9.1	7.9
Approach Delay (s)	8.2	8.1	9.1	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.7		
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	
Volume (vph)	2	135	4	16	58	6	4	116	106	84	30	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	74	8	5	149	136	108	38	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	103	290	151
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	136	5
Hadj (s)	0.01	0.08	-0.27	0.14
Departure Headway (s)	5.2	5.4	4.6	5.2
Degree Utilization, x	0.26	0.15	0.37	0.22
Capacity (veh/h)	637	603	738	641
Control Delay (s)	10.0	9.3	10.3	9.6
Approach Delay (s)	10.0	9.3	10.3	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	108	44	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	177	72	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	117			1			494	473	116	567	453	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	117			1			494	473	116	567	453	145
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			89			54	100	100	100	100	100
cM capacity (veh/h)	1476			1627			426	437	848	358	448	867

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	289	197	0
Volume Left	0	177	197	0
Volume Right	0	39	0	0
cSH	1700	1627	426	1700
Volume to Capacity	0.00	0.11	0.46	0.00
Queue Length 95th (m)	0.0	2.6	16.6	0.0
Control Delay (s)	0.0	4.9	20.5	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.5	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	58	4	27	16	9	10	103	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	73	5	34	20	11	13	130	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	92	66	157
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.21
Capacity (veh/h)	768	738	757	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.6%	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	
Volume (vph)	0	50	13	21	79	1	6	0	23	42	82	17
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	14	23	86	1	7	0	25	46	89	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	110	32	46	108
Volume Left (vph)	0	23	7	46	0
Volume Right (vph)	14	1	25	0	18
Hadj (s)	-0.01	0.09	-0.37	0.55	0.33
Departure Headway (s)	4.5	4.5	4.3	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.16
Capacity (veh/h)	766	752	799	626	656
Control Delay (s)	7.9	8.3	7.4	7.7	8.1
Approach Delay (s)	7.9	8.3	7.4	8.0	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	75	0	5	0	466	61	0	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	0	106	0	7	0	656	86	0	52	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	763	803	53	761	760	713	52			751		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	763	803	53	761	760	713	52			751		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	67	100	98	100			100		
cM capacity (veh/h)	312	314	1013	320	333	430	1554			861		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	113	742	52
Volume Left	0	106	0	0
Volume Right	0	7	86	0
cSH	1700	325	1554	861
Volume to Capacity	0.00	0.35	0.00	0.00
Queue Length 95th (m)	0.0	10.6	0.0	0.0
Control Delay (s)	0.0	21.9	0.0	0.0
Lane LOS	A	C		
Approach Delay (s)	0.0	21.9	0.0	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	31	337	0	0	349	199	0	0	0	2	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	432	0	0	447	255	0	0	0	3	0	6
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	712			432			1093	1223	433	1097	1096	584
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			432			1079	1214	433	1083	1082	553
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 %	95			100			100	100	100	99	100	99
cM capacity (veh/h)	881			1128			180	166	622	181	199	515

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	472	703	0	9
Volume Left	40	0	0	3
Volume Right	0	255	0	6
cSH	881	1128	1700	337
Volume to Capacity	0.05	0.00	0.00	0.03
Queue Length 95th (m)	1.0	0.0	0.0	0.6
Control Delay (s)	1.3	0.0	0.0	16.0
Lane LOS	A		A	C
Approach Delay (s)	1.3	0.0	0.0	16.0
Approach LOS			A	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	976	13	62	1037	269	10	169	43	306	223	381
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1414	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.57	1.00		0.58	1.00	1.00
Satd. Flow (perm)	195	3614	1414	528	3614	1440	1032	1847		1062	1921	1455
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)	362	996	13	63	1058	274	10	172	44	312	228	389
RTOR Reduction (vph)	0	0	6	0	0	107	0	9	0	0	0	242
Lane Group Flow (vph)	362	996	7	63	1058	167	10	207	0	312	228	147
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	53.9	53.9	53.9	33.0	33.0	33.0	33.1	33.1		33.1	33.1	33.1
Effective Green, g (s)	53.9	53.9	53.9	33.0	33.0	33.0	33.1	33.1		33.1	33.1	33.1
Actuated g/C Ratio	0.54	0.54	0.54	0.33	0.33	0.33	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	368	1947	762	174	1192	475	341	611		351	635	481
v/s Ratio Prot	c0.18	0.28			0.29			0.11			0.12	
v/s Ratio Perm	c0.35		0.00	0.12		0.12	0.01			c0.29		0.10
v/c Ratio	0.98	0.51	0.01	0.36	0.89	0.35	0.03	0.34		0.89	0.36	0.31
Uniform Delay, d1	29.3	14.7	10.7	25.5	31.7	25.4	22.6	25.2		31.7	25.4	24.9
Progression Factor	1.14	1.40	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.51	0.30
Incremental Delay, d2	39.2	0.8	0.0	5.8	10.0	2.0	0.1	0.7		22.8	0.7	0.7
Delay (s)	72.7	21.4	10.7	31.2	41.7	27.4	22.7	25.9		39.7	13.5	8.1
Level of Service	E	C	B	C	D	C	C	C		D	B	A
Approach Delay (s)		34.8			38.4			25.7			20.1	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.4%	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												
Volume (vph)	93	1307	146	64	1374	37	134	20	71	25	20	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3305			3350		1770	1632		1767	1546	
Flt Permitted		0.60			0.67		0.34	1.00		0.70	1.00	
Satd. Flow (perm)		1977			2251		630	1632		1294	1546	
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)	97	1361	152	67	1431	39	140	21	74	26	21	261
RTOR Reduction (vph)	0	8	0	0	2	0	0	40	0	0	32	0
Lane Group Flow (vph)	0	1602	0	0	1535	0	140	55	0	26	250	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1304			1485		119	310		245	293	
v/s Ratio Prot								0.03			0.16	
v/s Ratio Perm		c0.81			0.68		c0.22			0.02		
v/c Ratio		1.23			1.03		1.18	0.18		0.11	0.85	
Uniform Delay, d1		17.0			17.0		40.5	34.0		33.5	39.2	
Progression Factor		1.00			1.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2		109.8			29.8		137.6	0.6		0.4	22.6	
Delay (s)		126.8			50.6		178.1	34.5		33.9	61.7	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		126.8			50.6			120.1			59.4	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	89.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	137.0%	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												
Volume (vph)	114	5	58	20	6	44	18	821	18	25	934	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.97	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1704			1654		1767	3489		1657	3471	
Flt Permitted		0.76			0.88		0.25	1.00		0.31	1.00	
Satd. Flow (perm)		1339			1470		465	3489		534	3471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	60	21	6	45	19	846	19	26	963	62
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	162	0	0	35	0	19	864	0	26	1022	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		320	2407		368	2394	
v/s Ratio Prot								0.25			c0.29	
v/s Ratio Perm		c0.12			0.02		0.04			0.05		
v/c Ratio		0.64			0.13		0.06	0.36		0.07	0.43	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.1	6.8	
Progression Factor		1.00			1.00		1.56	1.71		0.27	0.19	
Incremental Delay, d2		7.1			0.5		0.3	0.3		0.2	0.3	
Delay (s)		44.4			34.9		8.1	11.2		1.6	1.6	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.4			34.9			11.2			1.6	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	325	37	82	14	34	175	38	895	22	130	1009	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1718	1681		1751	1605		1785	3491		1751	3353	
Flt Permitted	0.58	1.00		0.68	1.00		0.08	1.00		0.22	1.00	
Satd. Flow (perm)	1056	1681		1246	1605		149	3491		404	3353	
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)	346	39	87	15	36	186	40	952	23	138	1073	387
RTOR Reduction (vph)	0	30	0	0	44	0	0	1	0	0	35	0
Lane Group Flow (vph)	346	96	0	15	178	0	40	974	0	138	1425	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	35.7	35.7		35.7	35.7		50.3	50.3		50.3	50.3	
Effective Green, g (s)	35.7	35.7		35.7	35.7		50.3	50.3		50.3	50.3	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.50	0.50		0.50	0.50	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	376	600		444	572		74	1755		203	1686	
v/s Ratio Prot		0.06			0.11			0.28			c0.43	
v/s Ratio Perm	c0.33			0.01			0.27			0.34		
v/c Ratio	0.92	0.16		0.03	0.31		0.54	0.55		0.68	0.85	
Uniform Delay, d1	30.8	21.9		20.9	23.3		17.0	17.1		18.8	21.5	
Progression Factor	1.00	1.00		1.00	1.00		0.46	0.45		1.00	1.00	
Incremental Delay, d2	28.4	0.3		0.1	0.7		24.4	1.2		16.9	5.4	
Delay (s)	59.2	22.2		21.0	23.9		32.1	9.0		35.6	26.9	
Level of Service	E	C		C	C		C	A		D	C	
Approach Delay (s)		49.3			23.7			9.9			27.7	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	106.4%	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												
Volume (vph)	26	1305	41	35	1273	46	69	50	84	54	23	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3360			3345		1721	1579		1185	1585	
Flt Permitted		0.89			0.86		0.68	1.00		0.61	1.00	
Satd. Flow (perm)		2994			2872		1234	1579		756	1585	
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)	28	1388	44	37	1354	49	73	53	89	57	24	94
RTOR Reduction (vph)	0	2	0	0	2	0	0	44	0	0	41	0
Lane Group Flow (vph)	0	1458	0	0	1438	0	73	98	0	57	77	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2200			2110		178	228		109	229	
v/s Ratio Prot								0.06			0.05	
v/s Ratio Perm		0.49			c0.50		0.06			c0.08		
v/c Ratio		0.66			0.68		0.41	0.43		0.52	0.34	
Uniform Delay, d1		6.8			7.0		38.9	39.0		39.6	38.4	
Progression Factor		0.30			0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.3		3.2	2.7		8.4	1.8	
Delay (s)		2.2			5.4		42.1	41.7		47.9	40.2	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.2			5.4			41.8			42.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.1%	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												
Volume (vph)	108	14	21	48	5	45	21	1468	63	74	1646	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3513			3715	
Flt Permitted		0.75		0.70	1.00			0.90			0.67	
Satd. Flow (perm)		1376		1346	1629			3146			2499	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1513	65	76	1697	41
RTOR Reduction (vph)	0	5	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	138	0	49	12	0	0	1597	0	0	1814	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		18.4		18.4	18.4			87.6			87.6	
Effective Green, g (s)		18.4		18.4	18.4			87.6			87.6	
Actuated g/C Ratio		0.15		0.15	0.15			0.73			0.73	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		210		206	249			2296			1824	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.51			c0.73	
v/c Ratio		0.66		0.24	0.05			0.70			0.99	
Uniform Delay, d1		47.8		44.6	43.3			8.9			16.0	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		9.6		1.2	0.2			1.8			19.8	
Delay (s)		57.4		45.9	43.5			10.7			35.8	
Level of Service		E		D	D			B			D	
Approach Delay (s)		57.4			44.7			10.7			35.8	
Approach LOS		E			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	124.4%	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		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	229	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	260	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	308
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.05
Departure Headway (s)	5.3	5.1	4.7	4.5
Degree Utilization, x	0.10	0.15	0.23	0.39
Capacity (veh/h)	612	634	731	759
Control Delay (s)	8.9	9.0	9.1	10.4
Approach Delay (s)	8.9	9.0	9.1	10.4
Approach LOS	A	A	A	B

Intersection Summary			
Delay	9.6		
Level of Service	A		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	98	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	157	207
Volume Left	109	0	26
Volume Right	33	42	0
cSH	645	1700	1390
Volume to Capacity	0.22	0.09	0.02
Queue Length 95th (m)	5.9	0.0	0.4
Control Delay (s)	12.2	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	107	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	141	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			362	321	37	311	330	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			362	321	37	311	330	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			91			100	100	100	100	92	100
cM capacity (veh/h)	1622			1586			513	546	1035	598	418	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	151	32
Volume Left	0	141	0
Volume Right	18	0	0
cSH	1700	1586	418
Volume to Capacity	0.01	0.09	0.08
Queue Length 95th (m)	0.0	2.0	1.7
Control Delay (s)	0.0	7.0	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	14.3
Approach LOS			B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	1	131	62	149	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	177	84	201	54
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		532	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		532	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			87		48	94
cM capacity (veh/h)			1392		388	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	261	255
Volume Left	0	177	201
Volume Right	1	0	54
cSH	1700	1392	440
Volume to Capacity	0.00	0.13	0.58
Queue Length 95th (m)	0.0	3.1	25.1
Control Delay (s)	0.0	5.7	23.9
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	23.9
Approach LOS			C

Intersection Summary			
Average Delay	14.7		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	38	1457	1337	62	6	56
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	1637	1502	70	7	63
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.72				0.81	0.72
vC, conflicting volume	1639				2510	853
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107				1394	15
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	88				93	91
cM capacity (veh/h)	348				90	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	43	819	819	1001	570	70
Volume Left	43	0	0	0	0	7
Volume Right	0	0	0	0	70	63
cSH	348	1700	1700	1700	1700	431
Volume to Capacity	0.12	0.48	0.48	0.59	0.34	0.16
Queue Length 95th (m)	2.9	0.0	0.0	0.0	0.0	4.0
Control Delay (s)	16.8	0.0	0.0	0.0	0.0	15.0
Lane LOS	C					B
Approach Delay (s)	0.4			0.0		15.0
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	145	5	7	64	9	14	80	31	15	82	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	149	5	7	66	9	14	82	32	15	85	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	168	82	129	110
Volume Left (vph)	13	7	14	15
Volume Right (vph)	5	9	32	10
Hadj (s)	0.01	-0.02	0.23	-0.03
Departure Headway (s)	4.6	4.7	4.9	4.6
Degree Utilization, x	0.22	0.11	0.17	0.14
Capacity (veh/h)	732	714	696	722
Control Delay (s)	8.9	8.2	8.9	8.4
Approach Delay (s)	8.9	8.2	8.9	8.4
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.7		
Level of Service	A		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	160	9	47	223	107	7	66	33	222	57	11
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	31	193	11	57	269	129	8	80	40	267	69	13

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	235	325	129	128	349
Volume Left (vph)	31	57	0	8	267
Volume Right (vph)	11	0	129	40	13
Hadj (s)	0.01	0.09	-0.70	0.31	0.13
Departure Headway (s)	6.5	6.7	5.9	7.1	6.3
Degree Utilization, x	0.43	0.60	0.21	0.25	0.62
Capacity (veh/h)	507	517	582	437	536
Control Delay (s)	14.3	18.1	9.2	12.5	19.0
Approach Delay (s)	14.3	15.6		12.5	19.0
Approach LOS	B	C		B	C

Intersection Summary			
Delay	16.0		
Level of Service	C		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	1388	3	29	1371	47	2	1	20	10	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	56	1402	3	29	1385	47	2	1	20	10	0	43
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.73			0.80			0.83	0.83	0.80	0.83	0.83	0.73
vC, conflicting volume	1551			1477			2384	3197	775	2419	3174	838
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1017			1097			1176	2154	219	1218	2127	41
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	88			94			98	96	97	86	100	94
cM capacity (veh/h)	453			484			83	28	594	74	29	672

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	757	704	722	740	23	54
Volume Left	56	0	29	0	2	10
Volume Right	0	3	0	47	20	43
cSH	453	1700	484	1700	246	267
Volume to Capacity	0.12	0.41	0.06	0.44	0.09	0.20
Queue Length 95th (m)	2.9	0.0	1.3	0.0	2.2	5.1
Control Delay (s)	3.8	0.0	1.8	0.0	21.2	21.8
Lane LOS	A		A		C	C
Approach Delay (s)	1.9		0.9		21.2	21.8
Approach LOS					C	C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
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	
Volume (vph)	11	99	12	16	58	6	28	48	51	16	51	29
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	115	14	19	67	7	33	56	59	19	59	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	148	112
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	59	34
Hadj (s)	-0.03	0.02	-0.20	-0.13
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.18	0.14
Capacity (veh/h)	731	712	769	743
Control Delay (s)	8.6	8.3	8.4	8.2
Approach Delay (s)	8.6	8.3	8.4	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.4%	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	
Volume (vph)	4	97	4	62	178	12	8	28	32	69	33	8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	75	214	14	10	34	39	83	40	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	304	82	133
Volume Left (vph)	5	75	10	83
Volume Right (vph)	5	14	39	10
Hadj (s)	-0.02	0.02	-0.26	0.08
Departure Headway (s)	4.8	4.6	4.9	5.1
Degree Utilization, x	0.17	0.39	0.11	0.19
Capacity (veh/h)	692	739	663	639
Control Delay (s)	8.8	10.6	8.5	9.3
Approach Delay (s)	8.8	10.6	8.5	9.3
Approach LOS	A	B	A	A

Intersection Summary			
Delay	9.7		
Level of Service	A		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	112	72	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	0	0	0	170	109	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	161			22			558	523	116	578	505	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	161			22			558	523	116	578	505	212
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			89			87	100	100	100	100	100
cM capacity (veh/h)	1410			1576			367	399	850	348	408	773

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	315	48	0
Volume Left	0	170	47	0
Volume Right	0	36	2	0
cSH	1700	1576	373	1700
Volume to Capacity	0.00	0.11	0.13	0.00
Queue Length 95th (m)	0.0	2.5	3.1	0.0
Control Delay (s)	0.0	4.5	16.1	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	16.1	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
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	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	129	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	137	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	162
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.25
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.21
Capacity (veh/h)	725	705	768	715
Control Delay (s)	8.3	8.4	8.2	9.1
Approach Delay (s)	8.3	8.4	8.2	9.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	67	105	0	21	0	29	25	92	29
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	88	138	0	28	0	38	33	121	38

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	226	66	33	159
Volume Left (vph)	1	88	28	33	0
Volume Right (vph)	12	0	38	0	38
Hadj (s)	-0.05	0.08	-0.23	0.50	0.22
Departure Headway (s)	4.8	4.8	4.9	5.9	5.6
Degree Utilization, x	0.12	0.30	0.09	0.05	0.25
Capacity (veh/h)	689	712	681	578	611
Control Delay (s)	8.5	9.8	8.3	8.0	9.2
Approach Delay (s)	8.5	9.8	8.3	9.0	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	0	12	0	174	12	0	141	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	0	186	0	16	0	229	16	0	186	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	440	439	187	432	431	248	186			254		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440	439	187	432	431	248	186			254		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	65	100	98	100			100		
cM capacity (veh/h)	513	508	855	529	513	788	1389			1313		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	201	245	186
Volume Left	0	186	0	0
Volume Right	0	16	16	0
cSH	1700	543	1389	1313
Volume to Capacity	0.00	0.37	0.00	0.00
Queue Length 95th (m)	0.0	11.9	0.0	0.0
Control Delay (s)	0.0	15.5	0.0	0.0
Lane LOS	A	C		
Approach Delay (s)	0.0	15.5	0.0	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	432	0	0	394	70	0	0	0	16	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	480	0	0	438	78	0	0	0	18	0	23
Pedestrians		4			1						13	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	529			480			993	1017	481	980	979	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529			480			993	1017	481	980	979	494
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			100			100	100	100	92	100	96
cM capacity (veh/h)	1037			1082			212	234	585	226	246	571

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	484	516	0	41
Volume Left	4	0	0	18
Volume Right	0	78	0	23
cSH	1037	1082	1700	344
Volume to Capacity	0.00	0.00	0.00	0.12
Queue Length 95th (m)	0.1	0.0	0.0	2.8
Control Delay (s)	0.1	0.0	0.0	16.9
Lane LOS	A		A	C
Approach Delay (s)	0.1	0.0	0.0	16.9
Approach LOS			A	C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I

2031 Total Traffic Intersection Operations
Scenario D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	433	1161	9	31	846	266	9	126	31	239	166	285
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.09	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.58	1.00	1.00
Satd. Flow (perm)	163	3515	1360	336	3544	1315	920	1856		1047	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	498	1334	10	36	972	306	10	145	36	275	191	328
RTOR Reduction (vph)	0	0	4	0	0	89	0	6	0	0	0	233
Lane Group Flow (vph)	498	1334	6	36	972	217	10	175	0	275	191	95
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	86.6	86.6	86.6	46.6	46.6	46.6	40.4	40.4		40.4	40.4	40.4
Effective Green, g (s)	86.6	86.6	86.6	46.6	46.6	46.6	40.4	40.4		40.4	40.4	40.4
Actuated g/C Ratio	0.62	0.62	0.62	0.33	0.33	0.33	0.29	0.29		0.29	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	502	2174	841	111	1179	437	265	535		302	513	397
v/s Ratio Prot	c0.26	0.38			0.27			0.09			0.11	
v/s Ratio Perm	c0.35		0.00	0.11		0.16	0.01			c0.26		0.07
v/c Ratio	0.99	0.61	0.01	0.32	0.82	0.50	0.04	0.33		0.91	0.37	0.24
Uniform Delay, d1	42.1	16.4	10.2	34.9	42.9	37.3	35.8	39.1		48.1	39.7	38.0
Progression Factor	0.85	0.74	1.00	1.00	1.00	1.00	1.00	1.00		1.16	1.23	3.49
Incremental Delay, d2	29.5	0.8	0.0	7.6	6.6	4.0	0.1	0.7		30.4	0.9	0.6
Delay (s)	65.4	13.0	10.2	42.5	49.6	41.3	35.9	39.9		86.1	49.7	133.3
Level of Service	E	B	B	D	D	D	D	D		F	D	F
Approach Delay (s)		27.2			47.4			39.7			96.8	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.1%	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												
Volume (vph)	10	1741	107	39	1186	19	66	28	26	7	12	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3280			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.69		0.37	1.00		0.72	1.00	
Satd. Flow (perm)		3089			2197		692	1682		1357	1580	
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)	11	1913	118	43	1303	21	73	31	29	8	13	179
RTOR Reduction (vph)	0	3	0	0	1	0	0	24	0	0	80	0
Lane Group Flow (vph)	0	2039	0	0	1366	0	73	36	0	8	112	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		107.0			107.0		18.0	18.0		18.0	18.0	
Effective Green, g (s)		107.0			107.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2360			1679		88	216		174	203	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.66			0.62		c0.11			0.01		
v/c Ratio		0.86			0.81		0.83	0.16		0.05	0.55	
Uniform Delay, d1		11.5			10.3		59.5	54.3		53.5	57.2	
Progression Factor		1.00			0.32		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.5			3.1		48.9	0.8		0.2	5.4	
Delay (s)		16.0			6.4		108.4	55.1		53.7	62.6	
Level of Service		B			A		F	E		D	E	
Approach Delay (s)		16.0			6.4			84.3			62.3	
Approach LOS		B			A			F			E	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	98.2%	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												
Volume (vph)	102	0	23	17	5	33	18	786	15	19	689	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694			1670		1600	3432		1671	3345	
Flt Permitted		0.72			0.88		0.35	1.00		0.32	1.00	
Satd. Flow (perm)		1279			1491		595	3432		563	3345	
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)	109	0	24	18	5	35	19	836	16	20	733	40
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	93	0	0	28	0	19	851	0	20	769	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		399	2304		378	2245	
v/s Ratio Prot								c0.25			0.23	
v/s Ratio Perm		c0.07			0.02		0.03			0.04		
v/c Ratio		0.47			0.13		0.05	0.37		0.05	0.34	
Uniform Delay, d1		26.8			26.2		3.9	5.0		3.9	4.9	
Progression Factor		1.00			1.00		1.24	1.54		1.10	1.19	
Incremental Delay, d2		3.6			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.4			26.8		5.0	8.0		4.5	6.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.4			26.8			8.0			6.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.2%	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												
Volume (vph)	291	28	56	10	25	214	89	806	39	251	640	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	3.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.96	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1659		1706	1477		1607	3377		1733	3078	
Flt Permitted	0.25	1.00		0.69	1.00		0.14	1.00		0.15	1.00	
Satd. Flow (perm)	454	1659		1242	1477		245	3377		273	3078	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	351	34	67	12	30	258	107	971	47	302	771	511
RTOR Reduction (vph)	0	47	0	0	234	0	0	2	0	0	71	0
Lane Group Flow (vph)	351	54	0	12	54	0	107	1016	0	302	1211	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	40.9	40.9		13.1	13.1		69.2	60.5		85.1	73.4	
Effective Green, g (s)	40.9	40.9		13.1	13.1		69.2	60.5		85.1	73.4	
Actuated g/C Ratio	0.29	0.29		0.09	0.09		0.49	0.43		0.61	0.52	
Clearance Time (s)	3.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	5.0		5.0	5.0		3.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	359	484		116	138		205	1459		391	1613	
v/s Ratio Prot	c0.17	0.03			0.04		0.03	0.30		c0.12	0.39	
v/s Ratio Perm	c0.11			0.01			0.23			c0.35		
v/c Ratio	0.98	0.11		0.10	0.39		0.52	0.70		0.77	0.75	
Uniform Delay, d1	44.7	36.2		58.1	59.7		21.2	32.3		23.4	26.1	
Progression Factor	1.00	1.00		1.00	1.00		2.07	1.54		1.50	1.03	
Incremental Delay, d2	41.1	0.2		0.8	3.8		2.3	2.7		8.3	2.5	
Delay (s)	85.8	36.5		58.9	63.5		46.3	52.3		43.4	29.5	
Level of Service	F	D		E	E		D	D		D	C	
Approach Delay (s)		74.8			63.3			51.8			32.1	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.6%	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												
Volume (vph)	23	1782	25	47	1099	10	60	24	102	37	11	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3319			3221		1704	1496		1192	1402	
Flt Permitted		0.91			0.66		0.69	1.00		0.49	1.00	
Satd. Flow (perm)		3026			2135		1244	1496		619	1402	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1980	28	52	1221	11	67	27	113	41	12	74
RTOR Reduction (vph)	0	1	0	0	0	0	0	26	0	0	65	0
Lane Group Flow (vph)	0	2033	0	0	1284	0	67	114	0	41	21	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Effective Green, g (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2403			1695		149	179		74	168	
v/s Ratio Prot								c0.08			0.01	
v/s Ratio Perm		c0.67			0.60		0.05			0.07		
v/c Ratio		0.85			0.76		0.45	0.63		0.55	0.12	
Uniform Delay, d1		9.0			7.4		57.3	58.7		58.1	55.0	
Progression Factor		0.35			4.06		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			2.4		4.5	9.8		14.4	0.7	
Delay (s)		5.4			32.6		61.8	68.5		72.5	55.7	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		5.4			32.6			66.3			61.1	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	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												
Volume (vph)	61	1	28	47	2	114	40	1333	72	34	1220	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.99	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3397			3322	
Flt Permitted		0.60		0.71	1.00			0.82			0.82	
Satd. Flow (perm)		1085		1277	1551			2805			2734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1498	81	38	1371	145
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	72	0	0	1617	0	0	1554	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2199			2144	
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.07		0.04				c0.58			0.57	
v/c Ratio		0.62		0.36	0.40			0.74			0.72	
Uniform Delay, d1		59.0		57.1	57.4			7.7			7.5	
Progression Factor		1.00		1.00	1.00			0.57			1.00	
Incremental Delay, d2		12.8		3.1	3.1			1.5			2.2	
Delay (s)		71.8		60.3	60.4			5.9			9.7	
Level of Service		E		E	E			A			A	
Approach Delay (s)		71.8			60.4			5.9			9.7	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.8%	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	
Volume (vph)	2	5	3	52	18	36	7	47	18	6	143	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	66	23	46	9	59	23	8	181	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	134	91	214
Volume Left (vph)	3	66	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.02
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.26
Capacity (veh/h)	709	741	768	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	78	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	128	93	118
Volume Left	92	0	13
Volume Right	36	21	0
cSH	790	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	85	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	96	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			345	291	30	305	295	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			345	291	30	305	295	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			538	586	1031	610	453	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	185	29
Volume Left	0	96	0
Volume Right	4	0	0
cSH	1700	1611	453
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.5
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.5
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1	6	33	7	159	305
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	2	9	52	11	248	477
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		151	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		151	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		67	46
cM capacity (veh/h)			1602		762	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	62	725
Volume Left	0	52	248
Volume Right	9	0	477
cSH	1700	1602	839
Volume to Capacity	0.01	0.03	0.86
Queue Length 95th (m)	0.0	0.7	75.8
Control Delay (s)	0.0	6.1	29.7
Lane LOS		A	D
Approach Delay (s)	0.0	6.1	29.7
Approach LOS			D

Intersection Summary			
Average Delay	27.5		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	97	1686	1105	77	3	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	109	1894	1242	87	3	48
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.75				0.81	0.75
vC, conflicting volume	1360				2486	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804				962	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	80				98	94
cM capacity (veh/h)	539				161	790

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	109	947	947	828	500	52
Volume Left	109	0	0	0	0	3
Volume Right	0	0	0	0	87	48
cSH	539	1700	1700	1700	1700	630
Volume to Capacity	0.20	0.56	0.56	0.49	0.29	0.08
Queue Length 95th (m)	5.2	0.0	0.0	0.0	0.0	1.9
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	11.2
Lane LOS	B					B
Approach Delay (s)	0.7			0.0		11.2
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	57.6%	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	
Volume (vph)	31	101	4	9	31	16	3	195	31	4	40	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	36	116	5	10	36	18	3	224	36	5	46	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	156	64	263	55
Volume Left (vph)	36	10	3	5
Volume Right (vph)	5	18	36	5
Hadj (s)	0.03	-0.01	0.50	0.00
Departure Headway (s)	4.9	4.9	5.0	4.8
Degree Utilization, x	0.21	0.09	0.37	0.07
Capacity (veh/h)	690	667	688	693
Control Delay (s)	9.1	8.4	10.9	8.2
Approach Delay (s)	9.1	8.4	10.9	8.2
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.8		
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	
Volume (vph)	47	250	3	22	90	251	2	212	18	115	27	2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	68	362	4	32	130	364	3	307	26	167	39	3

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	435	162	364	336	209
Volume Left (vph)	68	32	0	3	167
Volume Right (vph)	4	0	364	26	3
Hadj (s)	0.04	0.17	-0.70	0.64	0.15
Departure Headway (s)	7.9	8.5	7.6	8.7	8.9
Degree Utilization, x	0.96	0.38	0.77	0.82	0.52
Capacity (veh/h)	435	414	466	407	379
Control Delay (s)	60.0	15.5	30.3	40.4	21.2
Approach Delay (s)	60.0	25.7		40.4	21.2
Approach LOS	F	D		E	C

Intersection Summary			
Delay	38.3		
Level of Service	E		
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	201	1722	4	12	1119	7	1	0	36	2	0	48
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)	218	1872	4	13	1216	8	1	0	39	2	0	52
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.76			0.63			0.76	0.76	0.63	0.76	0.76	0.76
vC, conflicting volume	1260			1892			3014	3613	955	2695	3611	649
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	698			1254			1566	2358	0	1145	2355	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	67			96			97	100	94	97	100	93
cM capacity (veh/h)	665			352			37	17	682	76	17	784

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1154	940	621	616	40	54
Volume Left	218	0	13	0	1	2
Volume Right	0	4	0	8	39	52
cSH	665	1700	352	1700	466	572
Volume to Capacity	0.33	0.55	0.04	0.36	0.09	0.10
Queue Length 95th (m)	10.0	0.0	0.8	0.0	2.0	2.2
Control Delay (s)	10.2	0.0	1.2	0.0	13.5	12.0
Lane LOS	B		A		B	B
Approach Delay (s)	5.6		0.6		13.5	12.0
Approach LOS					B	B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
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	
Volume (vph)	9	51	4	4	22	5	28	185	36	4	46	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	24	6	31	206	40	4	51	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	34	277	66
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	40	10
Hadj (s)	-0.01	0.08	-0.06	0.01
Departure Headway (s)	4.7	4.8	4.2	4.5
Degree Utilization, x	0.09	0.05	0.32	0.08
Capacity (veh/h)	705	682	839	765
Control Delay (s)	8.2	8.1	9.1	7.9
Approach Delay (s)	8.2	8.1	9.1	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.7		
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	
Volume (vph)	2	135	4	16	59	6	4	116	106	84	30	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	76	8	5	149	136	108	38	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	104	290	151
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	136	5
Hadj (s)	0.01	0.08	-0.27	0.14
Departure Headway (s)	5.2	5.4	4.6	5.2
Degree Utilization, x	0.26	0.15	0.37	0.22
Capacity (veh/h)	637	603	737	640
Control Delay (s)	10.0	9.3	10.3	9.6
Approach Delay (s)	10.0	9.3	10.3	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	108	44	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	177	72	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	117			1			494	473	116	567	453	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	117			1			494	473	116	567	453	145
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			89			54	100	100	100	100	100
cM capacity (veh/h)	1476			1627			426	437	848	358	448	867

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	289	197	0
Volume Left	0	177	197	0
Volume Right	0	39	0	0
cSH	1700	1627	426	1700
Volume to Capacity	0.00	0.11	0.46	0.00
Queue Length 95th (m)	0.0	2.6	16.6	0.0
Control Delay (s)	0.0	4.9	20.5	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.5	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	59	4	27	16	9	10	104	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	75	5	34	20	11	13	132	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	94	66	158
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.21
Capacity (veh/h)	767	737	756	728
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.6%	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	
Volume (vph)	0	50	13	22	79	1	6	0	23	42	82	17
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	14	24	86	1	7	0	25	46	89	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	111	32	46	108
Volume Left (vph)	0	24	7	46	0
Volume Right (vph)	14	1	25	0	18
Hadj (s)	-0.01	0.09	-0.37	0.55	0.33
Departure Headway (s)	4.5	4.5	4.3	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.16
Capacity (veh/h)	766	752	798	626	655
Control Delay (s)	7.9	8.3	7.4	7.7	8.1
Approach Delay (s)	7.9	8.3	7.4	8.0	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	31	75	0	5	5	466	61	0	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	31	106	0	7	5	656	86	0	52	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	773	813	53	802	770	713	52			751		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	773	813	53	802	770	713	52			751		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	64	100	98	100			100		
cM capacity (veh/h)	307	309	1013	290	327	430	1554			861		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	113	747	52
Volume Left	0	106	5	0
Volume Right	31	7	86	0
cSH	1013	296	1554	861
Volume to Capacity	0.03	0.38	0.00	0.00
Queue Length 95th (m)	0.7	12.0	0.1	0.0
Control Delay (s)	8.7	24.4	0.1	0.0
Lane LOS	A	C	A	
Approach Delay (s)	8.7	24.4	0.1	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Volume (veh/h)	31	364	0	5	359	199	4	0	19	2	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	467	0	5	460	255	4	0	19	3	0	6
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	724			467			1150	1281	468	1173	1153	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	696			467			1138	1273	468	1161	1140	564
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 %	95			100			98	100	97	98	100	99
cM capacity (veh/h)	871			1095			163	152	595	154	183	506

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	506	720	23	9
Volume Left	40	5	4	3
Volume Right	0	255	19	6
cSH	871	1095	407	306
Volume to Capacity	0.05	0.00	0.06	0.03
Queue Length 95th (m)	1.0	0.1	1.3	0.6
Control Delay (s)	1.3	0.1	14.4	17.1
Lane LOS	A	A	B	C
Approach Delay (s)	1.3	0.1	14.4	17.1
Approach LOS			B	C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	358	976	13	62	1037	275	10	169	43	309	223	381
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	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1414	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.57	1.00		0.58	1.00	1.00
Satd. Flow (perm)	195	3614	1414	528	3614	1440	1033	1847		1064	1921	1455
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)	365	996	13	63	1058	281	10	172	44	315	228	389
RTOR Reduction (vph)	0	0	6	0	0	109	0	9	0	0	0	241
Lane Group Flow (vph)	365	996	7	63	1058	172	10	207	0	315	228	148
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	53.7	53.7	53.7	33.0	33.0	33.0	33.3	33.3		33.3	33.3	33.3
Effective Green, g (s)	53.7	53.7	53.7	33.0	33.0	33.0	33.3	33.3		33.3	33.3	33.3
Actuated g/C Ratio	0.54	0.54	0.54	0.33	0.33	0.33	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	365	1940	759	174	1192	475	343	615		354	639	484
v/s Ratio Prot	c0.18	0.28			0.29			0.11			0.12	
v/s Ratio Perm	c0.36		0.00	0.12		0.12	0.01			c0.30		0.10
v/c Ratio	1.00	0.51	0.01	0.36	0.89	0.36	0.03	0.34		0.89	0.36	0.31
Uniform Delay, d1	29.7	14.8	10.8	25.5	31.7	25.5	22.5	25.0		31.6	25.2	24.8
Progression Factor	1.14	1.40	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.51	0.28
Incremental Delay, d2	43.6	0.8	0.0	5.8	10.0	2.1	0.1	0.7		22.8	0.7	0.7
Delay (s)	77.4	21.5	10.8	31.2	41.7	27.6	22.5	25.7		39.6	13.5	7.7
Level of Service	E	C	B	C	D	C	C	C		D	B	A
Approach Delay (s)		36.3			38.4			25.6			19.9	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.7%	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												
Volume (vph)	93	1315	146	64	1379	37	134	20	71	25	20	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3306			3350		1770	1632		1767	1546	
Flt Permitted		0.60			0.67		0.34	1.00		0.70	1.00	
Satd. Flow (perm)		1975			2244		630	1632		1294	1546	
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)	97	1370	152	67	1436	39	140	21	74	26	21	261
RTOR Reduction (vph)	0	8	0	0	2	0	0	39	0	0	31	0
Lane Group Flow (vph)	0	1611	0	0	1540	0	140	56	0	26	251	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1303			1481		119	310		245	293	
v/s Ratio Prot								0.03			0.16	
v/s Ratio Perm		c0.82			0.69		c0.22			0.02		
v/c Ratio		1.24			1.04		1.18	0.18		0.11	0.86	
Uniform Delay, d1		17.0			17.0		40.5	34.0		33.5	39.2	
Progression Factor		1.00			1.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2		113.2			31.8		137.6	0.6		0.4	22.9	
Delay (s)		130.2			52.5		178.1	34.6		33.9	62.1	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		130.2			52.5			120.1			59.7	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	91.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	137.4%	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												
Volume (vph)	114	5	58	20	6	44	18	830	18	25	937	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.97	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1704			1654		1767	3490		1658	3471	
Flt Permitted		0.76			0.88		0.25	1.00		0.30	1.00	
Satd. Flow (perm)		1339			1470		464	3490		528	3471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	60	21	6	45	19	856	19	26	966	62
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	162	0	0	35	0	19	874	0	26	1025	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		320	2408		364	2394	
v/s Ratio Prot								0.25			c0.30	
v/s Ratio Perm		c0.12			0.02		0.04			0.05		
v/c Ratio		0.64			0.13		0.06	0.36		0.07	0.43	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.1	6.8	
Progression Factor		1.00			1.00		1.56	1.71		0.29	0.20	
Incremental Delay, d2		7.1			0.5		0.3	0.3		0.2	0.3	
Delay (s)		44.4			34.9		8.1	11.3		1.7	1.6	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.4			34.9			11.2			1.6	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	37	85	14	34	175	47	895	22	130	1009	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1717	1679		1751	1605		1785	3491		1751	3340	
Flt Permitted	0.59	1.00		0.67	1.00		0.08	1.00		0.22	1.00	
Satd. Flow (perm)	1062	1679		1243	1605		152	3491		396	3340	
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)	367	39	90	15	36	186	50	952	23	138	1073	426
RTOR Reduction (vph)	0	30	0	0	43	0	0	2	0	0	41	0
Lane Group Flow (vph)	367	99	0	15	179	0	50	973	0	138	1458	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	36.7	36.7		36.7	36.7		49.3	49.3		49.3	49.3	
Effective Green, g (s)	36.7	36.7		36.7	36.7		49.3	49.3		49.3	49.3	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49		0.49	0.49	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	389	616		456	589		74	1721		195	1646	
v/s Ratio Prot		0.06			0.11			0.28			c0.44	
v/s Ratio Perm	c0.35			0.01			0.33			0.35		
v/c Ratio	0.94	0.16		0.03	0.30		0.68	0.57		0.71	0.89	
Uniform Delay, d1	30.6	21.3		20.3	22.5		19.3	17.8		19.7	22.8	
Progression Factor	1.00	1.00		1.00	1.00		0.49	0.47		1.00	1.00	
Incremental Delay, d2	32.1	0.3		0.1	0.6		38.2	1.3		19.5	7.4	
Delay (s)	62.7	21.6		20.3	23.2		47.6	9.6		39.2	30.2	
Level of Service	E	C		C	C		D	A		D	C	
Approach Delay (s)		52.0			23.0			11.4			31.0	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	108.7%	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												
Volume (vph)	26	1313	41	35	1278	46	69	50	84	54	23	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3361			3345		1721	1579		1185	1585	
Flt Permitted		0.89			0.86		0.68	1.00		0.61	1.00	
Satd. Flow (perm)		2994			2870		1234	1579		756	1585	
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)	28	1397	44	37	1360	49	73	53	89	57	24	94
RTOR Reduction (vph)	0	2	0	0	2	0	0	43	0	0	40	0
Lane Group Flow (vph)	0	1467	0	0	1444	0	73	99	0	57	78	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2200			2109		178	228		109	229	
v/s Ratio Prot								0.06			0.05	
v/s Ratio Perm		0.49			c0.50		0.06			c0.08		
v/c Ratio		0.67			0.68		0.41	0.44		0.52	0.34	
Uniform Delay, d1		6.9			7.1		38.9	39.0		39.6	38.4	
Progression Factor		0.30			0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.4		3.2	2.8		8.4	1.8	
Delay (s)		2.2			5.5		42.1	41.8		47.9	40.3	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.2			5.5			41.9			42.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.2%	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												
Volume (vph)	108	14	21	48	5	45	21	1488	63	74	1682	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3513			3716	
Flt Permitted		0.75		0.70	1.00			0.89			0.67	
Satd. Flow (perm)		1376		1346	1629			3142			2488	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1534	65	76	1734	41
RTOR Reduction (vph)	0	5	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	138	0	49	12	0	0	1618	0	0	1851	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		18.4		18.4	18.4			87.6			87.6	
Effective Green, g (s)		18.4		18.4	18.4			87.6			87.6	
Actuated g/C Ratio		0.15		0.15	0.15			0.73			0.73	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		210		206	249			2293			1816	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.51			c0.74	
v/c Ratio		0.66		0.24	0.05			0.71			1.02	
Uniform Delay, d1		47.8		44.6	43.3			9.0			16.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		9.6		1.2	0.2			1.9			26.1	
Delay (s)		57.4		45.9	43.5			10.9			42.3	
Level of Service		E		D	D			B			D	
Approach Delay (s)		57.4			44.7			10.9			42.3	
Approach LOS		E			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	125.9%	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												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	229	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	260	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	308
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.05
Departure Headway (s)	5.3	5.1	4.7	4.5
Degree Utilization, x	0.10	0.15	0.23	0.39
Capacity (veh/h)	612	634	731	759
Control Delay (s)	8.9	9.0	9.1	10.4
Approach Delay (s)	8.9	9.0	9.1	10.4
Approach LOS	A	A	A	B

Intersection Summary			
Delay	9.6		
Level of Service	A		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	98	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	157	207
Volume Left	109	0	26
Volume Right	33	42	0
cSH	645	1700	1390
Volume to Capacity	0.22	0.09	0.02
Queue Length 95th (m)	5.9	0.0	0.4
Control Delay (s)	12.2	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	107	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	141	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			362	321	37	311	330	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			362	321	37	311	330	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			91			100	100	100	100	92	100
cM capacity (veh/h)	1622			1586			513	546	1035	598	418	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	151	32
Volume Left	0	141	0
Volume Right	18	0	0
cSH	1700	1586	418
Volume to Capacity	0.01	0.09	0.08
Queue Length 95th (m)	0.0	2.0	1.7
Control Delay (s)	0.0	7.0	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	14.3
Approach LOS			B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	1	131	62	149	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	177	84	201	54
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		532	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		532	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			87		48	94
cM capacity (veh/h)			1392		388	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	261	255
Volume Left	0	177	201
Volume Right	1	0	54
cSH	1700	1392	440
Volume to Capacity	0.00	0.13	0.58
Queue Length 95th (m)	0.0	3.1	25.1
Control Delay (s)	0.0	5.7	23.9
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	23.9
Approach LOS			C

Intersection Summary			
Average Delay	14.7		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1460	1337	62	6	61
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1640	1502	70	7	69
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.72				0.81	0.72
vC, conflicting volume	1639				2523	853
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107				1402	15
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	86				92	91
cM capacity (veh/h)	348				87	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	820	820	1001	570	75
Volume Left	48	0	0	0	0	7
Volume Right	0	0	0	0	70	69
cSH	348	1700	1700	1700	1700	438
Volume to Capacity	0.14	0.48	0.48	0.59	0.34	0.17
Queue Length 95th (m)	3.3	0.0	0.0	0.0	0.0	4.3
Control Delay (s)	17.0	0.0	0.0	0.0	0.0	14.9
Lane LOS	C					B
Approach Delay (s)	0.5			0.0		14.9
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	51.1%	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	
Volume (vph)	13	145	5	7	64	9	14	85	31	15	87	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	149	5	7	66	9	14	88	32	15	90	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	168	82	134	115
Volume Left (vph)	13	7	14	15
Volume Right (vph)	5	9	32	10
Hadj (s)	0.01	-0.02	0.25	-0.03
Departure Headway (s)	4.6	4.7	4.9	4.7
Degree Utilization, x	0.22	0.11	0.18	0.15
Capacity (veh/h)	727	709	693	720
Control Delay (s)	8.9	8.3	9.0	8.5
Approach Delay (s)	8.9	8.3	9.0	8.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.7		
Level of Service	A		
Intersection Capacity Utilization	28.6%	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	
Volume (vph)	26	161	9	49	243	111	7	71	33	235	60	11
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	31	194	11	59	293	134	8	86	40	283	72	13

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	236	352	134	134	369
Volume Left (vph)	31	59	0	8	283
Volume Right (vph)	11	0	134	40	13
Hadj (s)	0.01	0.08	-0.70	0.33	0.13
Departure Headway (s)	6.8	6.8	6.0	7.4	6.5
Degree Utilization, x	0.44	0.67	0.22	0.27	0.67
Capacity (veh/h)	479	506	568	420	525
Control Delay (s)	15.0	21.4	9.6	13.2	21.6
Approach Delay (s)	15.0	18.1		13.2	21.6
Approach LOS	C	C		B	C

Intersection Summary			
Delay	18.0		
Level of Service	C		
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	1396	3	29	1376	47	2	1	20	10	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	56	1410	3	29	1390	47	2	1	20	10	0	43
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.73			0.80			0.83	0.83	0.80	0.83	0.83	0.73
vC, conflicting volume	1556			1485			2395	3210	779	2428	3187	841
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1024			1102			1179	2159	216	1219	2132	45
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	88			94			98	96	97	86	100	94
cM capacity (veh/h)	450			480			82	28	595	74	29	669

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	761	708	724	742	23	54
Volume Left	56	0	29	0	2	10
Volume Right	0	3	0	47	20	43
cSH	450	1700	480	1700	245	266
Volume to Capacity	0.12	0.42	0.06	0.44	0.09	0.20
Queue Length 95th (m)	2.9	0.0	1.4	0.0	2.2	5.1
Control Delay (s)	3.8	0.0	1.8	0.0	21.2	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	2.0		0.9		21.2	21.9
Approach LOS					C	C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
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	
Volume (vph)	11	99	12	16	58	6	28	48	51	16	51	29
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	115	14	19	67	7	33	56	59	19	59	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	148	112
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	59	34
Hadj (s)	-0.03	0.02	-0.20	-0.13
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.18	0.14
Capacity (veh/h)	731	712	769	743
Control Delay (s)	8.6	8.3	8.4	8.2
Approach Delay (s)	8.6	8.3	8.4	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	29.4%	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	
Volume (vph)	4	97	4	62	178	12	8	28	32	69	33	8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	75	214	14	10	34	39	83	40	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	304	82	133
Volume Left (vph)	5	75	10	83
Volume Right (vph)	5	14	39	10
Hadj (s)	-0.02	0.02	-0.26	0.08
Departure Headway (s)	4.8	4.6	4.9	5.1
Degree Utilization, x	0.17	0.39	0.11	0.19
Capacity (veh/h)	692	739	663	639
Control Delay (s)	8.8	10.6	8.5	9.3
Approach Delay (s)	8.8	10.6	8.5	9.3
Approach LOS	A	B	A	A

Intersection Summary			
Delay	9.7		
Level of Service	A		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	112	72	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	0	0	0	170	109	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	161			22			558	523	116	578	505	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	161			22			558	523	116	578	505	212
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			89			87	100	100	100	100	100
cM capacity (veh/h)	1410			1576			367	399	850	348	408	773

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	315	48	0
Volume Left	0	170	47	0
Volume Right	0	36	2	0
cSH	1700	1576	373	1700
Volume to Capacity	0.00	0.11	0.13	0.00
Queue Length 95th (m)	0.0	2.5	3.1	0.0
Control Delay (s)	0.0	4.5	16.1	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	16.1	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
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	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	129	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	137	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	162
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.25
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.21
Capacity (veh/h)	725	705	768	715
Control Delay (s)	8.3	8.4	8.2	9.1
Approach Delay (s)	8.3	8.4	8.2	9.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	67	105	0	21	0	29	25	92	29
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	88	138	0	28	0	38	33	121	38

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	226	66	33	159
Volume Left (vph)	1	88	28	33	0
Volume Right (vph)	12	0	38	0	38
Hadj (s)	-0.05	0.08	-0.23	0.50	0.22
Departure Headway (s)	4.8	4.8	4.9	5.9	5.6
Degree Utilization, x	0.12	0.30	0.09	0.05	0.25
Capacity (veh/h)	689	712	681	578	611
Control Delay (s)	8.5	9.8	8.3	8.0	9.2
Approach Delay (s)	8.5	9.8	8.3	9.0	
Approach LOS	A	A	A	A	

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	16	141	0	12	9	174	12	0	141	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	16	186	0	16	9	229	16	0	186	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	458	457	187	466	449	248	186			254		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	458	457	187	466	449	248	186			254		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	62	100	98	99			100		
cM capacity (veh/h)	496	493	855	491	498	788	1389			1313		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	201	254	186
Volume Left	0	186	9	0
Volume Right	16	16	16	0
cSH	855	506	1389	1313
Volume to Capacity	0.02	0.40	0.01	0.00
Queue Length 95th (m)	0.4	13.2	0.1	0.0
Control Delay (s)	9.3	16.7	0.3	0.0
Lane LOS	A	C	A	
Approach Delay (s)	9.3	16.7	0.3	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	446	0	21	418	70	2	0	9	16	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	496	0	21	464	78	2	0	9	18	0	23
Pedestrians		4			1						13	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					57							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	555			496			1077	1102	497	1073	1063	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	553			496			1076	1101	497	1072	1062	518
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			99	100	98	91	100	96
cM capacity (veh/h)	1013			1068			182	204	573	189	215	552

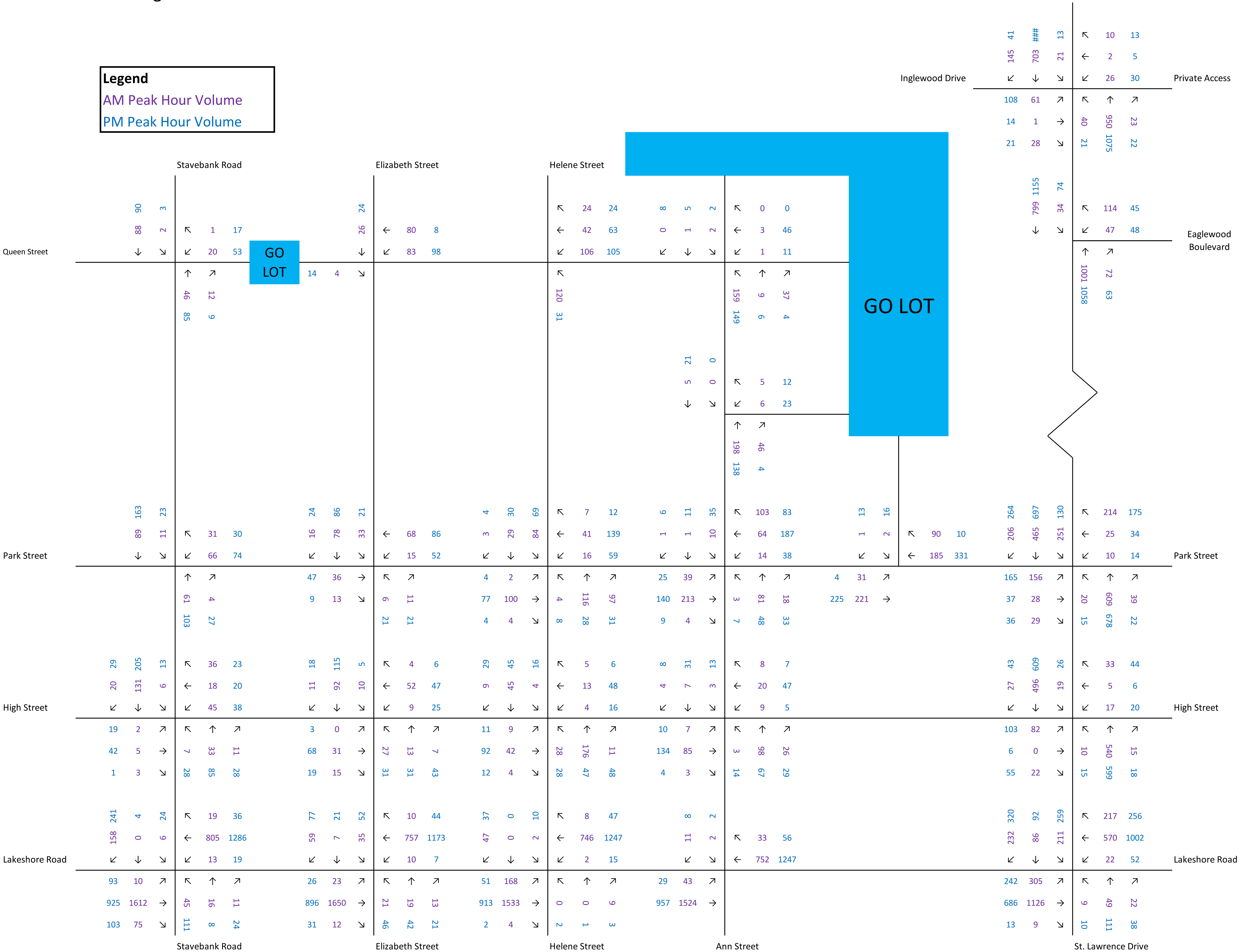
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	500	563	11	41
Volume Left	4	21	2	18
Volume Right	0	78	9	23
cSH	1013	1068	412	301
Volume to Capacity	0.00	0.02	0.03	0.14
Queue Length 95th (m)	0.1	0.4	0.6	3.3
Control Delay (s)	0.1	0.5	14.0	18.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.5	14.0	18.8
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

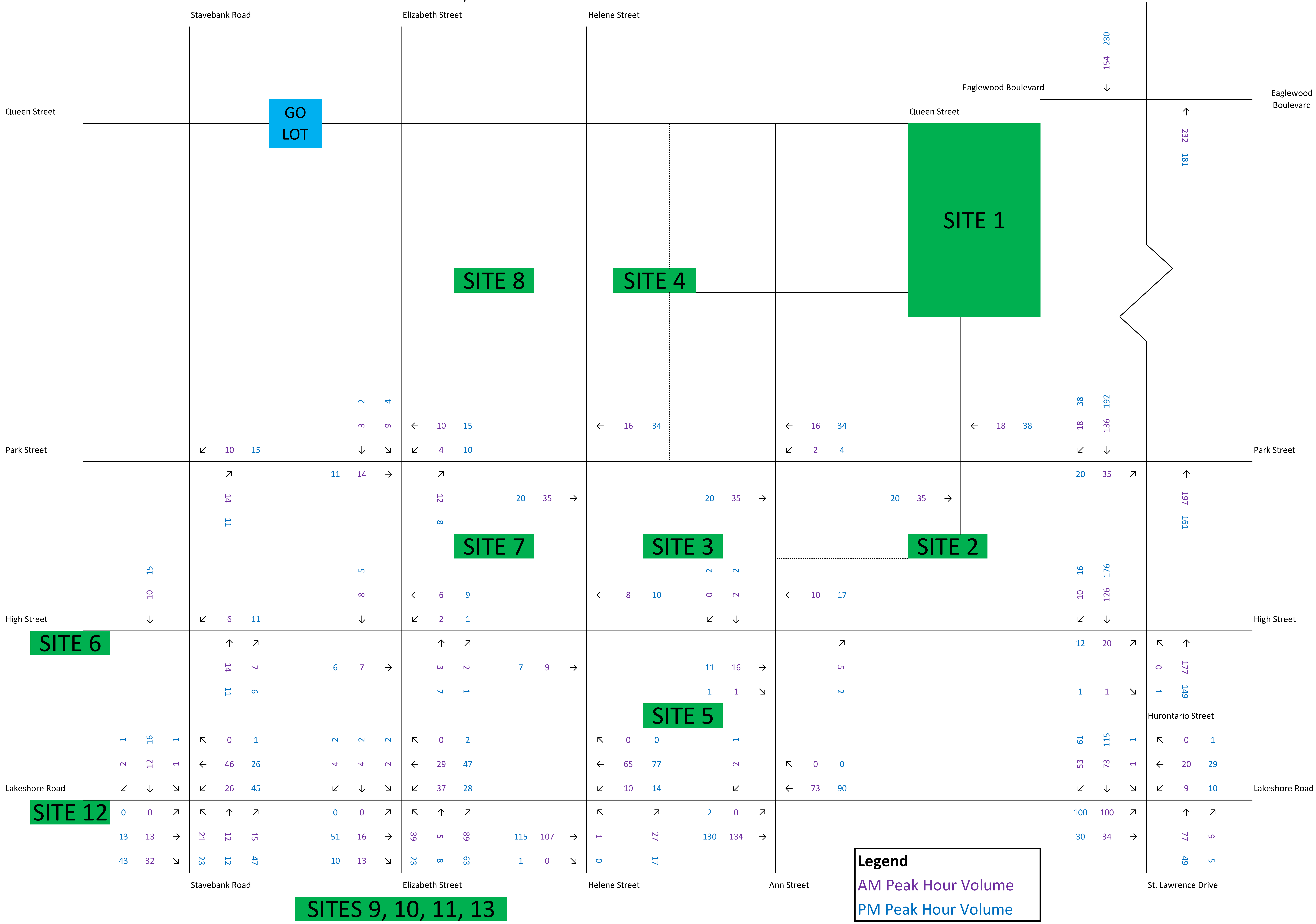
Appendix J

Volume Diagrams

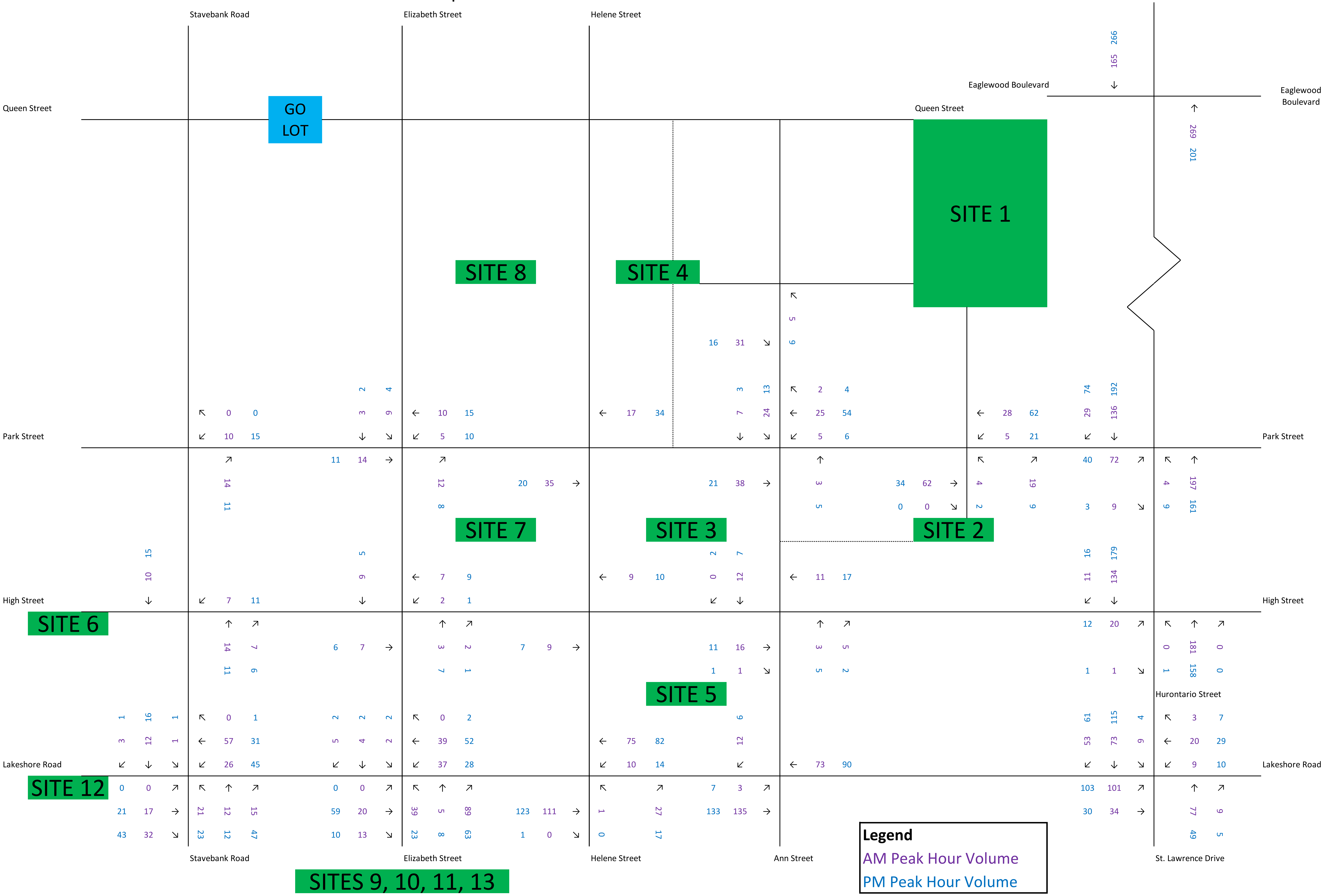
Volumes for Existing Conditions



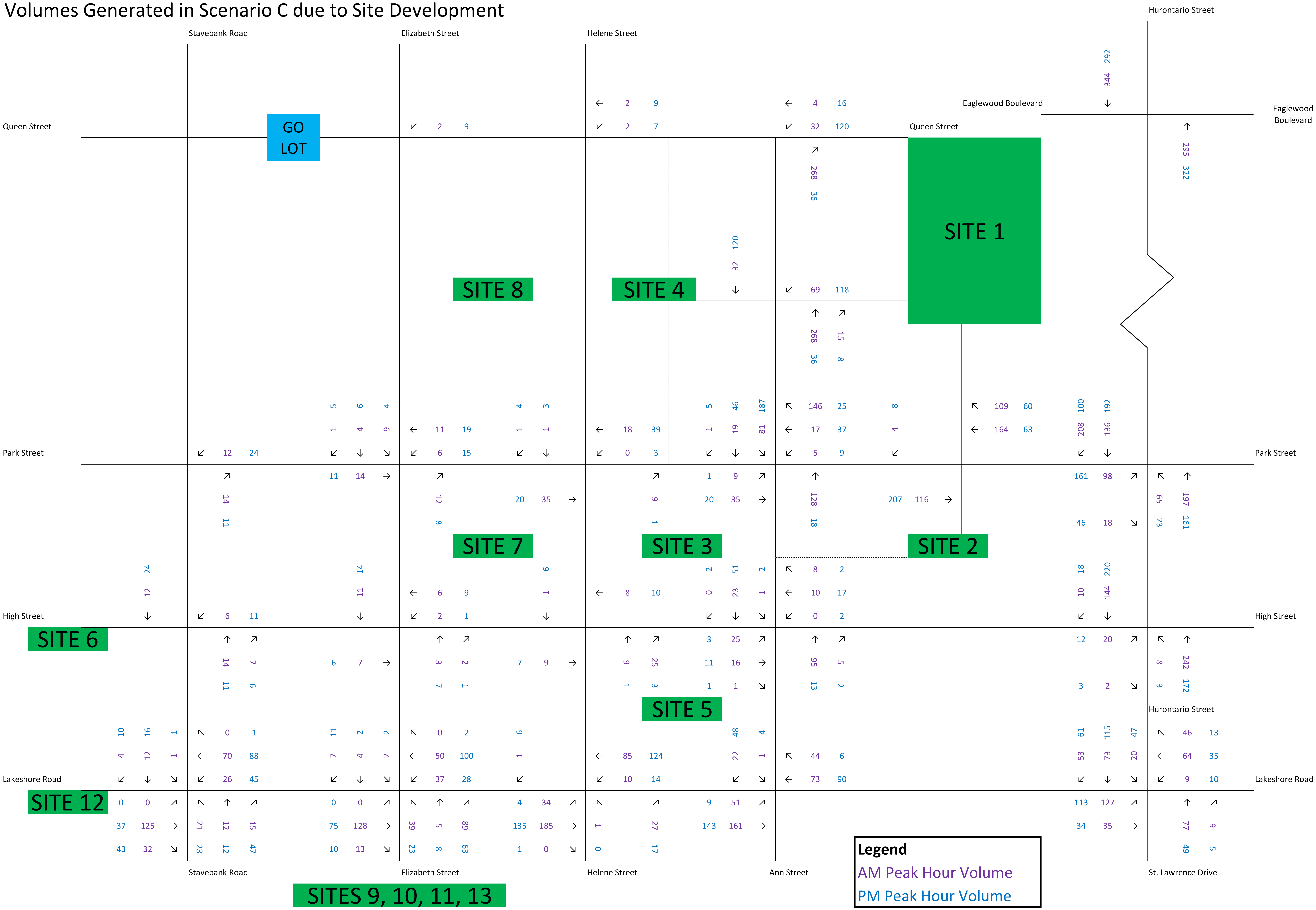
Volumes Generated in Scenario A due to Site Development



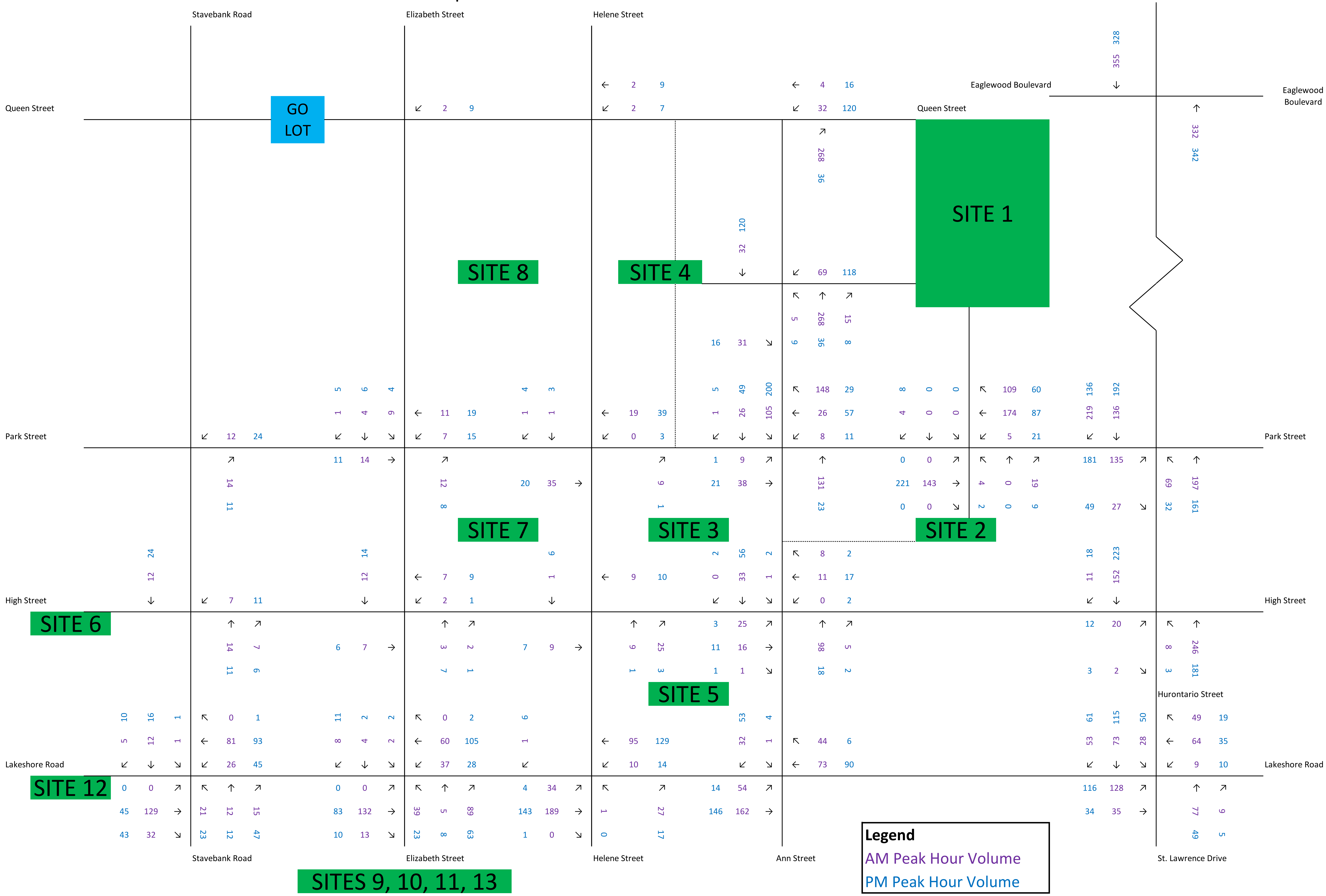
Volumes Generated in Scenario B due to Site Development



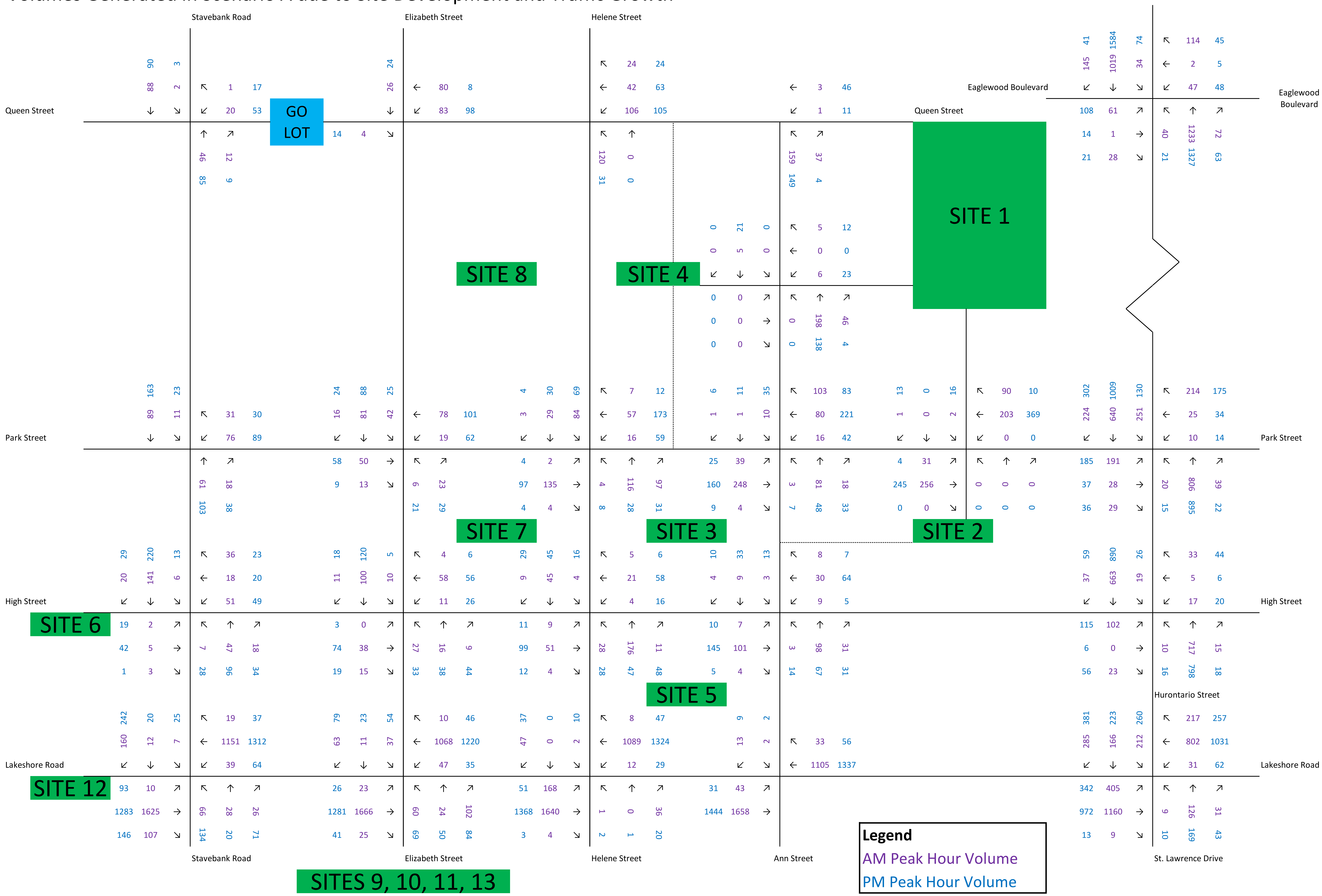
Volumes Generated in Scenario C due to Site Development



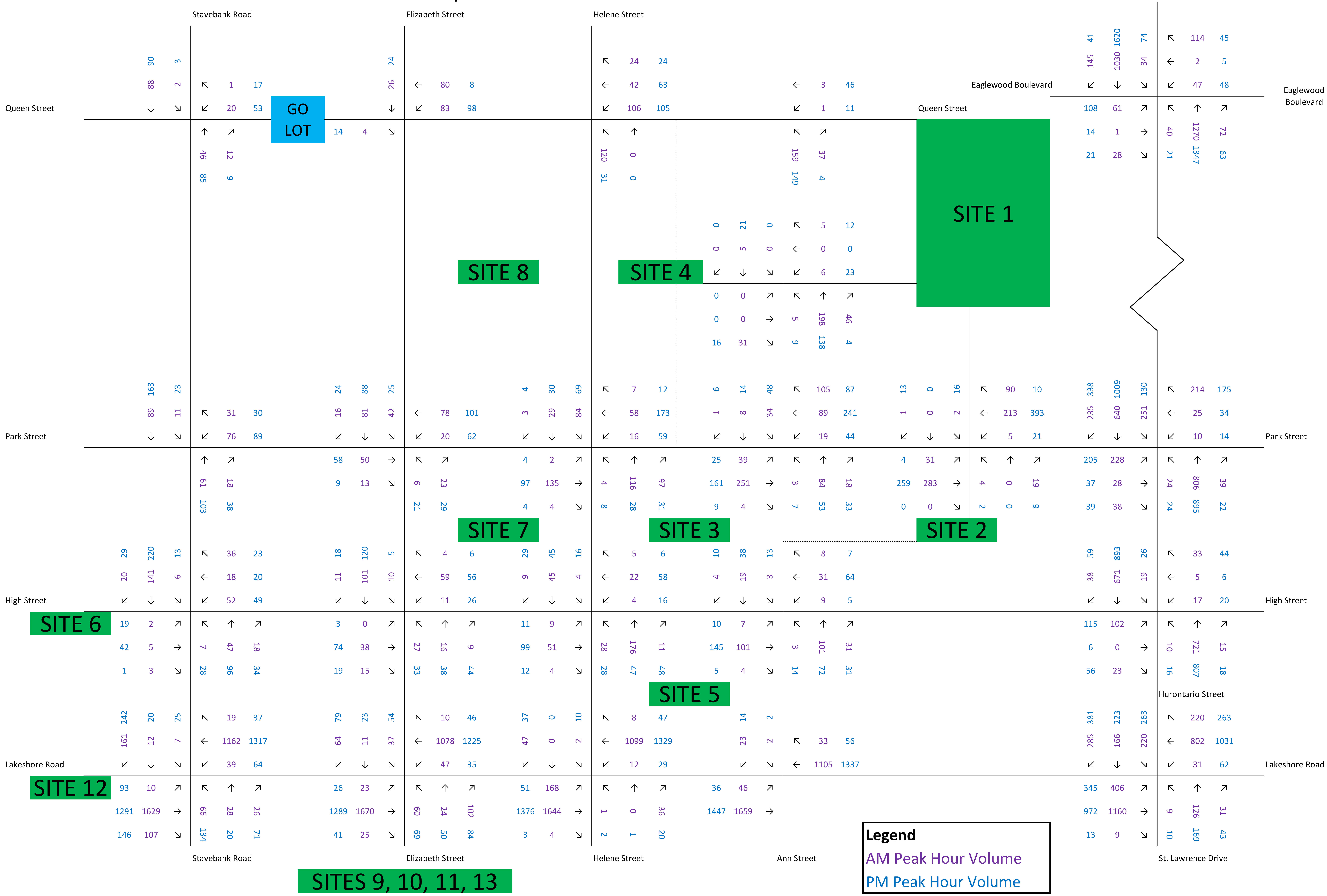
Volumes Generated in Scenario D due to Site Development



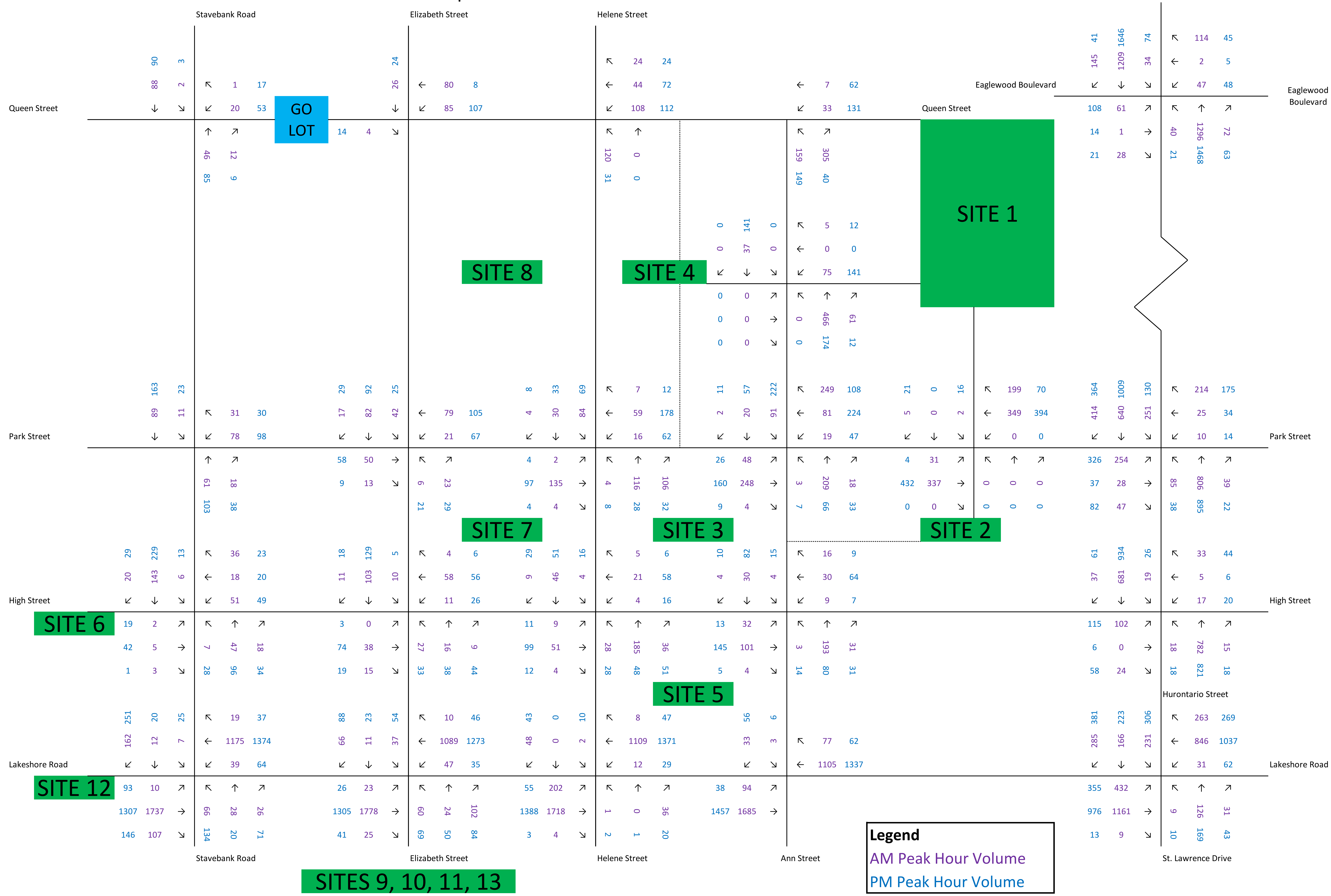
Volumes Generated in Scenario A due to Site Development and Traffic Growth



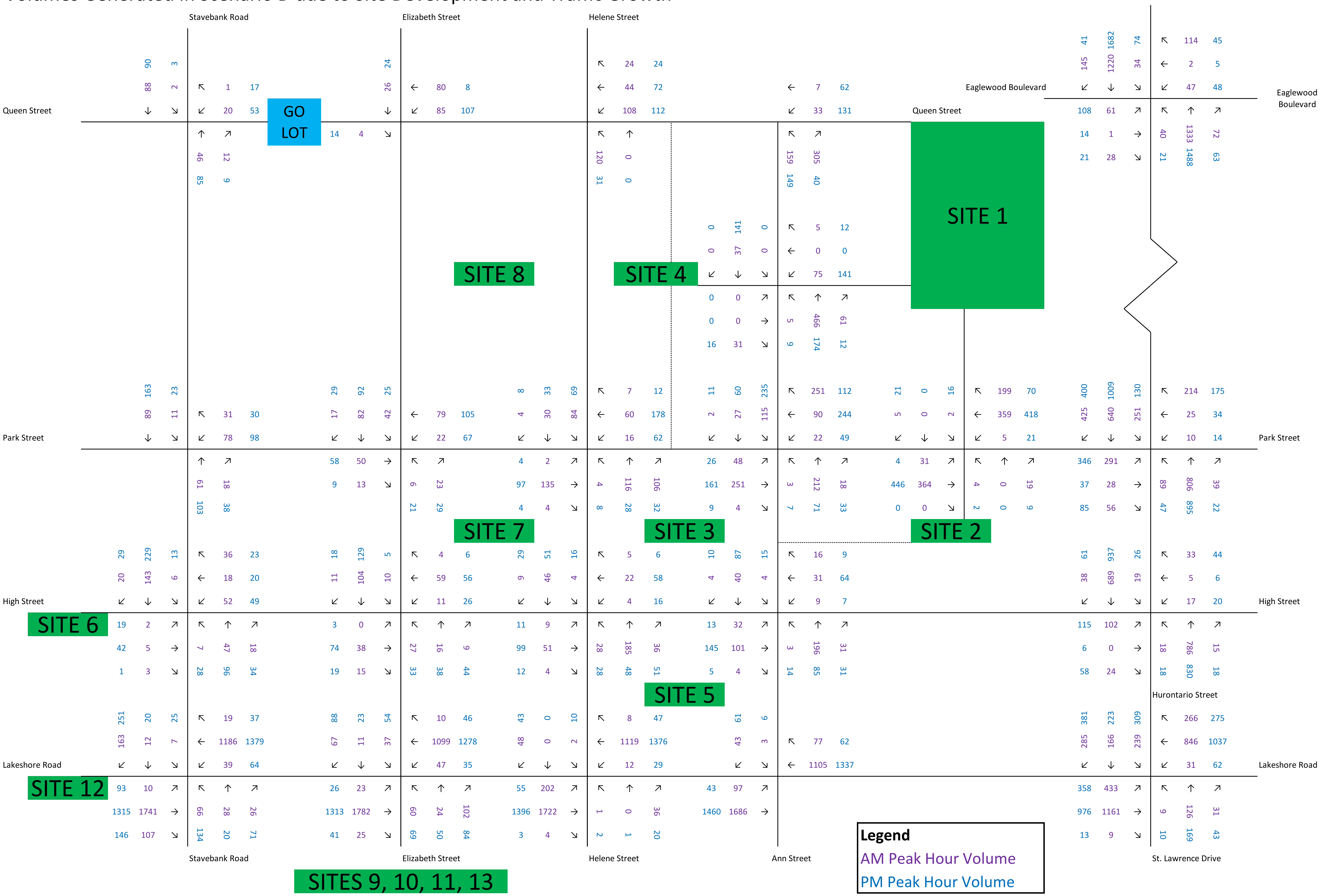
Volumes Generated in Scenario B due to Site Development and Traffic Growth



Volumes Generated in Scenario C due to Site Development and Traffic Growth



Volumes Generated in Scenario D due to Site Development and Traffic Growth



Appendix K

Queuing Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	466	1333	10	36	922	249	10	181	244	191	328
v/c Ratio	0.89	0.60	0.01	0.30	0.72	0.45	0.04	0.35	0.87	0.39	0.54
Control Delay	40.1	14.6	0.3	45.0	44.2	22.4	35.1	39.8	54.5	25.2	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	40.1	14.6	0.3	45.0	44.2	22.4	35.1	39.8	54.5	25.2	7.9
Queue Length 50th (m)	82.8	135.3	0.0	7.0	113.0	26.6	1.8	34.2	26.4	20.0	8.9
Queue Length 95th (m)	#133.7	108.0	m0.0	16.9	132.3	48.5	5.7	50.4	#49.6	38.2	20.7
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	538	2230	874	120	1277	548	278	576	316	546	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.60	0.01	0.30	0.72	0.45	0.04	0.31	0.77	0.35	0.58

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1915	1329	73	60	8	189
v/c Ratio	0.81	0.76	0.79	0.25	0.05	0.66
Control Delay	14.8	5.7	107.8	32.5	50.7	39.4
Queue Delay	0.3	0.2	0.0	0.0	0.0	0.0
Total Delay	15.1	5.9	107.8	32.5	50.7	39.4
Queue Length 50th (m)	144.2	9.1	18.2	7.1	1.8	22.9
Queue Length 95th (m)	199.3	44.8	#37.7	19.1	6.4	45.7
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2359	1741	117	300	222	338
Starvation Cap Reductn	0	65	0	0	0	0
Spillback Cap Reductn	89	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.79	0.62	0.20	0.04	0.56

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	58	11	779	20	744
v/c Ratio	0.50	0.21	0.03	0.32	0.05	0.31
Control Delay	23.1	14.4	6.9	8.1	9.3	11.2
Queue Delay	1.3	0.3	0.0	0.1	0.0	0.0
Total Delay	24.5	14.7	6.9	8.2	9.3	11.2
Queue Length 50th (m)	9.2	2.4	0.0	50.7	2.2	63.7
Queue Length 95th (m)	20.8	9.6	m1.7	m63.8	m4.8	87.1
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	503	555	437	2435	438	2374
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	223	258	0	397	0	13
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.20	0.03	0.38	0.05	0.32

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	69	12	288	24	1018	302	1040
v/c Ratio	0.96	0.12	0.03	0.45	0.13	0.73	0.79	0.55
Control Delay	95.3	17.6	30.6	7.8	30.6	41.1	35.7	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Total Delay	95.3	17.6	30.6	7.8	30.6	41.9	35.7	26.4
Queue Length 50th (m)	55.0	5.8	2.0	5.1	4.5	138.3	51.8	109.2
Queue Length 95th (m)	#85.9	13.9	5.8	17.6	11.1	147.5	67.7	118.6
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	267	624	446	686	187	1392	408	1875
Starvation Cap Reductn	0	0	0	0	0	138	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.11	0.03	0.42	0.13	0.81	0.74	0.55

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1905	1250	67	140	41	82
v/c Ratio	0.79	0.71	0.44	0.66	0.55	0.35
Control Delay	4.9	32.3	64.7	58.2	82.9	19.4
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	32.3	64.7	58.2	82.9	19.4
Queue Length 50th (m)	5.0	171.5	16.1	25.9	10.0	2.8
Queue Length 95th (m)	10.4	189.4	29.2	44.9	21.3	16.4
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2400	1752	207	275	102	289
Starvation Cap Reductn	166	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.71	0.32	0.51	0.40	0.28

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1506	1328
v/c Ratio	0.66	0.36	0.52	0.67	0.62
Control Delay	70.7	62.0	29.8	21.5	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	29.8	21.5	8.5
Queue Length 50th (m)	18.8	12.7	11.3	178.1	64.3
Queue Length 95th (m)	34.5	23.7	29.0	211.6	98.4
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	323	2254	2142
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.40	0.67	0.62

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	349	992	13	63	1052	262	10	216	265	228	389
v/c Ratio	0.92	0.49	0.02	0.34	0.83	0.43	0.03	0.38	0.83	0.39	0.55
Control Delay	55.8	20.4	2.5	32.1	37.5	13.5	22.5	26.5	36.7	13.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	55.8	20.4	2.5	32.1	37.5	13.5	22.5	26.5	36.7	13.3	4.9
Queue Length 50th (m)	53.4	65.2	0.0	8.5	92.7	14.1	1.2	26.5	26.3	13.8	6.2
Queue Length 95th (m)	#102.4	90.0	m0.0	19.8	#125.5	34.4	4.5	43.8	#74.7	27.5	4.0
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	381	2039	817	185	1266	603	344	636	354	653	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	83
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.49	0.02	0.34	0.83	0.43	0.03	0.34	0.75	0.35	0.59

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1585	1473	140	95	26	273
v/c Ratio	1.18	0.99	1.11	0.27	0.11	0.83
Control Delay	109.7	39.3	153.3	19.9	34.9	54.3
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	109.8	39.3	153.3	19.9	34.9	54.3
Queue Length 50th (m)	~179.8	105.5	~28.6	6.5	3.9	39.7
Queue Length 95th (m)	#219.0	#178.0	#62.6	18.9	10.5	#78.1
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1341	1492	126	352	245	330
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	34	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.99	1.11	0.27	0.11	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	72	16	842	26	978
v/c Ratio	0.66	0.24	0.05	0.35	0.07	0.41
Control Delay	42.7	16.8	9.8	11.4	1.3	1.3
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1
Total Delay	42.7	16.8	9.8	11.8	1.3	1.4
Queue Length 50th (m)	25.8	4.1	1.2	48.7	0.2	3.7
Queue Length 95th (m)	42.3	13.5	m3.1	m65.8	m0.4	5.5
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	472	516	342	2410	380	2399
Starvation Cap Reductn	0	0	0	964	0	468
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.14	0.05	0.58	0.07	0.51

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	196	77	15	222	16	975	138	1394
v/c Ratio	0.83	0.17	0.05	0.47	0.11	0.46	0.48	0.67
Control Delay	62.7	16.1	26.1	18.9	5.9	5.9	21.5	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	62.7	16.1	26.1	18.9	5.9	6.0	21.5	21.1
Queue Length 50th (m)	32.6	5.3	2.0	17.0	0.5	18.5	20.2	132.8
Queue Length 95th (m)	#58.8	14.6	6.2	34.4	m1.6	22.8	m23.7	m142.0
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	287	551	390	553	150	2139	285	2094
Starvation Cap Reductn	0	0	0	0	0	329	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.14	0.04	0.40	0.11	0.54	0.48	0.67

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1435	1384	73	142	57	108
v/c Ratio	0.65	0.66	0.41	0.52	0.52	0.39
Control Delay	2.4	5.7	43.8	29.9	54.8	23.7
Queue Delay	3.8	1.1	0.0	0.0	0.0	0.0
Total Delay	6.2	6.8	43.8	29.9	54.8	23.7
Queue Length 50th (m)	2.3	21.4	12.0	14.5	9.6	8.7
Queue Length 95th (m)	m26.7	28.1	22.6	29.3	20.1	21.2
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2207	2109	261	374	158	376
Starvation Cap Reductn	668	0	0	0	0	0
Spillback Cap Reductn	0	452	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.84	0.28	0.38	0.36	0.29

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1454	1750
v/c Ratio	0.60	0.22	0.16	0.67	0.95
Control Delay	46.1	36.2	12.4	18.8	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	36.2	12.4	18.8	28.8
Queue Length 50th (m)	22.5	7.6	0.8	106.8	124.6
Queue Length 95th (m)	37.7	15.9	9.1	124.8	#207.5
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	322	308	410	2184	1835
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.12	0.67	0.95

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	467	1333	10	36	922	253	10	181	253	191	328
v/c Ratio	0.90	0.60	0.01	0.31	0.74	0.47	0.04	0.34	0.87	0.38	0.53
Control Delay	42.0	14.2	0.3	46.2	45.7	23.4	34.3	38.9	53.6	24.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	42.0	14.2	0.3	46.2	45.7	23.4	34.3	38.9	53.6	24.7	7.3
Queue Length 50th (m)	83.7	131.7	0.0	7.0	114.3	27.9	1.8	33.8	26.3	18.9	6.7
Queue Length 95th (m)	#136.4	107.4	m0.0	17.1	133.8	50.5	5.6	49.8	#53.9	40.1	22.9
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	532	2204	864	118	1243	536	286	589	326	559	657
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.60	0.01	0.31	0.74	0.47	0.03	0.31	0.78	0.34	0.57

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1919	1341	73	60	8	190
v/c Ratio	0.81	0.77	0.79	0.25	0.05	0.67
Control Delay	15.0	5.8	108.1	32.4	50.6	40.5
Queue Delay	0.3	0.2	0.0	0.0	0.0	0.0
Total Delay	15.3	6.0	108.1	32.4	50.6	40.5
Queue Length 50th (m)	145.3	5.9	18.2	7.1	1.8	23.7
Queue Length 95th (m)	200.5	46.3	#37.9	19.1	6.4	46.6
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2357	1737	116	300	222	336
Starvation Cap Reductn	0	62	0	0	0	0
Spillback Cap Reductn	102	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.80	0.63	0.20	0.04	0.57

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	58	11	783	20	754
v/c Ratio	0.50	0.21	0.03	0.32	0.05	0.32
Control Delay	23.1	14.4	7.4	8.5	9.2	11.8
Queue Delay	1.6	0.4	0.0	0.1	0.0	0.0
Total Delay	24.7	14.8	7.4	8.6	9.2	11.8
Queue Length 50th (m)	9.2	2.4	0.8	51.0	2.2	67.9
Queue Length 95th (m)	20.8	9.6	m1.8	m65.7	m4.4	88.3
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	485	534	433	2435	435	2374
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	220	254	0	439	0	19
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.21	0.03	0.39	0.05	0.32

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	275	80	12	288	29	1018	302	1053
v/c Ratio	0.97	0.13	0.03	0.42	0.17	0.81	0.85	0.60
Control Delay	90.3	14.7	29.0	7.2	33.0	46.7	46.4	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Total Delay	90.3	14.7	29.0	7.2	33.0	48.9	46.4	29.6
Queue Length 50th (m)	67.2	5.6	2.0	4.9	5.7	139.4	53.2	114.1
Queue Length 95th (m)	#103.3	14.1	5.7	17.1	12.6	147.0	#78.2	122.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	295	646	460	703	167	1261	369	1759
Starvation Cap Reductn	0	0	0	0	0	129	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.12	0.03	0.41	0.17	0.90	0.82	0.60

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1910	1261	67	140	41	83
v/c Ratio	0.79	0.72	0.45	0.67	0.56	0.36
Control Delay	5.3	32.6	65.5	58.5	85.2	19.5
Queue Delay	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	32.6	65.5	58.5	85.2	19.5
Queue Length 50th (m)	5.1	173.2	16.1	25.6	10.0	2.8
Queue Length 95th (m)	9.8	190.2	29.4	45.0	21.5	16.5
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2403	1756	198	265	96	280
Starvation Cap Reductn	184	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.72	0.34	0.53	0.43	0.30

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1548	1340
v/c Ratio	0.66	0.36	0.53	0.69	0.63
Control Delay	70.7	62.0	32.4	21.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	32.4	21.0	8.7
Queue Length 50th (m)	18.8	12.7	12.8	179.9	65.7
Queue Length 95th (m)	34.5	23.7	30.5	m216.7	100.7
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	318	2257	2132
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.41	0.69	0.63

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	352	992	13	63	1052	268	10	216	268	228	389
v/c Ratio	0.92	0.49	0.02	0.34	0.84	0.45	0.03	0.38	0.84	0.39	0.55
Control Delay	56.0	20.5	2.4	32.2	37.9	13.5	22.5	26.5	37.6	13.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	56.0	20.5	2.4	32.2	37.9	13.5	22.5	26.5	37.6	13.7	4.8
Queue Length 50th (m)	53.8	65.1	0.0	8.5	92.7	14.4	1.2	26.5	23.4	12.1	4.3
Queue Length 95th (m)	#104.1	90.1	m0.0	19.8	#125.5	35.0	4.5	43.8	#76.2	29.3	6.1
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	384	2035	815	184	1257	602	344	636	354	653	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	83
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.49	0.02	0.34	0.84	0.45	0.03	0.34	0.76	0.35	0.59

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1594	1478	140	95	26	273
v/c Ratio	1.19	0.99	1.11	0.27	0.11	0.83
Control Delay	113.3	40.9	153.3	20.2	34.9	54.8
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	113.4	40.9	153.3	20.2	34.9	54.8
Queue Length 50th (m)	~182.0	106.2	~28.6	6.6	3.9	39.9
Queue Length 95th (m)	#221.1	#179.2	#62.6	19.1	10.5	#78.4
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1339	1488	126	351	245	329
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	35	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.99	1.11	0.27	0.11	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	72	16	851	26	981
v/c Ratio	0.66	0.24	0.05	0.35	0.07	0.41
Control Delay	42.7	16.8	9.8	11.5	1.4	1.2
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1
Total Delay	42.7	16.8	9.8	11.9	1.4	1.4
Queue Length 50th (m)	25.8	4.1	1.3	49.5	0.2	4.0
Queue Length 95th (m)	42.3	13.5	m3.1	m66.5	m0.4	5.8
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	472	516	340	2410	377	2399
Starvation Cap Reductn	0	0	0	961	0	495
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.14	0.05	0.59	0.07	0.52

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	80	15	222	26	975	138	1433
v/c Ratio	0.85	0.16	0.04	0.45	0.20	0.47	0.51	0.70
Control Delay	62.5	15.1	25.1	18.5	8.0	6.4	21.9	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	62.5	15.1	25.1	18.5	8.0	6.6	21.9	22.0
Queue Length 50th (m)	35.8	5.1	1.9	17.1	0.9	18.9	20.3	138.1
Queue Length 95th (m)	#65.2	14.4	6.1	34.5	m2.6	23.1	m22.3	m142.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	302	568	402	565	131	2083	273	2035
Starvation Cap Reductn	0	0	0	0	0	309	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.14	0.04	0.39	0.20	0.55	0.51	0.70

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1443	1389	73	142	57	108
v/c Ratio	0.65	0.66	0.41	0.52	0.52	0.39
Control Delay	2.4	5.7	43.8	30.2	54.8	24.0
Queue Delay	4.1	1.2	0.0	0.0	0.0	0.0
Total Delay	6.5	6.9	43.8	30.2	54.8	24.0
Queue Length 50th (m)	2.4	22.2	12.0	14.6	9.6	8.8
Queue Length 95th (m)	m26.5	101.3	22.6	29.5	20.1	21.4
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2207	2109	261	373	158	376
Starvation Cap Reductn	669	0	0	0	0	0
Spillback Cap Reductn	0	459	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.84	0.28	0.38	0.36	0.29

Intersection Summary

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1475	1787
v/c Ratio	0.60	0.22	0.16	0.68	0.98
Control Delay	46.1	36.2	12.4	18.7	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	36.2	12.4	18.7	33.4
Queue Length 50th (m)	22.5	7.6	0.8	107.2	134.0
Queue Length 95th (m)	37.7	15.9	9.1	124.6	#215.1
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	322	308	410	2182	1826
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.12	0.68	0.98

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	497	1334	10	36	972	302	10	181	266	191	328
v/c Ratio	0.96	0.61	0.01	0.32	0.82	0.57	0.04	0.34	0.91	0.38	0.53
Control Delay	56.7	13.5	0.2	46.8	50.2	26.4	35.4	39.2	77.2	41.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	56.7	13.5	0.2	46.8	50.2	26.4	35.4	39.2	77.2	41.0	13.7
Queue Length 50th (m)	102.9	118.3	0.0	7.1	123.3	36.4	1.8	34.0	38.4	27.3	24.3
Queue Length 95th (m)	m#159.6	98.3	m0.0	16.9	141.5	61.5	5.7	50.9	#100.6	55.4	38.5
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	519	2199	862	112	1185	528	273	563	312	534	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.61	0.01	0.32	0.82	0.57	0.04	0.32	0.85	0.36	0.58

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2038	1355	73	60	8	191
v/c Ratio	0.86	0.81	0.82	0.25	0.05	0.67
Control Delay	17.1	6.2	114.1	33.8	51.9	40.7
Queue Delay	0.5	0.3	0.0	0.0	0.0	0.0
Total Delay	17.6	6.5	114.1	33.8	51.9	40.7
Queue Length 50th (m)	179.0	18.6	18.0	7.2	1.8	23.2
Queue Length 95th (m)	224.1	50.0	#41.2	19.7	6.5	46.9
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2365	1683	104	275	203	316
Starvation Cap Reductn	0	56	0	0	0	0
Spillback Cap Reductn	83	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.83	0.70	0.22	0.04	0.60

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	58	19	848	20	763
v/c Ratio	0.50	0.21	0.04	0.35	0.05	0.32
Control Delay	23.2	14.4	7.0	8.6	5.6	5.8
Queue Delay	1.3	0.3	0.0	0.4	0.0	0.0
Total Delay	24.5	14.7	7.0	9.0	5.6	5.8
Queue Length 50th (m)	9.3	2.4	1.3	55.4	1.1	30.2
Queue Length 95th (m)	21.0	9.6	m2.6	m68.7	m2.8	53.2
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	487	534	428	2434	402	2373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	204	222	0	937	0	38
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.19	0.04	0.57	0.05	0.33

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	306	91	12	288	102	1018	302	1269
v/c Ratio	0.80	0.17	0.10	0.77	0.67	0.69	0.79	0.66
Control Delay	53.6	14.1	55.9	24.3	75.8	53.5	41.4	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	11.5	0.0	0.0
Total Delay	53.6	14.1	55.9	24.3	75.8	65.0	41.4	20.9
Queue Length 50th (m)	64.5	6.3	2.9	7.3	25.4	133.4	48.9	87.3
Queue Length 95th (m)	69.7	13.8	7.6	24.2	#50.8	146.6	#83.8	121.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	414	703	214	467	153	1483	384	1917
Starvation Cap Reductn	0	0	0	0	0	450	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.13	0.06	0.62	0.67	0.99	0.79	0.66

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2030	1273	67	140	41	85
v/c Ratio	0.84	0.75	0.45	0.68	0.55	0.37
Control Delay	5.9	36.9	65.6	62.3	84.5	19.6
Queue Delay	0.9	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	36.9	65.6	62.3	84.5	19.6
Queue Length 50th (m)	5.1	175.8	16.0	27.1	9.9	2.7
Queue Length 95th (m)	9.2	193.3	29.7	47.1	21.6	17.0
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2405	1696	187	249	92	272
Starvation Cap Reductn	158	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.75	0.36	0.56	0.45	0.31

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1577	1541
v/c Ratio	0.66	0.36	0.53	0.72	0.72
Control Delay	70.7	62.0	34.2	6.7	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	34.2	6.7	10.6
Queue Length 50th (m)	18.8	12.7	13.8	30.2	87.2
Queue Length 95th (m)	34.5	23.7	31.6	33.2	133.8
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	314	2199	2155
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.41	0.72	0.72

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	996	13	63	1058	274	10	216	312	228	389
v/c Ratio	0.97	0.51	0.02	0.36	0.89	0.47	0.03	0.35	0.89	0.36	0.54
Control Delay	67.6	22.3	2.5	33.0	42.3	13.9	21.8	24.8	43.9	14.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	67.6	22.3	2.5	33.0	42.3	13.9	21.8	24.8	43.9	14.1	4.1
Queue Length 50th (m)	~58.9	66.6	0.0	8.5	93.4	14.8	1.2	26.1	31.4	12.5	0.0
Queue Length 95th (m)	#110.7	93.1	m0.0	19.9	#126.7	35.6	4.4	43.1	#91.8	27.2	2.6
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	373	1947	782	174	1192	581	360	655	371	672	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	82
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.51	0.02	0.36	0.89	0.47	0.03	0.33	0.84	0.34	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1610	1537	140	95	26	282
v/c Ratio	1.23	1.03	1.18	0.27	0.11	0.87
Control Delay	129.7	51.7	176.1	20.9	34.9	60.6
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	129.8	51.7	176.1	20.9	34.9	60.6
Queue Length 50th (m)	~187.9	~105.7	~29.9	6.9	3.9	42.8
Queue Length 95th (m)	#227.1	#192.0	#63.9	19.4	10.5	#84.2
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1311	1486	119	349	245	325
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	37	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.26	1.03	1.18	0.27	0.11	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	72	19	865	26	1025
v/c Ratio	0.67	0.24	0.06	0.36	0.07	0.43
Control Delay	42.9	16.8	11.2	12.5	2.1	1.8
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.3
Total Delay	42.9	16.8	11.2	13.0	2.1	2.0
Queue Length 50th (m)	26.1	4.1	1.6	50.8	0.3	5.6
Queue Length 95th (m)	42.7	13.5	m4.0	m67.4	m0.5	9.6
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	446	487	321	2408	370	2397
Starvation Cap Reductn	0	0	0	977	0	671
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.15	0.06	0.60	0.07	0.59

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	346	126	15	222	40	975	138	1460
v/c Ratio	0.92	0.20	0.03	0.36	0.53	0.55	0.68	0.85
Control Delay	61.4	14.1	19.9	17.3	37.4	9.3	40.6	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	61.4	14.1	19.9	17.3	37.4	9.5	40.6	27.1
Queue Length 50th (m)	56.1	9.0	1.7	18.6	1.7	22.6	18.8	115.2
Queue Length 95th (m)	#103.2	20.1	5.4	35.2	#21.5	26.5	#49.3	#147.8
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	401	667	473	652	75	1757	202	1721
Starvation Cap Reductn	0	0	0	0	0	215	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.19	0.03	0.34	0.53	0.63	0.68	0.85

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1460	1440	73	142	57	118
v/c Ratio	0.66	0.68	0.41	0.52	0.52	0.44
Control Delay	2.5	6.1	43.9	30.8	54.8	27.4
Queue Delay	5.5	1.8	0.0	0.0	0.0	0.0
Total Delay	8.0	7.9	43.9	30.8	54.8	27.5
Queue Length 50th (m)	2.5	23.6	12.0	15.0	9.6	11.4
Queue Length 95th (m)	m26.0	m114.1	22.6	29.8	20.1	24.6
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2199	2113	259	371	158	370
Starvation Cap Reductn	673	0	0	0	0	0
Spillback Cap Reductn	0	481	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.88	0.28	0.38	0.36	0.33

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1599	1814
v/c Ratio	0.67	0.24	0.18	0.70	0.99
Control Delay	60.3	45.8	15.1	11.5	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	45.8	15.1	11.5	37.2
Queue Length 50th (m)	28.2	9.4	0.9	89.3	~174.5
Queue Length 95th (m)	46.5	19.3	10.7	126.6	#251.3
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	268	258	349	2299	1824
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.19	0.15	0.70	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	498	1334	10	36	972	306	10	181	275	191	328
v/c Ratio	0.98	0.61	0.01	0.32	0.82	0.58	0.04	0.33	0.91	0.37	0.52
Control Delay	62.2	13.6	0.2	46.9	50.5	26.8	34.8	38.4	88.0	50.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	62.2	13.6	0.2	46.9	50.5	26.8	34.8	38.4	88.0	50.3	16.5
Queue Length 50th (m)	105.4	117.7	0.0	7.1	123.3	37.2	1.8	33.6	56.1	36.4	24.2
Queue Length 95th (m)	m#162.3	98.3	m0.0	16.9	141.5	62.4	5.7	50.4	#103.5	61.9	46.1
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	506	2175	853	111	1179	526	282	576	321	546	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	80
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.61	0.01	0.32	0.82	0.58	0.04	0.31	0.86	0.35	0.58

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2042	1367	73	60	8	192
v/c Ratio	0.86	0.81	0.83	0.25	0.05	0.68
Control Delay	17.3	6.9	114.9	33.8	51.9	41.8
Queue Delay	0.5	0.3	0.0	0.0	0.0	0.0
Total Delay	17.8	7.2	114.9	33.8	51.9	41.8
Queue Length 50th (m)	181.2	23.4	18.0	7.2	1.8	23.9
Queue Length 95th (m)	224.8	51.5	#41.3	19.7	6.5	48.0
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2364	1679	103	275	203	315
Starvation Cap Reductn	0	54	0	0	0	0
Spillback Cap Reductn	80	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.84	0.71	0.22	0.04	0.61

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	58	19	852	20	773
v/c Ratio	0.50	0.21	0.05	0.35	0.05	0.33
Control Delay	23.2	14.4	7.2	8.8	6.4	6.7
Queue Delay	1.3	0.3	0.0	0.4	0.0	0.0
Total Delay	24.5	14.7	7.2	9.2	6.4	6.7
Queue Length 50th (m)	9.3	2.4	1.3	55.5	1.0	30.1
Queue Length 95th (m)	21.0	9.6	m2.7	m68.9	m2.8	65.7
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	487	534	422	2434	399	2373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	206	225	0	976	0	83
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.19	0.05	0.58	0.05	0.34

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	351	101	12	288	107	1018	302	1282
v/c Ratio	0.94	0.19	0.10	0.77	0.50	0.70	0.76	0.76
Control Delay	74.4	13.9	56.0	24.3	37.4	54.6	38.6	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.4	0.0	0.0
Total Delay	74.4	13.9	56.0	24.3	37.4	74.1	38.6	27.7
Queue Length 50th (m)	77.8	6.4	2.9	7.3	16.5	133.9	48.5	95.6
Queue Length 95th (m)	#89.5	14.8	7.6	24.2	29.6	146.2	77.0	121.4
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	375	657	213	467	212	1462	414	1684
Starvation Cap Reductn	0	0	0	0	0	462	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.15	0.06	0.62	0.50	1.02	0.73	0.76

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2034	1284	67	140	41	86
v/c Ratio	0.85	0.76	0.45	0.68	0.55	0.37
Control Delay	6.0	37.4	65.8	62.3	84.5	19.4
Queue Delay	1.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	37.5	65.8	62.3	84.5	19.4
Queue Length 50th (m)	5.1	169.8	16.0	27.1	9.9	2.7
Queue Length 95th (m)	9.7	194.7	29.8	47.1	21.6	17.0
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2403	1696	186	249	92	273
Starvation Cap Reductn	156	0	0	0	0	0
Spillback Cap Reductn	0	10	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.76	0.36	0.56	0.45	0.32

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1619	1554
v/c Ratio	0.66	0.36	0.55	0.74	0.72
Control Delay	70.7	62.0	37.0	6.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	37.0	6.6	10.9
Queue Length 50th (m)	18.8	12.7	15.3	29.7	89.7
Queue Length 95th (m)	34.5	23.7	33.1	m33.0	137.6
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	309	2202	2144
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.42	0.74	0.72

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	365	996	13	63	1058	281	10	216	315	228	389
v/c Ratio	0.98	0.51	0.02	0.36	0.89	0.48	0.03	0.35	0.89	0.36	0.54
Control Delay	71.2	22.4	2.5	33.0	42.3	14.0	21.8	24.7	44.1	14.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	71.2	22.4	2.5	33.0	42.3	14.0	21.8	24.7	44.1	14.2	4.0
Queue Length 50th (m)	~60.1	66.7	0.0	8.5	93.4	15.3	1.2	26.1	31.4	12.5	0.0
Queue Length 95th (m)	#112.2	93.2	m0.0	19.9	#126.7	36.5	4.4	43.1	#93.4	27.6	2.5
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	371	1941	780	174	1192	584	361	655	372	672	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	82
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.51	0.02	0.36	0.89	0.48	0.03	0.33	0.85	0.34	0.59

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1619	1542	140	95	26	282
v/c Ratio	1.24	1.04	1.18	0.27	0.11	0.87
Control Delay	133.1	53.9	176.1	21.2	34.9	61.2
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	133.2	53.9	176.1	21.2	34.9	61.2
Queue Length 50th (m)	~189.9	~153.1	~29.9	7.1	3.9	43.0
Queue Length 95th (m)	#229.1	#193.6	#63.9	19.6	10.5	#84.5
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1310	1481	119	348	245	324
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	38	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.27	1.04	1.18	0.27	0.11	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	72	19	875	26	1028
v/c Ratio	0.67	0.24	0.06	0.36	0.07	0.43
Control Delay	42.9	16.8	11.2	12.6	2.2	1.8
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.3
Total Delay	42.9	16.8	11.2	13.1	2.2	2.1
Queue Length 50th (m)	26.1	4.1	1.6	51.5	0.3	6.0
Queue Length 95th (m)	42.7	13.5	m3.9	m68.0	m0.5	m9.7
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	446	487	320	2408	367	2397
Starvation Cap Reductn	0	0	0	974	0	690
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.15	0.06	0.61	0.07	0.60

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	367	129	15	222	50	975	138	1499
v/c Ratio	0.94	0.20	0.03	0.35	0.68	0.57	0.71	0.89
Control Delay	65.0	14.1	19.9	17.0	55.8	9.9	43.7	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	65.0	14.1	19.9	17.0	55.8	10.1	43.7	30.2
Queue Length 50th (m)	61.1	9.4	1.7	18.6	7.3	22.5	19.0	120.3
Queue Length 95th (m)	#111.5	20.7	5.4	35.2	#27.0	26.3	#50.1	#167.1
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	403	666	472	652	74	1720	195	1685
Starvation Cap Reductn	0	0	0	0	0	214	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.19	0.03	0.34	0.68	0.65	0.71	0.89

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1469	1446	73	142	57	118
v/c Ratio	0.67	0.68	0.41	0.52	0.52	0.44
Control Delay	2.6	6.2	43.9	31.1	54.8	27.7
Queue Delay	6.0	2.0	0.0	0.0	0.0	0.0
Total Delay	8.6	8.2	43.9	31.1	54.8	27.8
Queue Length 50th (m)	2.5	24.0	12.0	15.1	9.6	11.5
Queue Length 95th (m)	m25.7	m114.3	22.6	30.0	20.1	24.8
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2201	2111	259	371	158	370
Starvation Cap Reductn	674	0	0	0	0	0
Spillback Cap Reductn	0	485	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.89	0.28	0.38	0.36	0.33

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1620	1851
v/c Ratio	0.67	0.24	0.18	0.71	1.02
Control Delay	60.3	45.8	15.1	11.8	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	45.8	15.1	11.8	43.9
Queue Length 50th (m)	28.2	9.4	0.9	91.8	~214.1
Queue Length 95th (m)	46.5	19.3	10.7	130.5	#260.5
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	268	258	349	2297	1816
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.19	0.15	0.71	1.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX E.

Recommended Official Plan Amendment

Appendix E. Recommended Official Plan Amendment (OPA)

The Port Credit GO Station Southeast Area Master Plan recommends a number of new policies to provide definitive direction on appropriate land use, built form and transportation. The new policies would be implemented through an amendment to the Port Credit Local Area Plan (2014), which forms part of the Mississauga Official Plan (2014). This proposed draft Official Plan Amendment (OPA) has been prepared in order to assist with the future preparation of an OPA by the City of Mississauga. It is possible following the review of the Master Plan and the draft proposed OPA by various City of Mississauga departments, City Council, commenting agencies and stakeholders, as well as further discussions between the City of Mississauga, Metrolinx and IBI Group, that changes will be made to the draft OPA language.

13.1.2 Port Credit GO Station Southeast Area (Site 12)

Blocks Comprising the Port Credit GO Station Southeast Area (Site 12)

13.1.12.1 The lands identified as Special Site 12 are located west of Hurontario Street, south of the C.N. Railway, east of Helene Street, and north of High Street. These lands are in an important location that has the potential to support further development of the Port Credit Mobility Hub

13.1.12.2 Notwithstanding the provisions of the Mixed Use and Utility designations and the Desirable Urban Form policies, the following provision shall apply, with the Port Credit GO Station Southeast Area Master Plan also to be used in the review of development applications: ~~further study is required to determine the appropriate type of redevelopment on these lands.~~

~~13.1.12.3 These lands are in an important location that can further the development of the Port Credit Mobility Hub. A comprehensive master plan will be prepared to the City's satisfaction that will address, among other matters, land use, built form, transportation and heritage resources. In addition, the master plan will:~~

~~a) have regard for other City and Provincial plans, policies and reports such as those related to the future Light Rapid Transit on Hurontario and Mobility Hubs;~~
~~b) determine appropriate access improvements and linkages for pedestrians, cyclists, and commuters traveling between the GO station and future LRT stop;~~

~~c) provide amenities such as secure storage facilities for bicycles, car share drop-off areas, heated waiting areas, traveler information centres, cafes and restaurants, as well as services such as daycares, or grocery stores;~~

~~d) address appropriate design of any parking structures; and~~

~~e) provide of opportunities to accommodate employment uses.~~

~~13.1.12.4 Consultation on the comprehensive master plan will occur with the landowners, local community and other stakeholders.~~

a) Minimum and maximum building heights are shown in Schedule 2B and described below:

   i) Maximum building heights of 22 storeys are permitted throughout the Master Plan Area, with the exception of lands fronting Hurontario Street, if the tower component of a building is primarily residential. Maximum building heights of 19 storeys are permitted where the tower component is constructed primarily for office or institutional purposes and is to have greater floor to ceiling heights.

   ii) Residential and non-residential buildings fronting Hurontario Street shall be no more than 8 storeys, with a setback consistent with a 45 degree angular plane generally required after 6 storeys.

   The maximum permitted height of buildings fronting Hurontario Street may be exceeded by 1 storey for every storey of additional office use provided beyond the recommended minimum requirement, up to a maximum of 2 storeys. The ability to achieve up to 10 storeys along Hurontario Street will require a proponent to provide further built form, design and planning justification, to the satisfaction of the City.

Appendix E. Recommended Official Plan Amendment (OPA)

iii) All buildings shall be a minimum of 2-storeys.

b) Variation in building heights and form, including the position of towers relative to each other, should be achieved.

c) A minimum of 30 metres shall be provided between any portion of a building that is 8 storeys or higher to another building that is 8 storeys or higher.

d) The maximum size of residential floor plates beyond the 15th floor shall generally be 800 square metres or less.

e) Long or full block buildings will be permitted but are encouraged to provide internal mid-block connections where possible and shall generally provide variation in the facade to break up the massing (e.g. physical vertical recesses, changes in materials or other forms of articulation).

f) Above-grade structures must be contextually sensitive and provide for visual interest and elements that contribute to the streetscape, such as space for office, retail/commercial or community uses, services for transit users (e.g. ticketing, interactive information boards and service kiosks), building entrances, community display cases, public art, street furniture and landscape features. Generally, a higher proportion of the building envelop that faces a public street or gateway entry point should be animated at street-level than not. The intent is to achieve visual animation, interest and streetscape improvements along each elevation of an above-grade parking structure, with a target of generally providing animation at street level along 2/3rds of a building envelope.

g) All future developments over 1,000 sq. m. shall provide an appropriate mix of non-residential, employment-generating uses including office and other uses such as retail stores, restaurants, personal service establishments or community service space.

h) The following minimum gross floor area (GFA) of employment-generating uses will be required as part of future comprehensive block redevelopments:

- Block 1: 2,800 sq. m.
- Block 2: 1,400 sq. m.
- Block 4: 250 sq. m.

i) Developments should be encouraged to provide office space in larger, contiguous floorplates (at-grade or above-grade) in order to accommodate a variety of businesses and services.

j) Development applications shall demonstrate how transit use, cycling, car and bike sharing, car pooling, shared parking and other travel demand management measures will be achieved.

k) Reduced, transit-supportive parking standards are encouraged for future development within the Port Credit GO Station South Area. Through the rezoning process, applicants are to provide a parking study to justify the appropriateness of the specific parking standards being proposed.

l) Development applications shall demonstrate how a seamless integration of modes of travel and access is achieved, especially at-grade and on the lower floors of buildings.