

Engineering

- Land/Site Development
- Municipal Infrastructure
- Environmental/Water Resources
- Traffic/Transportation
- Recreational

Planning

- Land/Site Development
- Planning Application Management
- Municipal Planning
- Urban Design
- Expert Witness (LPAT)
- Wireless Industry

Landscape Architecture

- Streetscapes & Public Amenities
- Open Space, Parks & Recreation
- Community & Residential
- Commercial & Institutional
- Environmental Restoration



East LeBreton Flats

301 Lett Street

Transportation Impact Study

NOVATECH

Engineers, Planners & Landscape Architects

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**East LeBreton Flats
301 Lett Street**

Transportation Impact Study

Prepared for:

Claridge Homes

Prepared By:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

October 2017
Revised January 2020
Revised June 2020
Revised April 2021
Revised September 2021

Novatech File: 116042
Ref No. R-2016-054

September 21, 2021

City of Ottawa
Planning and Growth Management Branch
110 Laurier Ave. W., 4th Floor,
Ottawa, Ontario K1P 1J1

Attention: Wally Dubyk
Project Manager, Infrastructure Approvals

Dear Sir:

Reference: East LeBreton Flats Development
Transportation Impact Study
Our File No. : 116042

A Transportation Impact Study (TIS) dated October 2017 was prepared in support of Zoning By-law Amendment and Official Plan Amendment applications for the East LeBreton Flats lands. A supplementary addendum dated May 2018 was prepared to review the impact of Phase 1 only. Following approval, Claridge has altered its Phase 1 to the buildings located between Lett Street and Lloyd Street. The TIS was revised in January 2020, June 2021, and April 2021 in support of the revisions to Phase 1. This revised report has been prepared to address City comments received on August 20, 2021.

Please call if you have any questions as you complete your review.

Yours truly,

NOVATECH



Brad Byvelds, P. Eng.
Project Coordinator | Transportation/Traffic



TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check appropriate field(s)] is either transportation engineering or transportation planning .

1,2 License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

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Signature of Individual certifier that s/he meets the above four criteria

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EXECUTIVE SUMMARY

A Transportation Impact Study (TIS) dated October 2017 was prepared in support of Zoning By-law Amendment and Official Plan Amendment applications for the East LeBreton Flats lands. A supplementary addendum dated May 2018 was prepared to review the impacts of Phase 1 only. Following approval, Claridge has altered its Phase 1 to the buildings located between Lett Street and Lloyd Street. The TIS was revised in January 2020, June 2021, and April 2021 in support of the revisions to Phase 1. This revised report has been prepared to address City comments received on the latest resubmission.

The previously approved Phase 1 of the development consisted of 350 residential units, a 21,500ft² food store and 43,000ft² of institutional development. The new Phase 1 development consists of 273 condominium units, 319 rental apartment units, a 5,190ft² daycare, and 8,220ft² ground floor commercial. The estimated completion date of the proposed development is 2023.

The study area for this report includes the following intersections:

- Wellington Street/Sir John A MacDonald Parkway/Booth Street;
- Wellington Street/Lett Street;
- Wellington Street/Portage Bridge;
- Booth Street/Fleet Street;
- Booth Street/Albert Street.

The time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. Existing traffic conditions within the study area have been examined, along with background and total traffic conditions for the 2023 build-out and 2028 horizon years.

The main conclusions and recommendations of this report are:

Development Design and Parking

- The overall East LeBreton Flats lands will be accessed through the Booth Street/Fleet Street and Wellington Street/Lett Street intersections. Parking for the development will be underground with access to Lloyd Street. The recently completed Confederation Line construction has developed a median along Booth Street, restricting the Fleet Street intersection to right-in right-out. The Wellington Street/Lett Street intersection will remain signalized.
- Pedestrian facilities will be provided between the main building entrances and the sidewalks along the adjacent roadways.
- A north-south crosswalk is proposed on the west leg and an east-west pedestrian crossover (PXO) is proposed on the north leg of the Fleet Street/Lett Street intersection to provide additional pedestrian connectivity.
- Cyclists can use the underground parking ramp or service entrances off the mid-block passage to connect to the shared traffic lanes along the adjacent roadways.
- A loading area will be provided adjacent to the proposed underground parking ramp. This loading area will generally be used by moving trucks for resident move-in or move-out. A fence or wall will be provided between the loading area and the underground parking ramp to provide safety for residents using the loading area.

- A total of 326 vehicle parking spaces (270 resident, 56 visitor) and 639 bicycle parking spaces (589 underground, 50 surface) are proposed for the development, exceeding the minimum requirements of the Zoning By-law.
- No parking is proposed for the commercial and day care uses as none are required.
- The proposed 326 vehicle parking spaces do not exceed the maximum requirement of the Zoning By-law.

Boundary Street MMLOS

- PLOS (Target 'A'):
 - With no sidewalk currently provided on the west side of Lett Street (North-South), the south side of Fleet Street, and both sides of Lloyd Street and Lett Street (East-West) the PLOS for these roadways is deemed 'F'.
- BLOS (Target 'D'):
 - Each boundary roadway achieves a BLOS 'B', surpassing the target.
- TLOS and TkLOS
 - Not applicable as Boundary streets are not bus or truck routes.
- AutoLOS (Target 'E')
 - Each boundary roadway achieves an Auto LOS 'A', surpassing the target.
- The approved design for the boundary roadways will provide new pedestrian facilities along the boundary roadways, achieving the target PLOS 'A' along Lett Street (North-South), Fleet Street, and Lloyd Street.
- Consideration could be given to providing a sidewalk on the south side of Lett Street (east-west) as part of the future park to the south. A sidewalk on the south side of Lett Street (East-West) will achieve the target PLOS 'A'.

Access Intersections Design, TDM, Neighbourhood Traffic Management, and Transit

- The width of the underground parking ramp adheres to the requirements of the ZBL.
- The overall width of the combined underground parking ramp and loading area is 9.7m, exceeding the requirements of the City's Private Approach By-law. As the loading area will only be used for infrequent move-in move-out, and garbage operations, and a depressed curb return will be provided to delineate the underground parking ramp from the loading area, a waiver to the Section 25 (c) of the City's Private Approach By-law is requested.
- The location of the proposed underground parking ramp adheres to the requirements of the City's Private Approach By-law.
- A maximum grade of 6% for a distance of 8.4m from the back of sidewalk is consistent with the TAC recommendations and is anticipated to provide appropriate sight lines for vehicles exiting the ramp to the sidewalk and roadway. A waiver to the City's PABL is recommended.
- As Lett Street and Lloyd Street are local roadways and carry low traffic volumes, the available SSD and ISD are considered acceptable.
- Based on the landscape plan, the trees immediately north and south of the access will be red maple and sugar maple trees with a 50mm diameter. These trees will have a high canopy and will not represent an obstruction to sightlines.
- The proposed development conforms to the City's Transportation Demand Management initiatives by providing easy access to the local pedestrian, bicycle and transit systems.
- To encourage travel by sustainable modes, the proponent agrees to implement the following TDM measures within the building:
 - Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress,
 - Display local area maps with walking/cycling access routes and key destinations at major entrances,

- Display relevant transit schedules and route maps at entrances,
 - Contract with provider to install on-site carshare vehicles and promote their use by residents,
 - Unbundle parking cost from purchase price (condominium) or monthly rent (apartment),
 - Provide a multi-modal travel option information package to new residents, and
 - Offer personalized trip planning to new residents.
- As a condition of Site Plan approval, the proponent has agreed to provide security to the City of Ottawa for costs to produce Miovision traffic count data for underground parking access. The traffic count data will be used to determine if the target auto modal shares are achieved. The security identified above would cover the City's costs of collecting and reviewing data for the monitoring period.
 - As the only accesses to the subject lands are provided on Booth Street and Wellington Street, which are classified as arterial roadways in the City's 2013 TMP, the proposed development is not anticipated to have any measurable impact on the residential communities in the site's vicinity.
 - Traffic volumes along Lett Street and Lloyd Street, south of Fleet Street are not anticipated to exceed Area Traffic Management thresholds for local roadways. However, it is noted that the previously approved design for these roadways include roadway narrowings at the Fleet Street intersections.
 - No capacity deficiencies are anticipated for Line 1 at the Pimisi Station.
 - Based on the average bus load at departure information obtained for bus routes at stop #1876 and #1877, these bus routes are anticipated to accommodate the additional peak hour transit trips generated by the proposed development.

Intersection MMLOS Analysis

- None of the signalized intersections within the study area meet the target PLOS and BLOS. All intersections within the study area except the Booth Street/Albert Street and Wellington Street/Lett Street intersection meet the target TkLOS.
- All of the study area intersections are not located along a Transit Priority Corridor and do not have a target TLOS in the MMLOS Guidelines.
- The Sir John A Macdonald Parkway/Wellington Street/Booth Street and Albert Street/Booth Street intersections do not meet the target Auto LOS.
- Wellington Street/Portage Bridge intersection: This is not a standard configuration and the results of the PLOS and BLOS analysis should be treated with caution. The pedestrian and cycling facilities are anticipated to have a higher PLOS and BLOS than represented by the analysis. Critical movements at this intersection are currently operating with a vehicle LOS E during the PM peak hour.
- Wellington Street/Sir John A MacDonald Parkway/Booth Street intersection: This intersection is currently under construction and will be modified to a protected intersection design. The proposed modifications will improve the PLOS and BLOS at this intersection.
- Wellington Street/Lett Street intersection: The City could consider implementing leading pedestrian intervals and a jug handle to facilitate the westbound left turn movement for cyclists.
- Albert Street/Booth Street intersection: This intersection is anticipated to be reconstructed as part of the City's Albert Street Cycling and Pedestrian Facilities Project between City Centre Avenue and Empress Avenue. Based on the preliminary functional design, this intersection will be modified to a protected intersection design. The proposed modifications will improve the PLOS and BLOS at this intersection.

Future Background Intersection Operations

- Under the 2023 and 2028 background and total traffic conditions, critical movements at the Wellington Street/Sir John A MacDonald Parkway/Booth Street and Albert Street/Booth Street intersections are anticipated to operate with LOS F during the AM and PM peak hours.
- Consideration should be given to maintaining the existing lane configuration on the northbound approach to the Albert Street/Booth Street intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on this approach is anticipated to maintain an acceptable v/c ratio and reduce queueing on this approach.
- With more than 420 vehicles projected to be turning left during each of the AM and PM peak hours, the City should consider implementing dual eastbound left turn lanes at the Albert Street/Booth Street intersection when the bus lanes are repurposed along Albert Street. Improved overall intersection operations and a reduced eastbound left turn 95th percentile queue length (85m-90m) are anticipated during the AM and PM peak hours if dual eastbound left turn lanes are implemented by the City.

Future Total Intersection Operations

- The addition of site generated traffic is not anticipated to have a significant impact on the overall intersection operations within the study area.
- The existing Wellington Street/Lett Street intersection geometry and storage lengths accommodate traffic generated by the development.
- The impacts of a right-turn on red restriction on the northbound approach to the Wellington Street/Lett Street is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 30-35m during the AM and PM peak hours.
- As development of future phases within the east LeBreton Flats lands progress, the impacts of a right-turn on red restriction at the Wellington Street/Lett Street intersection are anticipated to increase. Since the Wellington Street/Lett Street intersection is the only signalized access to the subject lands, a right turn on red restriction on the northbound approach is not recommended.
- The findings of the sensitivity analysis are generally consistent with the 2028 total traffic condition. No further mitigation measures are anticipated to be required if the development does not achieve the target TOD modal shares.

Demand Rationalization

- Continued support of transportation solutions that maximize the transit, bike and pedestrian modes of travel will be critical in this area.
- Options to displace traffic along the study area roads include increased use of non-auto modes of transportation to/from the downtown core, alternate time of travel for drivers using the corridor to make use of off-peak capacity and alternate routes for travel to/from the downtown core.
- A review of the alternative north-south interprovincial routes, and north-south and east-west routes outside the study area are considered outside the scope of this study.

1.0 INTRODUCTION

A Transportation Impact Study (TIS) dated October 2017 was prepared in support of Zoning By-law Amendment and Official Plan Amendment applications for the East LeBreton Flats lands. A supplementary addendum dated May 2018 was prepared to review the impacts of Phase 1 only. Following approval, Claridge has altered its Phase 1 to the buildings located between Lett Street and Lloyd Street. The TIS was revised in January 2020, June 2021, and April 2021 in support of the revisions to Phase 1. This revised report has been prepared to address City comments received on the latest resubmission.

The overall East LeBreton Flats lands will be accessed through the Booth Street/Fleet Street and Wellington Street/Lett Street intersections, consistent with the Block Subdivision Plan, which can be found in **Appendix A**. An aerial photo of the East LeBreton Flats lands is shown in **Figure 1**.

Figure 1: Aerial Photo of the East LeBreton Flats Lands



Phase 1 of East LeBreton Flats lands are currently zoned MD[2504] S386-h and are currently vacant. The subject site is bounded by the following:

- To the north, Fleet Street and parkland;
- To the south, Lett Street and future residential development;
- To the east, Lett Street and existing residential development;
- To the west, Lloyd Street and future mixed-use development.

1.1 Proposed Development

The previously approved Phase 1 of the development consisted of 350 residential units, a 21,500ft² food store and 43,000ft² of institutional development. The new Phase 1 development consists of 273 condominium units, 319 rental apartment units, a 5,190ft² daycare, and 8,220ft² ground floor

commercial. A copy of the proposed site plan is included in **Appendix B**. The estimated completion date of the proposed development is 2023.

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadway Facilities

Wellington Street

Wellington Street is an arterial roadway that runs on an east-west alignment between Booth Street and Elgin Street. Map 7 in the City of Ottawa's 2013 TMP identifies Wellington Street in the vicinity of the Portage Bridge a "Federally Owned Roadway". It has a four-lane divided urban cross section, transitioning to a six-lane divided urban cross section near the Portage Bridge, and a regulatory speed limit of 50km/hr within the study area.

Sir John A MacDonald Parkway

The Sir John A MacDonald Parkway is a federally owned roadway that runs on an east-west alignment between Carling Avenue and Booth Street. It is classified as an arterial roadway between Vimy Place and Booth Street. It has a four-lane divided urban cross section and a regulatory speed limit of 50km/hr within the study area.

Albert Street

Albert Street is an arterial roadway that runs on an east-west alignment between Bayview Road and the Mackenzie King Bridge. Albert Street has a five-lane undivided urban cross-section and a regulatory speed limit of 50km/hr within the study area. It contains one transit lane in each direction, two westbound lanes for general traffic and one eastbound lane for general traffic. Albert Street is a truck route allowing full-loads.

Booth Street

Booth Street runs on a north-south alignment and is classified as an arterial roadway between the Chaudière Bridge and Albert Street. Booth Street south of Albert Street is classified as a major collector and has a two-lane undivided urban cross section with a regulatory speed limit of 50km/hr. Traffic calming measures (on-street parking, curb extensions and speed humps) have been implemented along Booth Street south of Albert Street. Booth Street between Albert Street and Wellington Street has two travel lanes in either direction, with raised concrete medians on the intersection approaches. Booth Street north of Albert Street is a truck route with load restrictions.

Portage Bridge

The Portage Bridge is a federally owned bridge connecting the provinces of Ontario and Quebec. The Portage Bridge runs on a north south alignment between Wellington Street (Ontario) and Rue Laurier (Quebec). It has a six-lane divided urban cross section and a regulatory speed limit of 50km/hr.

Lett Street and Fleet Street

Lett Street and Fleet Street are local roadways providing access to the overall East LeBreton Flats lands. Lett Street and Fleet Street have two lane undivided urban cross sections and a regulatory speed limit of 50km/hr.

2.1.2 Study Area Intersections

The existing lane configurations at the study area intersections are described below.

Wellington Street/Sir John A MacDonald Parkway/Booth Street

- Northbound one through lane, and one shared through/right turn lane
- Southbound – two through lanes, a left turn lane and a right turn lane
- Eastbound – two through lanes
- Westbound – one through lane and one shared through/right turn lane
- The eastbound left/right turn movements as well as the northbound and westbound left turn movements are restricted



Wellington Street/Lett Street

- Eastbound (Wellington Street) – one through lane and one shared through/right turn lane
- Westbound – two through lanes and a left turn lane
- Northbound – one shared left/right turn lane



Wellington Street/Portage Bridge

- Eastbound – three through/right turn lanes and dual left turn lanes
- Westbound – two through/left turn lanes and three right turn lanes
- Southbound – three left turn lanes and one right turn lane with smart channel



Booth Street/Fleet Street

- Northbound – one through lane and one shared through/right turn lane
- Southbound – two through lanes
- Westbound – One right turn lane

Albert Street/Booth Street

- Northbound – one shared through/left turn lane and one shared through/right turn lane
- Southbound – one through lane, one left turn lane and one right turn lane
- Eastbound – one through lane, one transit lane and one left turn lane. The transit lane functions as a right turn lane on this approach
- Westbound – two through lanes, one transit lane, one left turn lane and one right turn lane
- Right turn on red prohibitions are in place on the westbound and southbound approaches from 7:00AM to 9:00PM on weekdays
- The westbound left turn movement is prohibited between 7:00AM to 9:00AM and 3:30PM to 5:30PM on weekdays
- The southbound through movement is prohibited between 11:00PM to 6:00AM

**2.1.3 Driveways**

There are three existing driveways accessing the boundary streets that surround the site:

1. One driveway at Lloyd Street for a surface parking lot; and,
- 2, 3. Two driveways at Lett Street accessing underground parking for 300 Lett Street.

2.1.4 Pedestrian and Cycling Facilities

Sidewalks are currently provided on both sides of Wellington Street, Sir John A MacDonald Parkway, Booth Street, the south side of Albert Street, the east side of Lett Street, and the north side of Fleet Street. Fleet Street, east of Lett Street, connects to Pooley's Bridge/Commissioner Street. A multi-use pathway is also provided on the north side of Albert Street.

A multi-use pathway network is currently provided just east of the existing residential development east of Lett Street. This multi-use pathway network provides connections from Fleet Street/Pooley's Bridge to Wellington Street and the Trans Canada Trail.

Booth Street, Sir John A MacDonald Parkway, Wellington Street and Albert Street are classified as Spine Cycling Routes in the City's Ultimate Cycling Network. A physically separated bike lane (westbound) and a standard bicycle lane (eastbound) are currently provided along Wellington Street east of the Portage Bridge. A segregated two-way cycle track is provided along the east side of Portage Bridge. A multi-use pathway is provided on the north side of Albert Street. Cycle tracks are provided along Booth Street between Wellington Street and Albert Street.

2.1.5 Area Traffic Management

Currently, there are no existing Area Traffic Management (ATM) measures within the study area.

2.1.6 Transit Facilities

An excerpt from OC Transpo's system map for the study area is included in **Appendix C**. This report describes all existing transit facilities within a five-minute walk of the subject site, which equates to a walking distance of approximately 400m.

The Pimisi Light Rail Transit (LRT) station is located a walking distance of approximately 300m from the subject site. The Pimisi LRT station serves O-Train Route 1, which runs on an east-west alignment between the Tunneys Pasture LRT Station and the Blair LRT Station. O-Train Route 1 runs on three-minute headways during peak periods.

OC Transpo bus stops #1877 and #1876 are located along Booth Street, south of Wellington Street/Sir John A MacDonald Parkway. These bus stops provide service to the OC Transpo routes 61, 63, 66, 75, and 85, which provide interprovincial transit service.

OC Transpo Routes 61, 63, and 75 travel between the Gatineau and the Goulbourn Recreation Complex (Stittsville), Briarbrook (Kanata North), and the Minto Recreation Complex (Nepean South) respectively. These routes are classified as 'Rapid' routes that provide station to station bus service seven days a week during all time periods. These routes only serve the Pimisi Station during the peak period and peak direction.

OC Transpo Route 66 travels between Solandt Road (Kanata North) and Gatineau. This route is classified as a 'Local' route and provides peak period service on weekdays. This route operates in the off-peak direction only, from Gatineau in the AM and to Gatineau in the PM, with service every 30 minutes.

OC Transpo Route 85 travels between the Bayshore Transit and Gatineau. This route is classified as a 'Frequent' route and provides all day service, seven days a week. On weekdays, this route operates every 15 minutes or less.

2.1.7 Traffic Volumes

Weekday traffic counts completed by the City of Ottawa were used to determine the existing vehicle, pedestrian, and cyclist traffic volumes at the following study area intersections:

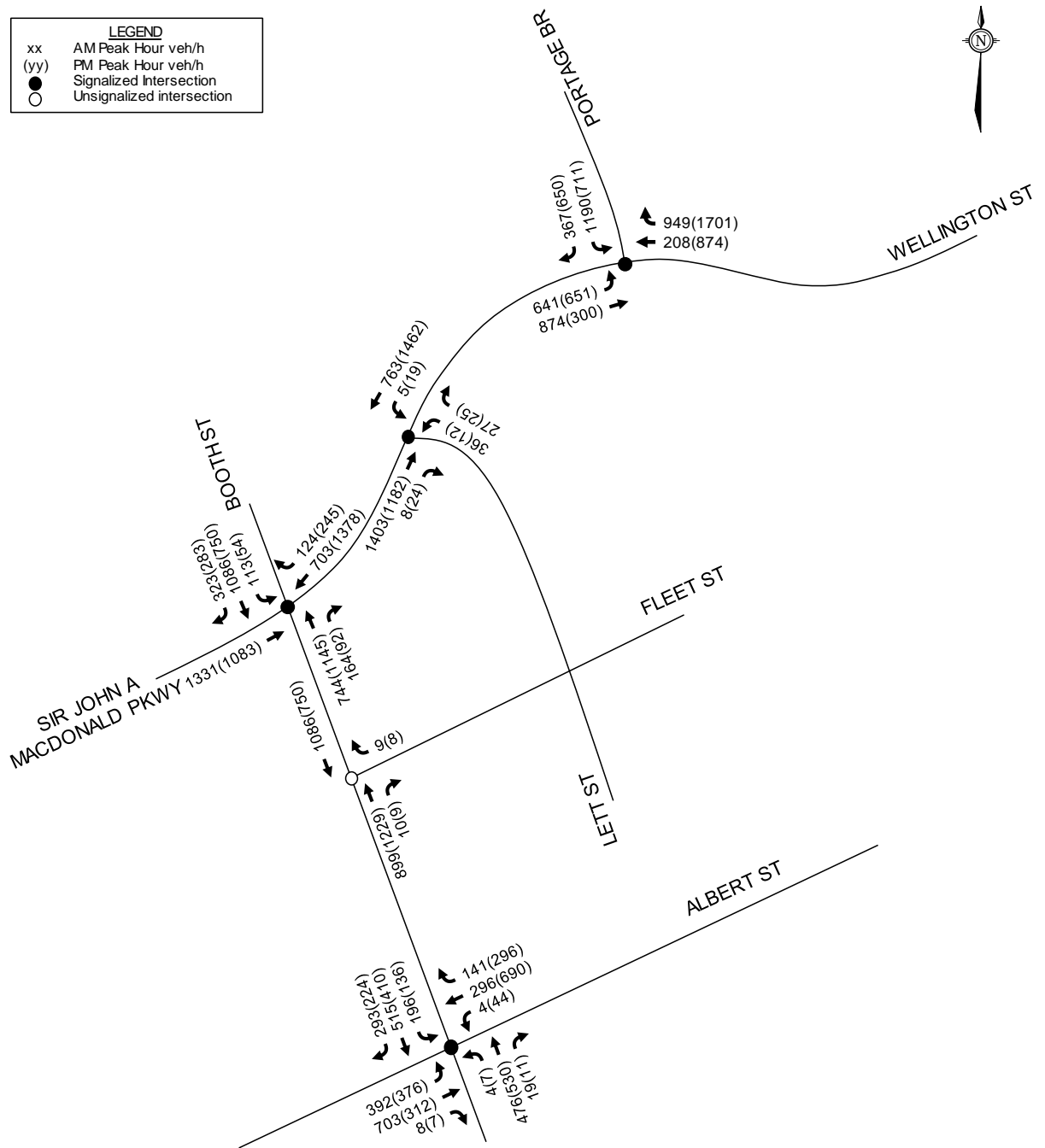
- Wellington Street /Sir John A MacDonald Parkway/Booth Street – June 8, 2017
- Wellington Street/Lett Street – August 31, 2016
- Wellington Street/Portage Bridge – March 23, 2016
- Booth Street/Albert Street – June 8, 2017

The traffic volumes using the Booth Street/Fleet Street intersection have been estimated using the traffic volumes presented in the 300 Lett Street Transportation Brief (dated April 2011).

Peak hour summary sheets for the above traffic counts and an excerpt from the 300 Lett Street Transportation Brief are included in **Appendix D**. Existing weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 2**.

Figure 2: Existing Traffic Volumes

LEGEND	
xx	AM Peak Hour veh/h
(yy)	PM Peak Hour veh/h
●	Signalized Intersection
○	Unsignalized Intersection



2.1.8 Collision Records

Historical collision data for the last five years was obtained from the City's Public Works and Service Department for all study area intersections and roadways. Copies of the collision summary reports are included in **Appendix E**.

Table 1 summarizes the number of collisions reported at each intersection and roadway segment from January 1st, 2014 to December 31st, 2018.

Table 1: Reported Collisions

Intersection / Street Segment	Number of Reported Collisions
Wellington Street / Sir John A MacDonald Parkway / Booth Street	60
Booth Street / Albert Street	51
Wellington Street / Portage Bridge	29
Wellington Street / Lett Street	9
Booth Street / Fleet Street	2

Wellington Street/Sir John A MacDonald Parkway/Booth Street

A total of 60 collisions were reported at the Wellington Street/Sir John A MacDonald Parkway/Booth Street intersection over the last five years. Twenty-five of the collisions were rear-end impacts, 14 were sideswipe impacts, 12 were turning movement impacts, five were angle impacts, and four were single vehicle/other impacts. Ten of the collisions resulted in personal injuries, but none were fatal. One of the collisions involved a pedestrian and one involved a cyclist.

Ten of the rear-end impacts involved eastbound vehicles, seven involved westbound vehicles, six involved northbound vehicles, and two involved southbound vehicles. Eight of the rear-end impacts occurred under poor surface/environmental conditions.

Five of the sideswipe impacts involved southbound vehicles, four involved eastbound vehicles, three involved westbound vehicles, and two involved northbound vehicles. Three of the sideswipe impacts occurred under poor surface conditions.

Three of the turning movement impacts involved eastbound left turning vehicles, two involved northbound left turning vehicles, two involved northbound right turning vehicles, two involved southbound left turning vehicles, two involved westbound right turning vehicles, and one involved a westbound left turning vehicle. Three of the turning movement impacts occurred under poor surface conditions.

It is noteworthy that a detour was in place from 2014 to 2016 to accommodate the closure of Booth Street for Confederation Line Light Rail Transit (LRT) construction. This detour reconfigured the intersection to include eastbound dual left turn lanes and converted the southbound lanes into dual right turn lanes. This detour significantly changed the traffic flow at this intersection and may have had an impact on the collision history.

Booth Street/Albert Street

A total of 51 collisions were reported at the Booth Street/Albert Street intersection over the last five years. Eighteen of the collisions were rear-end impacts, 14 were turning movement impacts, 10 were angle impacts, six were sideswipe impacts, and three were single vehicle/other impacts. Twelve of the collisions caused personal injuries, but none were fatal. Four of the collisions involved cyclists, but none involved pedestrians.

Eight of the rear-end impacts involved westbound vehicles, five involved southbound vehicles, three involved eastbound vehicles, and two involved northbound vehicles. Six of the rear-end impacts occurred under poor surface conditions.

Five of the turning movement impacts involved eastbound left turning vehicles, four involved southbound left turning vehicles, two involved eastbound right turning vehicles, two involved westbound right turning vehicles, and one involved a northbound right turning vehicle. Three of the turning movement impacts occurred under poor surface conditions.

Four of the angle impacts involved southbound and westbound vehicles, three involved northbound and westbound vehicles, two involved northbound and eastbound vehicles, and one involved a southbound and eastbound vehicle. Four of the angle impacts occurred under poor surface conditions.

It is noteworthy that the northern leg of this intersection was closed from 2014 to 2016 for the construction of the Confederation Line. The changes implemented as part of the Confederation Line construction are expected to have a positive effect on the safety of this intersection, and by extension, the number and types of collisions that will be observed in years to come. As such, Novatech have not identified any potential mitigation measures at this intersection, since the conditions that may have warranted mitigation measures will be addressed by the reconstruction.

Wellington Street/Portage Bridge

A total of 29 collisions were reported at the Wellington Street/Portage Bridge intersection over the last five years. Fourteen of the collisions were rear-end impacts, seven were single vehicle/other impacts, six were sideswipe impacts, and two were angle impacts. Five of the collisions caused personal injuries, but none were fatal. One of the collisions involved a cyclist, but none involved pedestrians.

Six of the rear-end impacts involved southbound vehicles, five involved westbound vehicles, and two involved eastbound vehicles. Nine of the rear-end impacts occurred under poor surface conditions.

Wellington Street/Lett Street

A total of nine collisions were reported at the Wellington Street/Lett Street intersection over the last five years. Seven of the collisions were rear-end impacts and two were angle impacts. One of the collisions caused personal injuries, but none were fatal. None of the collisions involved pedestrians or cyclists.

Five of the rear-end impacts involved eastbound vehicles and two involved westbound vehicles. All the collisions occurred under dry surface conditions.

Booth Street/Fleet Street

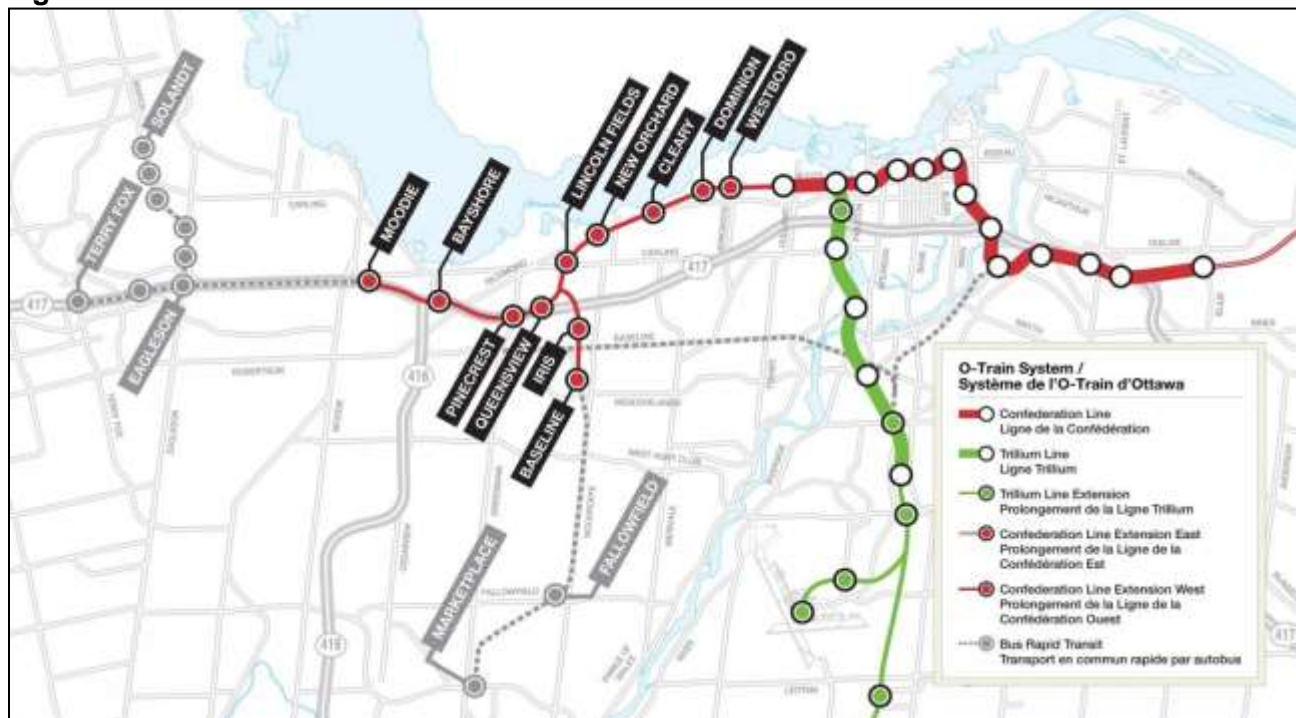
A total of two collisions were reported at the Booth Street/Fleet Street intersection over the past five years. One of the collisions was a turning movement impact between a northbound right turning vehicle and a cyclist. The other collision was an "other" impact between a vehicle reversing into a westbound vehicle. Both of the collisions occurred under dry surface conditions and caused property damage only.

2.2 Planned Conditions

2.2.1 Planned Transportation Projects

OC Transpo has recently converted the east-west transitway between Tunney’s Pasture and Blair stations to LRT, known as the Confederation Line. Construction of Phase 2 of the Ottawa LRT has begun, which will extend the LRT further east, west and south (See **Figure 3**).

Figure 3: LRT Phase 2



The City of Ottawa’s *Ottawa Cycling Plan (OCP)* Ultimate Cycling Network identifies the construction of bicycle lanes along Albert Street (Phase One – 2014 to 2019 implementation). With the opening of the Confederation LRT Line, The City of Ottawa is planning the removal of the bus lanes along Albert Street and repurposing this space to accommodate pedestrian and cycling modes as well as two through lanes in each direction, completing the plans of the OCP. The reconstruction of Albert Street will be completed through three separate projects, from Bayview Road to City Centre Avenue, from City Centre Avenue to Empress Avenue, and the Albert Street/Slater Street repurposing project east of Empress Avenue. Preliminary design drawings for the Albert Street Cycling and Pedestrian Facilities Project between City Centre Avenue and Empress Avenue were obtained from City staff and are included in **Appendix F**. City staff have identified that these plans are preliminary and subject to change. However, it is noteworthy that this project will convert the Booth Street/Albert Street intersection into a protected intersection with the following lane arrangement: two through lanes in the westbound and eastbound directions, one through lane in the northbound and southbound directions, a single auxiliary left-turn lane in all directions, and a southbound auxiliary right-turn lane. This project is currently scheduled for construction in 2024.

The City of Ottawa’s OCP also identifies either bicycle lanes or a multi-use pathway along Booth Street between Sir John A MacDonald Parkway and the Ottawa River Pathway (Phase 2 – 2020 to 2025 implementation). The Booth Street Cycling Facilities Project between the Ottawa River Pathway and Fleet Street is currently under construction. Design drawings for this project were

obtained from City staff and are included in **Appendix F**. This project will extend the existing bike lanes along Booth Street (currently terminating at Fleet Street) north to the Ottawa River Pathway to connect with the Zibi development. This project will convert the Booth Street/Sir John A MacDonald Parkway/Wellington Street intersection into a protected intersection.

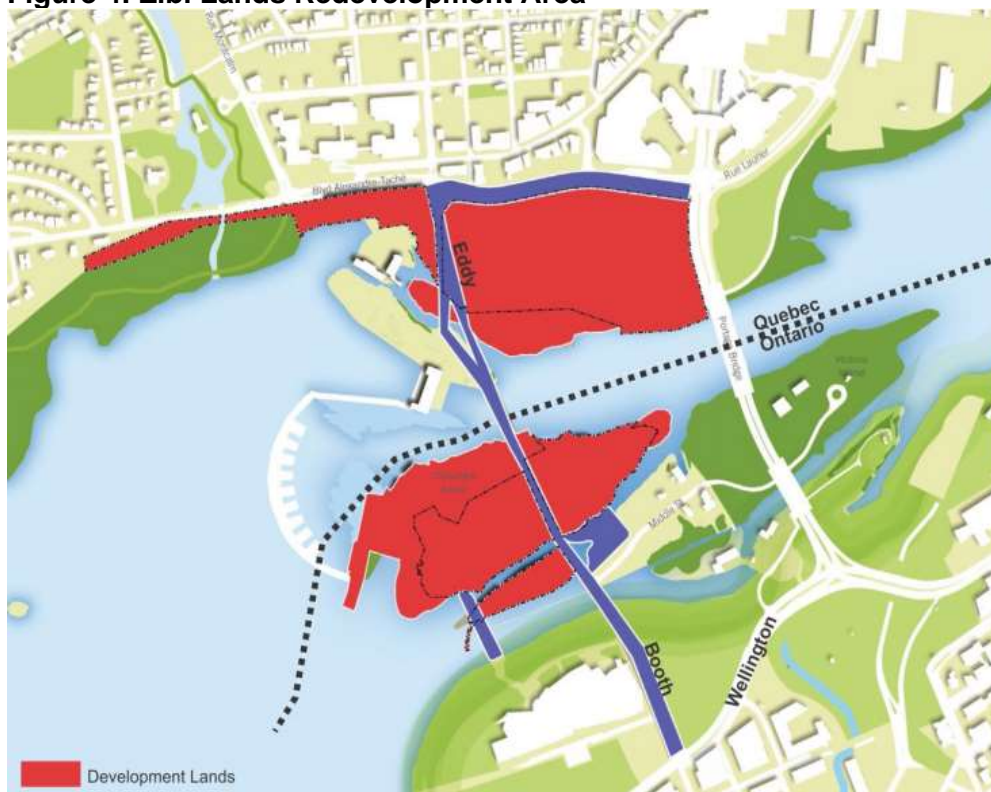
The City of Ottawa's *2013 Transportation Master Plan (TMP)* identifies the extension of Preston Street from Albert Street to Sir John A MacDonald Parkway at Vimy Place as a Phase 3 Project (2026-2031) in its list of 2031 Affordable Road Network Projects. It describes this project as a two-lane extension of Preston Street through LeBreton Flats including a structure crossing of the new Confederation Line LRT and existing aqueduct. However, based on recent discussions with City staff this project may be removed from the future TMP/OP updates.

2.2.2 Other Area Developments

A Transportation Study was prepared in April 2018 for the Ottawa Central Library development located at 557 Wellington Street, 584/587 Wellington Street and 550 Albert Street. For the purposes of this analysis, it has been assumed that this development will be fully built-out by 2023. Vehicular traffic generated by this site is based on the traffic projections in the April 2018 report. Relevant excerpts are included in **Appendix G**.

Windmill Development is proposing to redevelop the former Domtar lands (now called Zibi) shown in **Figure 4**.

Figure 4: Zibi Lands Redevelopment Area



The Zibi lands will contain approximately 1M square feet of mixed-use development on the Ontario side of the provincial border and 2M square feet of mixed-use development on the Quebec side. A Transportation Impact Study (TIS) was prepared by Parsons in September 2015 in support of Phase 1 of the Zibi development. The TIS included a review of the ultimate Zibi development to assess the

impacts at the site’s signalized intersection to Booth Street. Two Addenda (June and July 2019) addressed changes associated with Block 211 and changes to Phase 1 of Zibi. Based on the TIS and its Addenda, Phase 1 of the Zibi development will consist of 315 condominium units, 72,500ft² of office space, 28,300ft² of retail, a 9,153ft² restaurant, and a 7,000ft² community centre. Relevant excerpts from the TIS and Addenda are included in **Appendix G**.

Trinity Group are proposing a development at 900 Albert Street, consisting of 1,632 residential units, 10,905m² of retail space, and 16,818m² of office space. A TIS (Parsons 2016) was prepared in support of the development. Addendum #3 (Parsons March 2018) to the TIS considered the impact of the proposed revisions to the concept, including a reduction of the residential units, additional office space, and a hotel. Relevant excerpts from the March 2018 addendum and November 2016 TIS are included in **Appendix G**.

2.3 Study Area and Time Periods

The study area for this report includes the following intersections:

- Wellington Street/Sir John A MacDonald Parkway/Booth Street;
- Wellington Street/Lett Street;
- Wellington Street/Portage Bridge;
- Booth Street/Fleet Street;
- Booth Street/Albert Street.

The time periods for the analysis are the weekday AM and PM peak hours, as they represent the ‘worst case’ combination of site generated traffic and adjacent street traffic. Existing traffic conditions within the study area have been examined, along with background and total traffic conditions for the 2023 build-out and 2028 horizon year of Phase 1 of the subject lands.

2.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the *2017 TIA Guidelines*. The applicable exemptions for this site are shown in **Table 2**.

Table 2: TIA Exemptions

Module	Element	Exemption Criteria	Status
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	• Only required for site plans	Not Exempt
	4.1.3 New Street Networks	• Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	• Only required for site plans	Not Exempt
	4.2.2 Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	Exempt

Module	Element	Exemption Criteria	Status
Network Impact Component			
4.5 Transportation Demand Management	<i>All elements</i>	<ul style="list-style-type: none"> Not required for non-residential site plans expected to have fewer than 60 employees and/or students on location at any given time 	Not Exempt
4.6 Neighbourhood Traffic Management	<i>4.6.1 Adjacent Neighbourhoods</i>	<ul style="list-style-type: none"> Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds 	Not Exempt
4.8 Network Concept	<i>All elements</i>	<ul style="list-style-type: none"> Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by the established zoning 	Exempt

As the proposed parking is anticipated to meet the Zoning By-law requirements, Module 4.2.2 is exempt from the analysis. As the proposed development is consistent with the previously established zoning, Module 4.8 is exempt from the analysis.

Based on the foregoing, the following modules will be included in the TIA report:

Design Review Component

- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design

Network Impact Component

- Module 4.5: Transportation Demand Management
- Module 4.6: Neighbourhood Traffic Management
- Module 4.7: Transit
- Module 4.9: Intersection Design

3.0 FORECASTING

3.1 Development Generated Travel Demand

3.1.1 Trip Generation

Trips generated by the residential development have been estimated based on the High-rise Condominiums (Land Use 232) and High-rise Apartments (Land Use 222) in the 2009 TRANS Trip Generation Study. Trips generated by the residential portion have been converted to person trips using the auto volume modal shares presented in Table 3.13 of the TRANS Trip Generation Manual.

Trips generated by the commercial space and day care have been estimated based on the Shopping Center (Land Use 820) and Day Care Center (Land Use 565) in *Trip Generation Manual, 10th Edition* (Institute of Transportation Engineers, Washington, 2017). Trips generated by the commercial/day care development have been converted to person trips using a 1.28 factor, consistent with the City’s TIA Guidelines. Person trips generated by the site are summarized in the following table.

Table 3: Person Trip Generation

Land Use	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
High Rise Condominium (3+ Floors)	74	189	263	139	100	239
High Rise Apartments (10+ Floors)	48	152	200	138	84	222
Shopping Center	6	4	10	53	57	110
Day Care Center	39	34	73	35	39	74
TOTAL	167	379	546	365	280	645

The modal shares for the residential component of the development are based on the modal shares for TOD zones, as requested by the City. The modal shares for the retail/day care portion of the development are based on the TRANS O-D shares for trips within the Ottawa Inner Area. The projected person trips by modal share are summarized in the following table.

Table 4: Site Generated Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
<i>Residential Person Trips</i>		122	341	463	277	184	461
Auto Driver	15%	18	51	69	40	28	68
Auto Passenger	5%	6	17	23	14	9	23
Transit	65%	80	222	302	181	119	300
Bike/Walk	15%	18	51	69	42	28	70
<i>Retail / Day Care Person Trips</i>		45	38	83	88	96	184
Auto Driver	20%	9	8	17	18	19	37
Auto Passenger	10%	5	3	8	8	10	18
Transit	10%	5	3	8	8	10	18
Bike/Walk	60%	26	24	50	54	57	111
Auto Driver (Total)		27	59	86	58	47	105
Auto Passenger (Total)		11	20	31	22	19	41
Transit (Total)		85	225	310	189	129	318
Bike/Walk (Total)		44	75	119	96	85	181

The shopping center land use is expected to generate two types of external peak hour trips: primary and pass-by trips. Primary trips are made for the specific purpose of visiting the site and pass-by trips are made as intermediate stops on the way to another destination. *Trip Generation Handbook, 3rd Edition* (Institute of Transportation Engineers, Washington, 2017) identifies 34% as the average pass-by rate for the Shopping Center land use and the peak hour pass-by trips have been estimated based on a pass-by rate of 34%. The pass-by trips generated by the commercial development are part of the observed background traffic and do not constitute ‘new’ trips on the adjacent road network. The primary and pass-by trip generation for the commercial land use is summarized in the following table.

Table 5: Pass-by Retail Trips

Trip Type	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
<i>Shopping Center Vehicle Trips</i>	1	1	2	11	11	22
Pass-by	0	0	0	4	4	8
Primary	1	1	2	7	7	14

3.1.2 Trip Distribution

The distribution of vehicular trips generated by the proposed development has been projected with appropriate consideration given to several key factors, including:

- The size and nature of the proposed development;
- Existing traffic patterns;
- The location of the site accesses with respect to the adjacent roadway system; and,
- The principles of logical trip routing.

Trips generated by the proposed development will be assigned differently based on arrival and departure due to the traffic restrictions at the Wellington Street/Sir John A MacDonald Parkway/Booth Street intersection. Trips generated by the proposed development have been distributed and assigned to the adjacent road network as follows:

Arrival

- 60% to/from the east via Wellington Street;
- 25% to/from the south via Booth Street;
- 10% to/from the west via Wellington Street/Sir John A MacDonald Parkway; and,
- 5% to/from the north via the Portage Bridge.

Departure

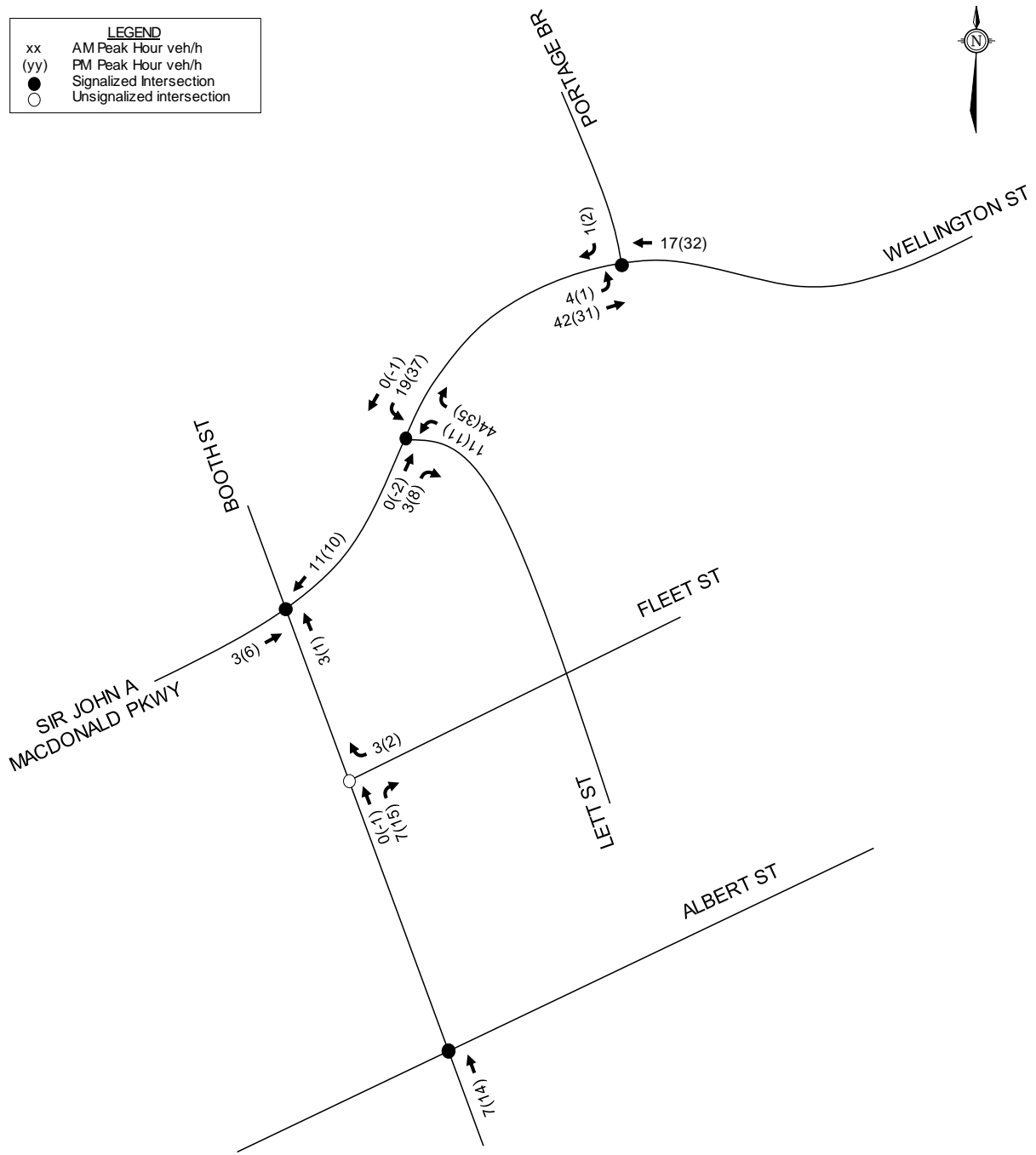
- 70% to/from the east via Wellington Street;
- 20% to/from the west via Wellington Street/Sir John A MacDonald Parkway;
- 5% to/from the north via Booth Street/Chaudiere Bridge; and,
- 5% to/from the north via the Portage Bridge.

Pass-by trips generated by the proposed development have been distributed based on existing traffic conditions.

Traffic generated by the proposed development during the AM and PM peak hours are summarized in **Figure 5**.

Figure 5: Site Generated Traffic

LEGEND	
xx	AM Peak Hour veh/h
(yy)	PM Peak Hour veh/h
●	Signalized Intersection
○	Unsignalized Intersection



3.2 Background Traffic

3.2.1 General Background Traffic Growth

The City of Ottawa's TMP identifies that the overall transit modal share (TMS) in the Ottawa Inner Area is anticipated to increase by 2% prior to the 2031 horizon year. The implementation of the Confederation Line in 2019 is anticipated to help achieve this increased TMS sooner than 2031. The projected traffic volumes at the study area intersections have been reduced to reflect the future TMS in the area.

Background traffic projections are based on 2011 and 2031 snapshots from the City of Ottawa's Strategic Long-Range Model and traffic generated by other planned developments in the area. The City's long-range model suggests a growth rate of approximately 0.5% per year along Wellington Street and Booth Street (north of Wellington Street). The long-range model suggests a -0.5% growth rate along Booth Street (south of Wellington Street). In order to provide a conservative and robust analysis, a 0.5% annual growth rate has been applied to the traffic volumes along Wellington Street, Booth Street and Albert Street.

With the Confederation Line LRT now operational, which was not accounted for in the 2017 traffic count, it has been assumed that 80% of bus traffic along Albert Street has been removed.

3.2.2 Other Area Development Traffic

Other developments in the vicinity of the subject site are summarized in **Section 2.2.2**. Traffic generated by the following other developments have been accounted for in the background traffic:

- Ottawa Central Library development;
- Zibi development – Phase 1 and Block 211; and,
- 900 Albert Street.

Background traffic volumes at the study area intersections for the 2023 (build-out) and 2028 (horizon) years that include other area development trips are shown in **Figures 6** and **7**, respectively. Total traffic volumes that include site generated trips for the 2023 build-out year and 2028 horizon year are shown in **Figures 8** and **9**, respectively.

Figure 6: 2023 Background Traffic Volumes

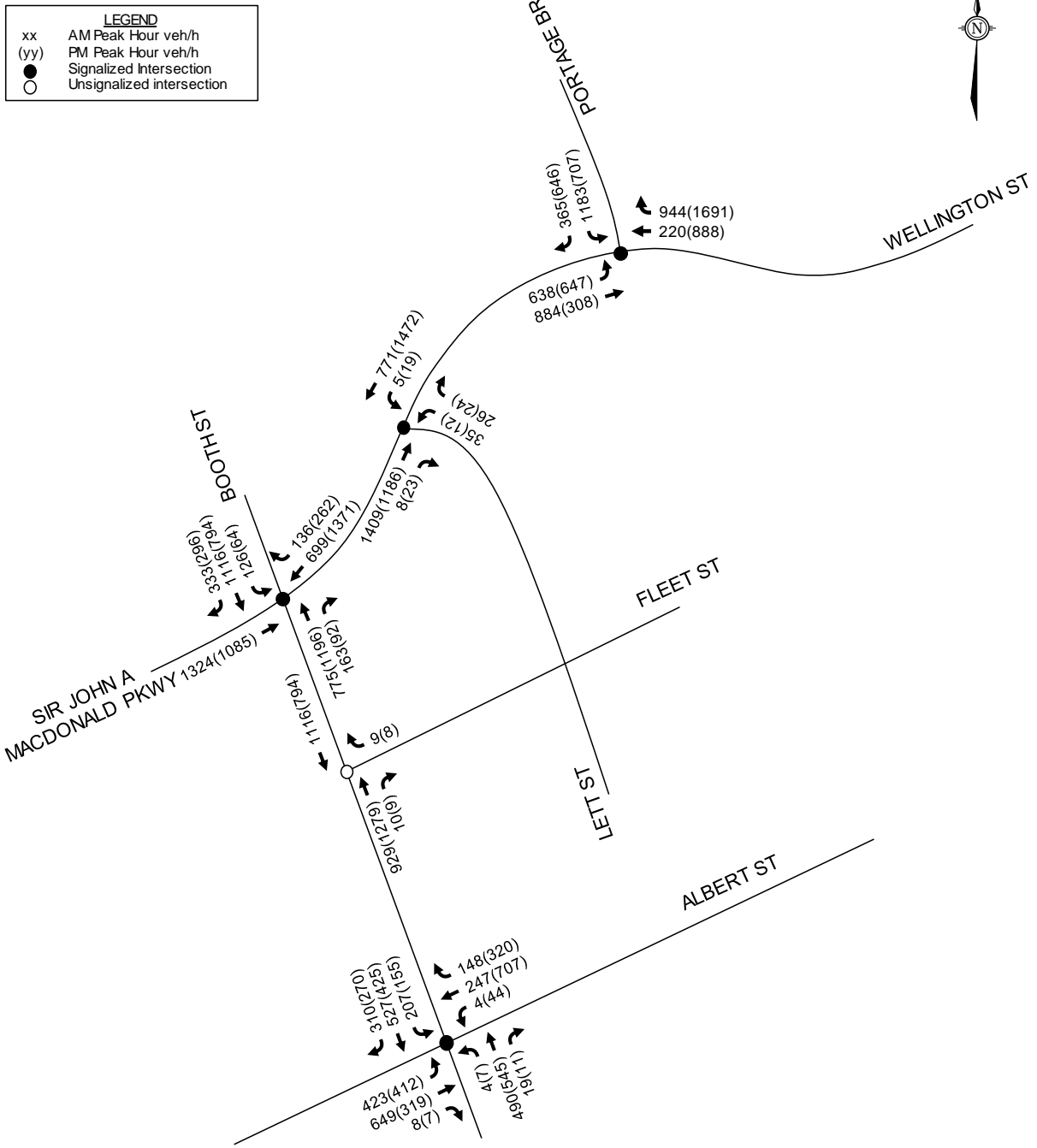


Figure 7: 2028 Background Traffic Volumes

LEGEND	
xx	AM Peak Hour veh/h
(yy)	PM Peak Hour veh/h
●	Signalized Intersection
○	Unsignalized Intersection

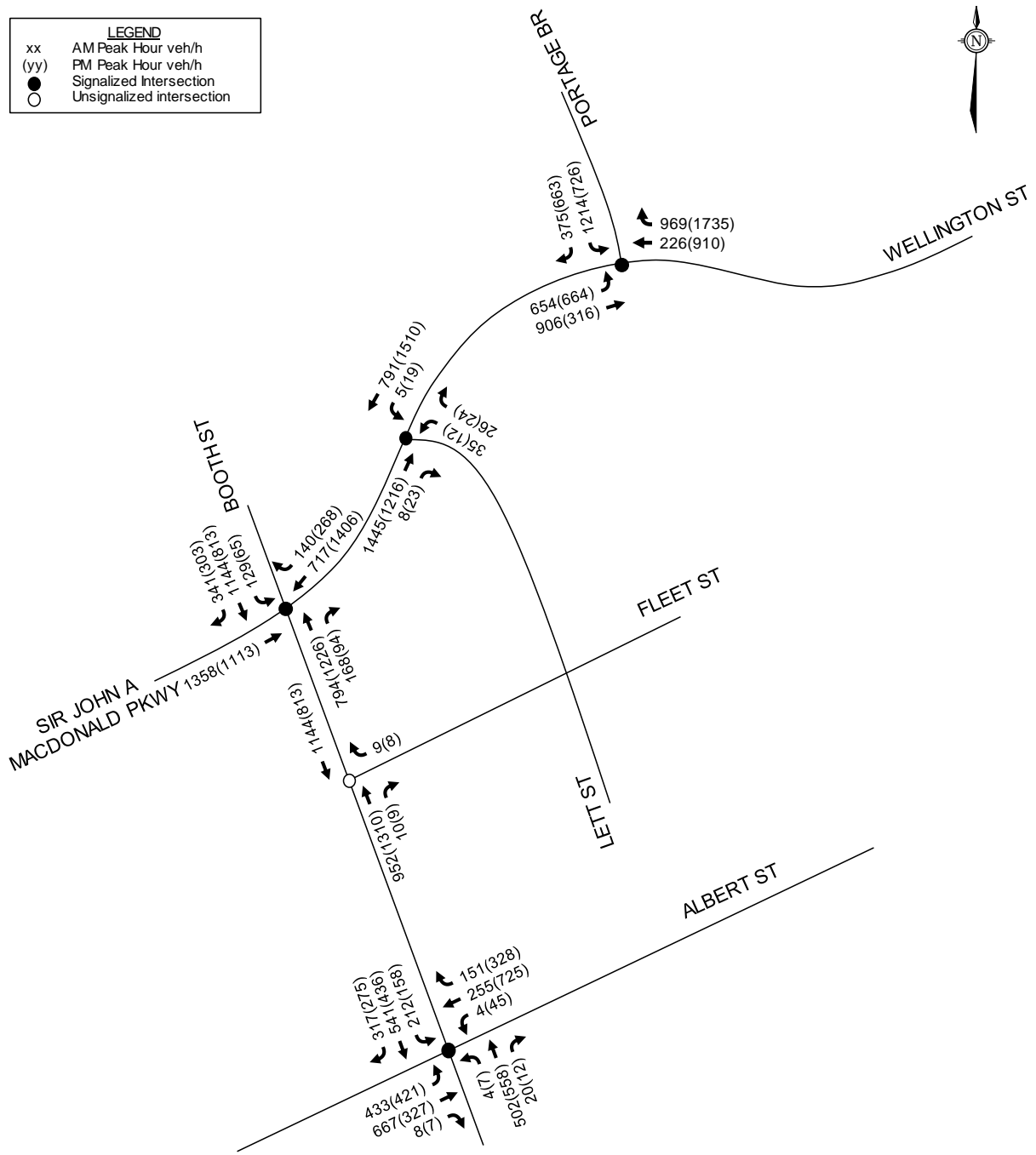


Figure 8: 2023 Total Traffic Volumes

LEGEND	
xx	AM Peak Hour veh/h
(yy)	PM Peak Hour veh/h
●	Signalized Intersection
○	Unsignalized Intersection

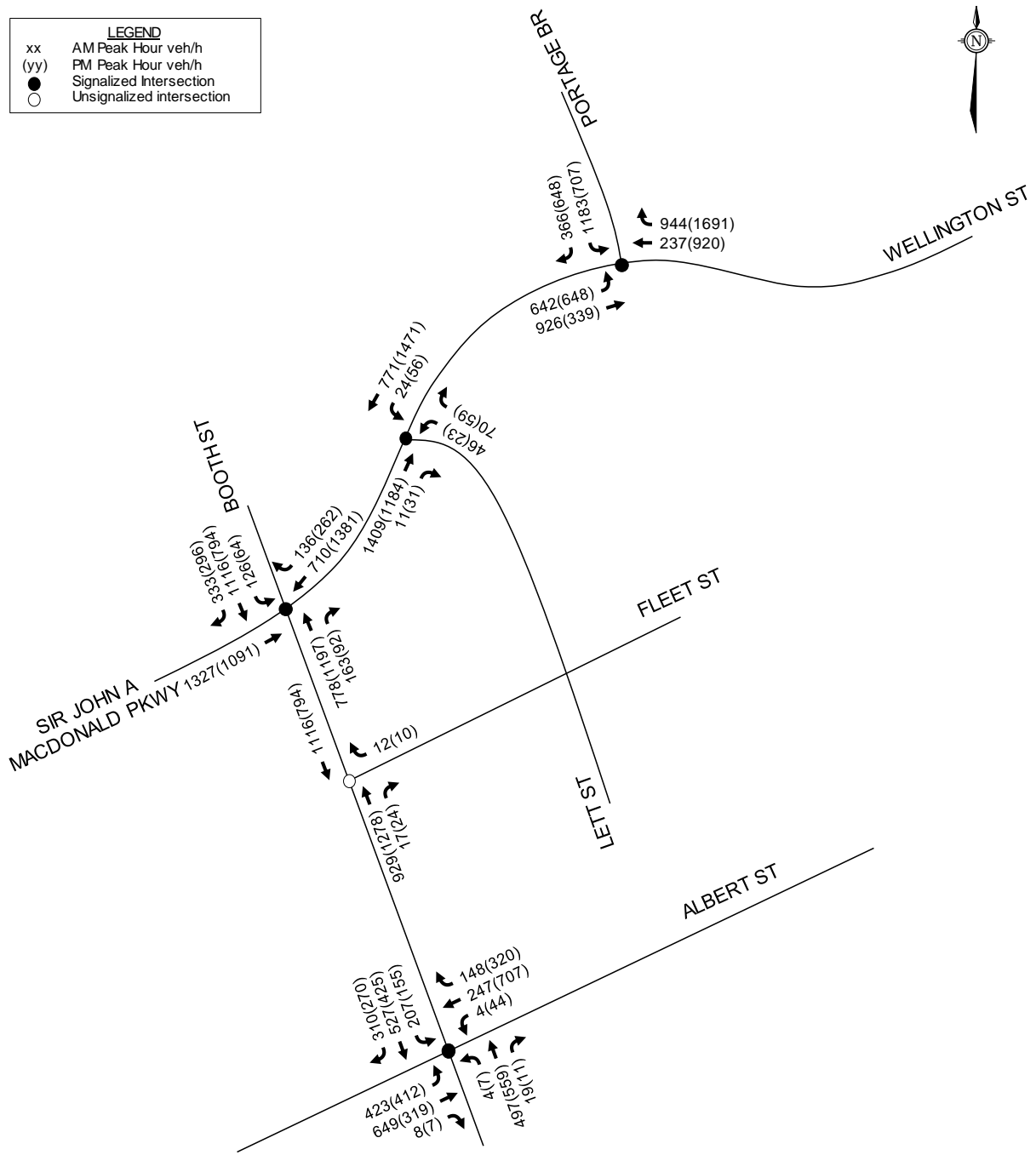
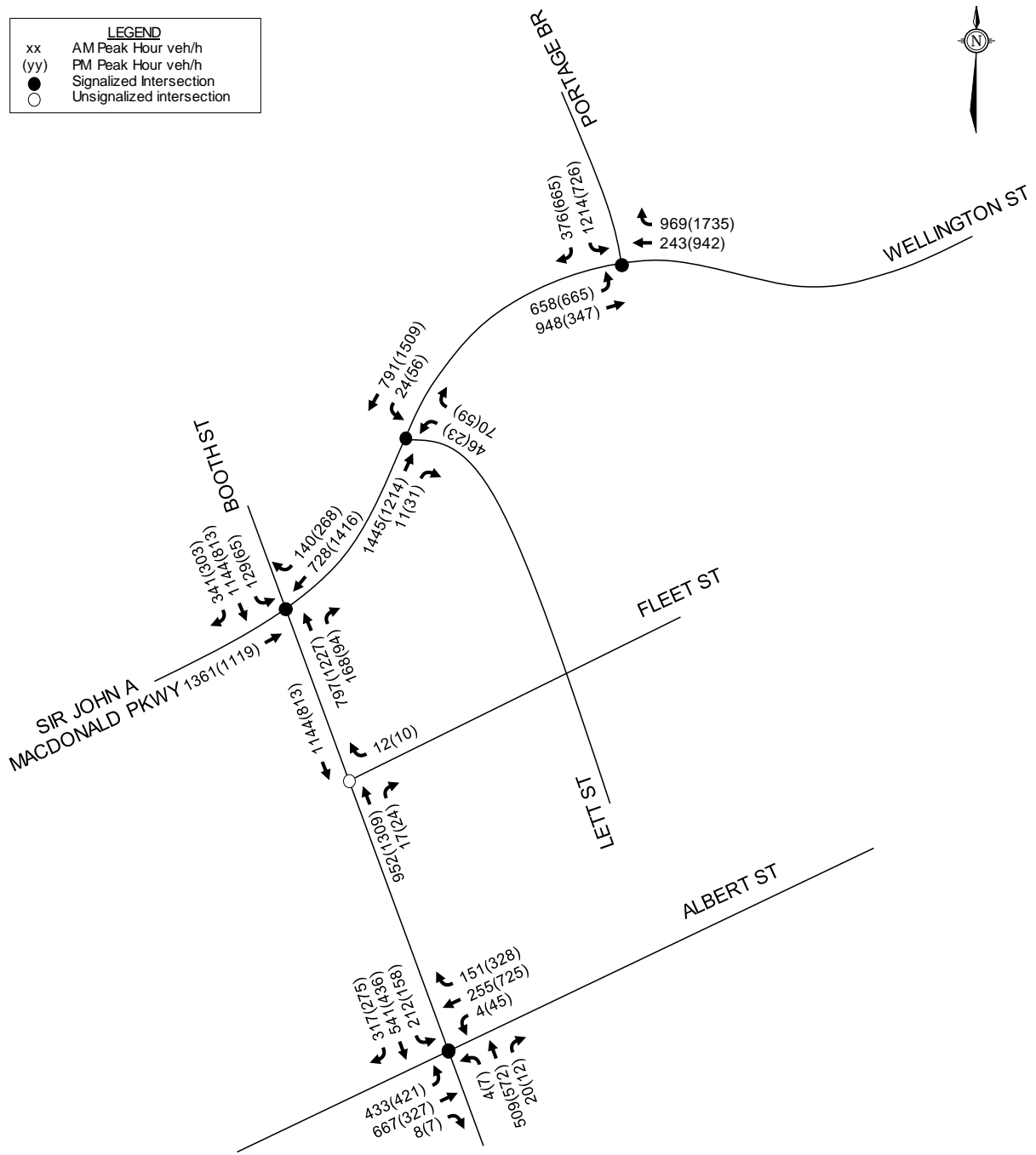


Figure 9: 2028 Total Traffic Volumes

LEGEND	
xx	AM Peak Hour veh/h
(yy)	PM Peak Hour veh/h
●	Signalized Intersection
○	Unsignalized Intersection



4.0 ANALYSIS

4.1 Development Design

The overall East LeBreton Flats lands will be accessed through the Booth Street/Fleet Street and Wellington Street/Lett Street intersections. This is consistent with the Block Subdivision Plan, which can be found in **Appendix A**. Parking for the development will be underground with access to Lloyd Street. The recently completed Confederation Line construction has developed a median along Booth Street, restricting the Fleet Street intersection to right-in right-out. The Wellington Street/Lett Street intersection will remain signalized.

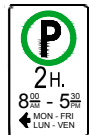
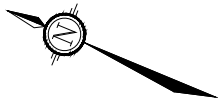
Pedestrian facilities will be provided between the main building entrances and the sidewalks along the adjacent roadways. It is noted that there is currently no pedestrian connectivity at the Fleet Street/Lett Street intersection. As part of the development, a north-south crosswalk is proposed on the west leg of the intersection, providing pedestrian connectivity between the subject development and the park. A new east-west pedestrian crossover (PXO) is also proposed on the north leg of the intersection. The proposed PXO will provide pedestrian connectivity between the subject development and the existing sidewalk on the east side of Lett Street, as well as between the existing residential developments on the east side of Lett Street and the park. Based on the projected traffic volumes along Street 1 (i.e. less than 4,500 vehicles over eight hours), a posted speed limit of less than 50km/hr, and a pedestrian crossing distance of 7m, Ontario Traffic Manual (OTM) Book 15 recommends a PXO D in this location. A functional design of the proposed modifications to the Fleet Street/Lett Street intersection is provided in **Figure 10**.

Bicycle parking will be provided in accordance with the City's Zoning By-Law. Cyclists can use the underground parking ramp or service entrances off the mid-block passage to connect to the shared traffic lanes along the adjacent roadways.

A loading area will be provided adjacent to the proposed underground parking ramp. This loading area will generally be used by moving trucks for resident move-in or move-out. A fence or wall will be provided between the loading area and the underground parking ramp to provide safety for residents using the loading area. Turning movements of a Medium Single Unit (MSU) delivery truck are included in **Figure 11** and **12**.

Phase 1 of the proposed development is within a walking distance of approximately 400m of the Pimisi LRT station. This LRT station provides comprehensive transit coverage across the City of Ottawa.

A review of the City's Transportation Demand Management (TDM) – Supportive Development Design and Infrastructure Checklist has been conducted. A copy of the TDM checklist is included in **Appendix H**. All required TDM-supportive design and infrastructure measures in the TDM checklist are met.



Rb-53L PARKING PERMITTED
Rb-55R NO STOPPING



Rb-55L
NO STOPPING

50.00m

LETT STREET

50.00m



Rb-55L
NO STOPPING



Wc-27R
PEDESTRIAN
CROSSING AHEAD



STOP FOR
PEDESTRIANS
PRIORITE AUX
PIETONS



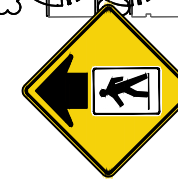
STOP FOR
PEDESTRIANS
PRIORITE AUX
PIETONS

Ra-5L Ra-5R (OTM) c/w Ra-4T
PEDESTRIAN CROSSING
BACK TO BACK SIGNS



Rb-1 STOP

FLEET STREET



Wc-27R
PEDESTRIAN
CROSSING AHEAD

NOVATECH

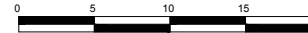
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301 LETT STREET

FLEET STREET AND LETT STREET MODIFICATIONS

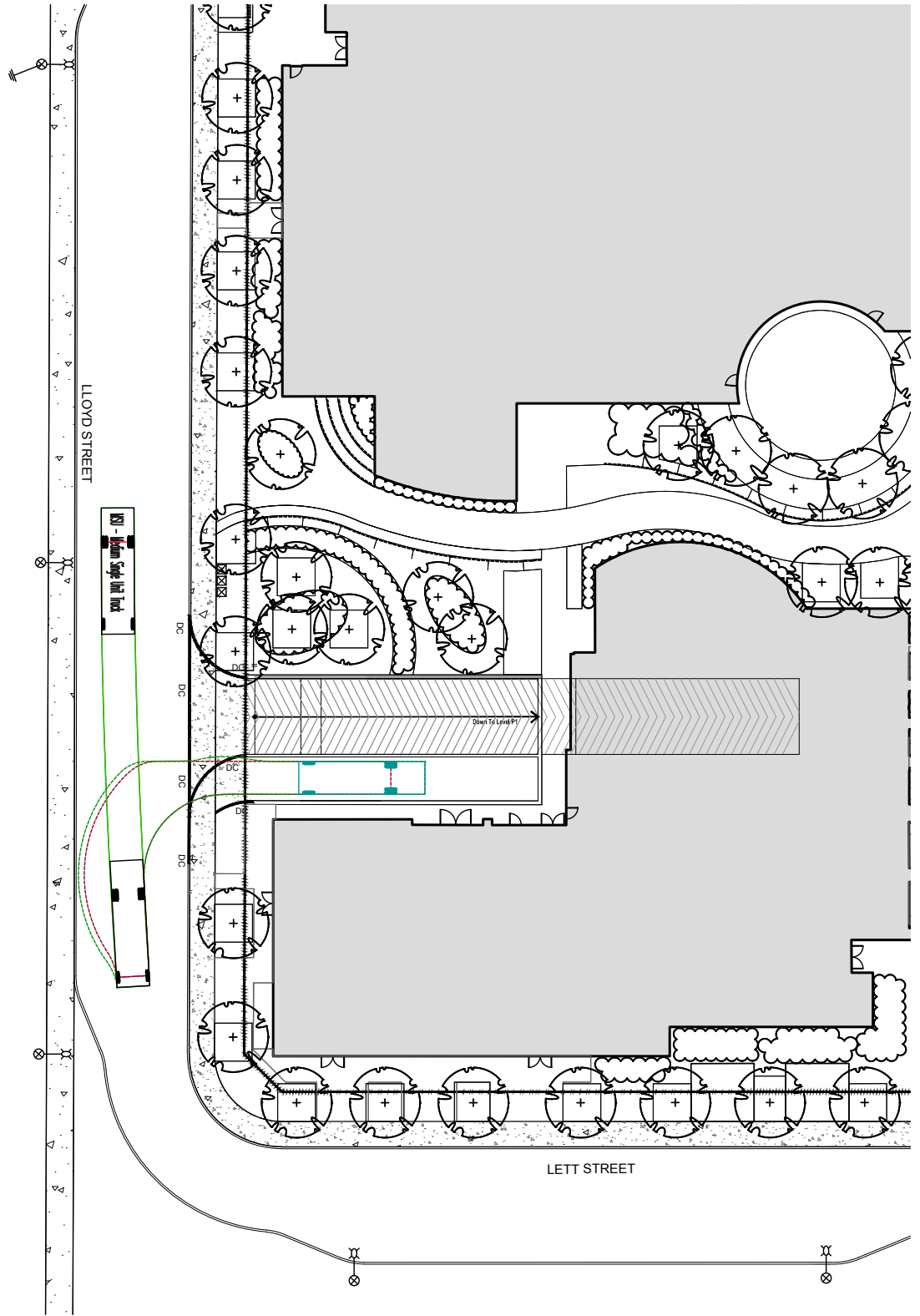
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DATE SEP 2021

JOB 116042

FIGURE FIGURE 10

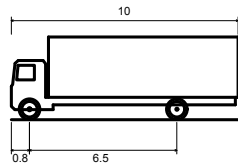


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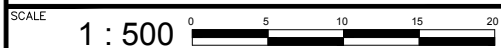


MSU - Medium Single Unit Truck

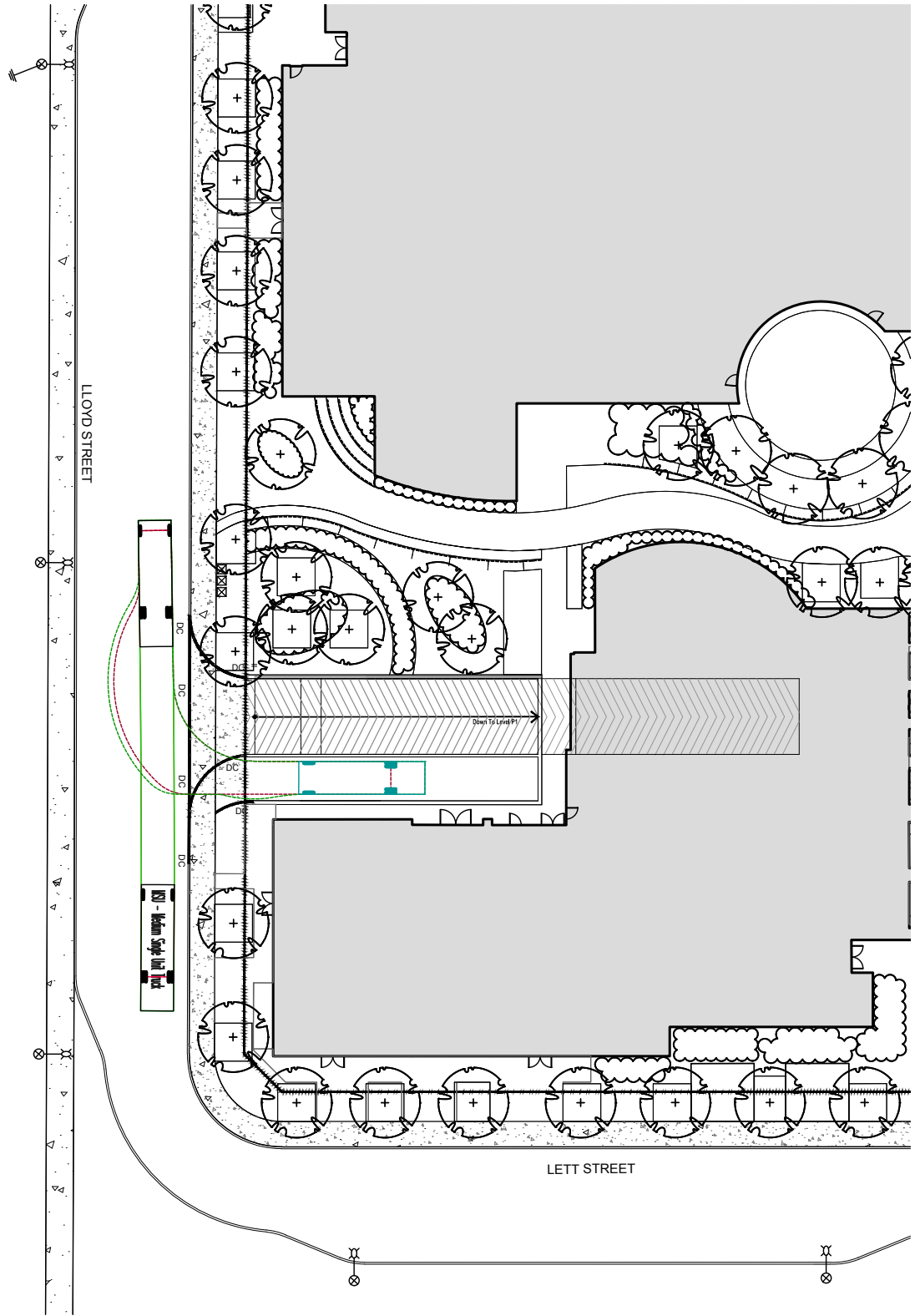
Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

301 LETT STREET

TURNING MOVEMENTS
(MSU)



DATE	JOB	FIGURE
AUG 2021	116042	FIGURE 11

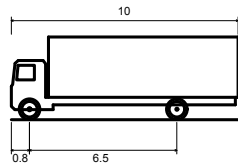


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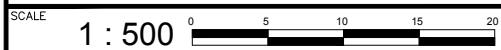


MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

301 LETT STREET

TURNING MOVEMENTS
(MSU)



DATE	AUG 2021	JOB	116042	FIGURE	FIGURE 12
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4.2 Parking

The proposed development is located within Area A of Schedule 1 and Area Z of Schedule 1A to the City’s Zoning By-law (ZBL). Minimum parking rates for vehicles and bicycles are summarized in the following table.

Table 6: Minimum Parking Requirements

Land Use	Rate	Units/GFA	Required
<i>Vehicle Parking (Minimum)</i>			
Residential	Resident: No parking requirement	592	0
	Visitor: 0.1 spaces per dwelling unit after the first 12 units; no more than 30 per building		56
Commercial	No parking requirement	764m ²	0
Day-Care	No parking requirement	482m ²	0
Minimum Vehicle Parking Requirement			56
<i>Vehicle Parking (Maximum)</i>			
Residential	1.5 spaces per unit	592	888
Commercial	1.0 spaces per 100m ² of GFA	764m ²	8
Day-Care	No Parking Requirement	482m ²	0
Maximum Vehicle Parking Requirement			896
<i>Bicycle Parking</i>			
Residential	0.5 spaces per dwelling unit	592	296
Commercial	1 per 250m ² of GFA	764m ²	3
Day-Care	1 per 250m ² of GFA	482m ²	2
Minimum Bicycle Parking Requirement			301

A total of 326 vehicle parking spaces (270 resident, 56 visitor) and 639 bicycle parking spaces (589 underground, 50 surface) are proposed for the development, exceeding the minimum requirements of the Zoning By-law. No parking is proposed for the commercial and day care uses as none are required. The proposed 326 vehicle parking spaces do not exceed the maximum requirement of the Zoning By-law.

4.3 Boundary Streets

This section provides a review of the boundary streets using complete streets principles. The Multi-Modal Level of Service (MMLOS) guidelines produced by IBI Group in 2015 were used to evaluate the LOS of the boundary roadways for each mode of transportation. Schedule B of the City of

Ottawa’s Official Plan indicates that all boundary streets are in the Central Policy Area. All boundary streets are also located within 600m of the Pimisi LRT station.

The existing and target PLOS, BLOS, and Auto LOS for the boundary street segments are summarized in the following table. As none of the boundary streets serve transit and none are classified as truck routes, the TLOS and TkLOS has not been reviewed. Detailed segment MMLOS analysis is included in **Appendix I**.

Table 7: Segment MMLOS Summary

Segment	PLOS	BLOS	TLOS	TkLOS	Auto LOS
Lett Street (North-South)	F	B	-	-	A
Target	A	D	-	-	E
Lett Street (East-West)	F	B	-	-	A
Target	A	D	-	-	E
Lloyd Street	F	B	-	-	A
Target	A	D	-	-	E
Fleet Street	F	B	-	-	A
Target	A	D	-	-	E

With no sidewalk currently provided on the west side of Lett Street (North-South), the south side of Fleet Street, and both sides of Lloyd Street and Lett Street (East-West) the PLOS for these roadways is deemed ‘F’. The approved design for the Lett Street and Lloyd Street are provided in **Appendix J**, and will include the following new pedestrian facilities:

- 2.0m concrete sidewalk adjacent to the curb along west and north side of Lett Street,
- 2.0m concrete sidewalk adjacent to the curb along both sides of Lloyd Street, and
- 4.6m concrete sidewalk adjacent to the curb on the south side of Fleet Street.

It is noted that as part of this application, the Fleet Street frontage will reduce the previously approved sidewalk to 2.0m to provide additional landscaping behind the sidewalk. The aforementioned pedestrian facilities will achieve the target PLOS ‘A’ along Lett Street (North-South), Fleet Street, and Lloyd Street. Consideration could be given to providing a sidewalk on the south side of Lett Street (east-west) as part of the future park to the south. A sidewalk on the south side of Lett Street (East-West) will achieve the target PLOS ‘A’.

With mixed traffic and two lanes along each roadway, each roadway achieves a BLOS ‘B’, surpassing the target ‘D’.

Each boundary roadway is expected to operate with traffic volumes well below the 400 vehicle per hour per lane capacity identified for local streets in the City’s guidelines for the TRANS Long-Range Transportation Model and the AutoLOS for each boundary roadway is expected to be ‘A’.

4.4 Access Intersections Design

The proposed underground parking garage will be accessed along Lloyd Street. The proposed underground parking ramp will be 6.0m in width, and will be located 26m from the Lett Street right-of-way (ROW) limit and 60m from the Fleet Street ROW limit. A 3.7m wide loading area will be provided immediately adjacent to the underground parking ramp. A depressed curb will be provided to delineate the underground parking ramp from the loading area. The underground parking ramp will have a 6% grade for a distance of 6m within the property, where it transitions to a 16% grade for 14m, before transitioning back to a 7.5% grade at the base of the ramp.

Section 107 of the City's ZBL identifies a minimum width of 6.0m for a double traffic lane leading to a parking garage. Section 25(c) of the City's Private Approach By-law (PABL) identifies a maximum width of 9m for a two-way driveway. The width of the underground parking ramp adheres to the requirements of the ZBL. The overall width of the combined underground parking ramp and loading area is 9.7m, exceeding the requirements of the City's PABL. As the loading area will only be used for infrequent move-in move-out and garbage operations, and a depressed curb return will be provided to delineate the underground parking ramp from the loading area, a waiver to the Section 25 (c) of the City's PABL is requested.

Section 25(o) of the City's PABL identifies a minimum distance of 6m between a driveway and the nearest intersecting streetline. The location of the proposed underground parking ramp adheres to the requirements of the City's PABL.

Section 25 (u) of the City's PABL requires a maximum ramp grade of 2% for a distance of 9m within the property, for an underground parking garage containing more than 50 parking spaces. A distance of 2.4m with a grade of 2% sloping towards the roadway will be provided between the back of sidewalk and the property line. The proposed underground parking ramp accommodates a maximum 6% grade for a distance of 6m within the property, where it transitions to a 16% grade. A grade of 2% for a distance of 9m within the property is unachievable due to the lay-out of the underground parking garage, a maximum recommended transition grade differential of 10%, and headroom requirements at the base of the ramp. As such a waiver to the City's PABL is required for the grade of the underground parking ramp.

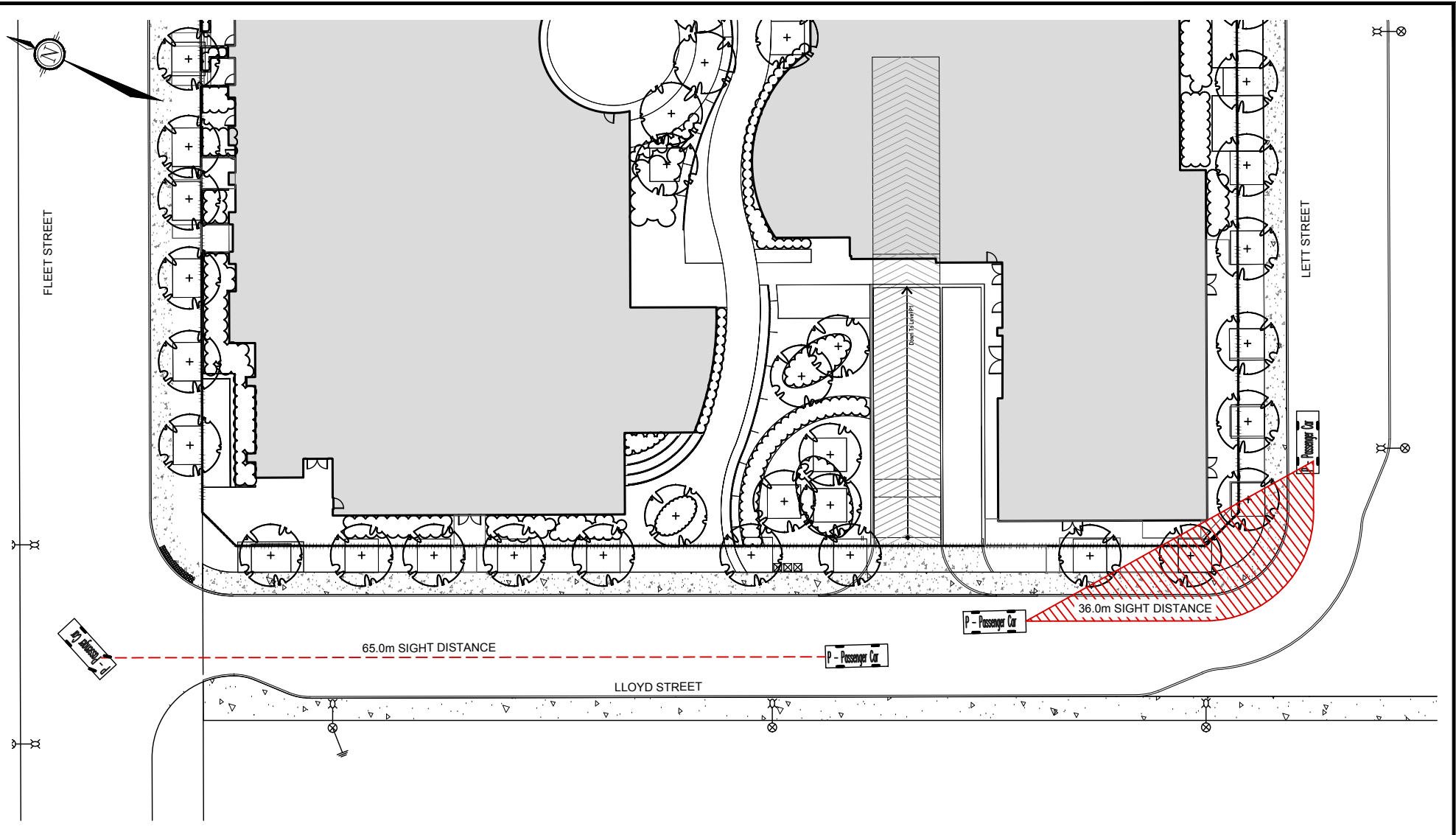
The Transportation Association of Canada (TAC) Geometric Design Guidelines Section 8.9.11 identifies a maximum recommended downgrade of 7% for low volume driveways on local roadways. A maximum grade of 6% for a distance of 8.4m from the back of sidewalk is consistent with the TAC recommendations and is anticipated to provide appropriate sight lines for vehicles exiting the ramp to the sidewalk and roadway. A waiver to the City's PABL is recommended.

The TAC Geometric Design Guidelines identify the following Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) requirements based on a design speed of 50km/hr:

- SSD = 65m
- ISD to turn left = 105m
- ISD to turn right = 95m

The available SSD at the access is shown in **Figure 13**. The required SSD for a southbound vehicle is achieved. Approximately 35m of SSD, equating to a design speed of 30 km/hr is available for a northbound passenger vehicle. As vehicles approaching the access from the south are anticipated to be travelling slower to navigate the 90-degree curve, and Lett Street and Lloyd Street are local roadways that carry low traffic volumes, the available SSD is considered acceptable.

The available ISD to turn left and right is shown in **Figure 14**. Approximately 40-45m of ISD, equating to a design speed of 20km/hr is available for a passenger vehicle to turn right from the access. As vehicles approaching the access from the south are anticipated to be travelling slower to navigate the 90-degree curve, and Lett Street and Lloyd Street are local roadways that carry low traffic volumes, the available ISD is considered acceptable. The ISD to turn left from the access is limited by the Fleet Street/Lloyd Street intersection. Approximately 85m of ISD, equating to a design speed of 40-50km/hr is available for a passenger vehicle to turn left from the access. As Lloyd Street is a local roadway and will carry low traffic volumes, the available ISD is considered acceptable.



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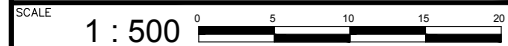


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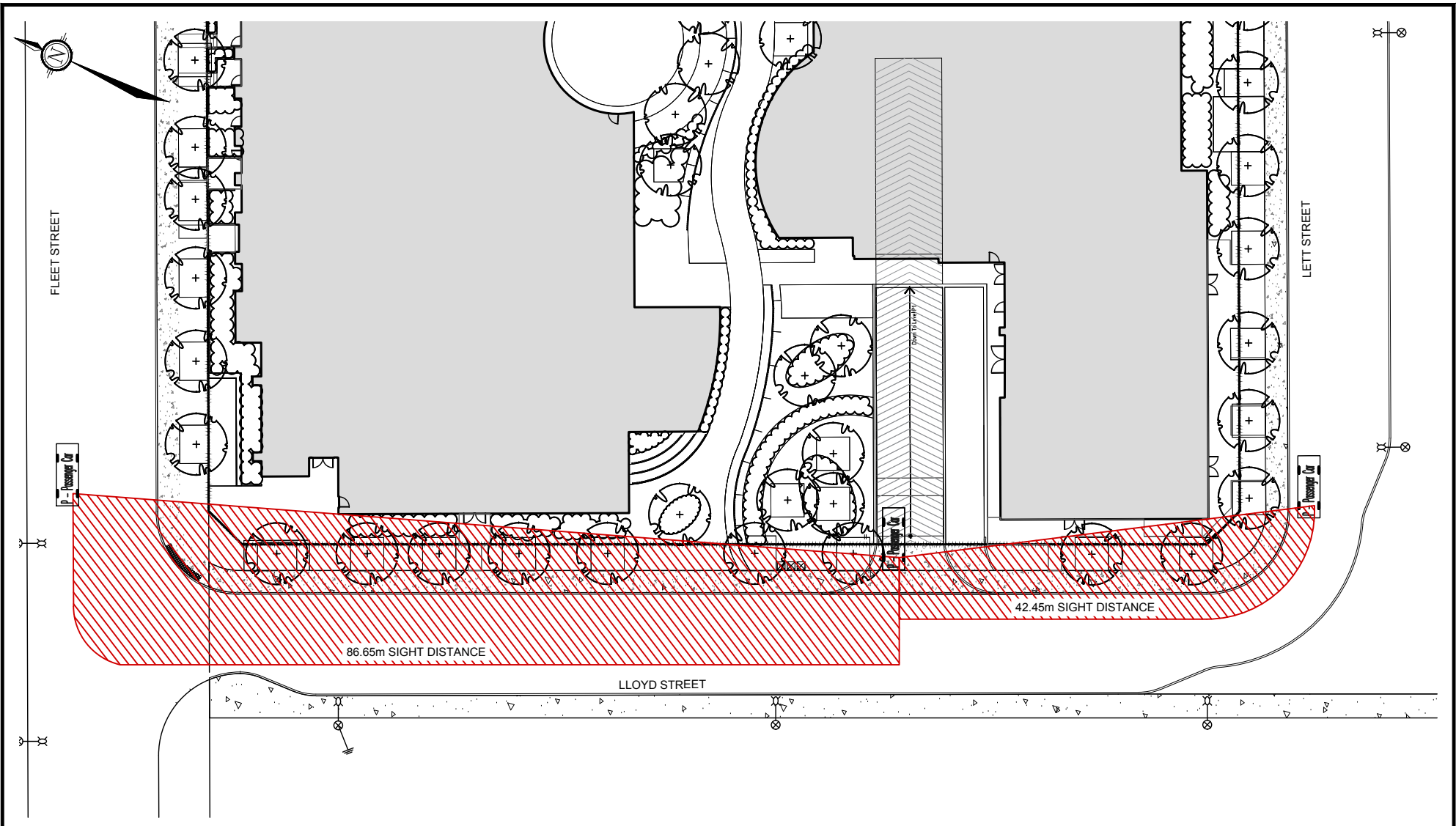
Telephone (613) 254-9643
 Facsimile (613) 254-5867
 Website www.novatech-eng.com

301 LETT STREET

STOPPING
 SIGHT DISTANCE



DATE AUG 2021	JOB 116042	FIGURE FIGURE 13
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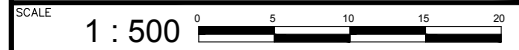


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301 LETT STREET

INTERSECTION
 SIGHT DISTANCE



DATE AUG 2021	JOB 116042	FIGURE FIGURE 14
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It is noted that trees are proposed within the right-of-way along Lloyd Street. Based on the landscape plan, the trees immediately north and south of the access will be red maple and sugar maple trees with a 50mm diameter. These trees will have a high canopy and will not represent an obstruction to sightlines.

4.5 Transportation Demand Management

4.5.1 Context for TDM

The proposed development consists of 273 condominium units, 319 rental units, a 5,190ft² day care, and 8,220ft² of commercial. The tenants of the commercial and day care uses are not known at this time. The residential unit breakdown is summarized in the following table.

Table 8: Residential Unit Breakdown

Unit Type	Number of Units	
	Condominium	Rental Apartments
Loft	5	4
Studio	31	47
One Bedroom	157	178
Two Bedroom	77	73
Three Bedroom	3	17

4.5.2 Need and Opportunity

The proposed development is located within TOD Zone as it is within a 600m walking distance of the Pimisi LRT station. As described in Section 4.1, the target 15% auto driver, 5% auto passenger, 65% transit, 15% bike/walk modal shares for the proposed residential development are consistent with TOD zones. The modal shares assumed for the commercial and day care development are consistent with modal shares within the Ottawa Inner Area.

Using the 2011 TRANS O-D Survey Report, the typical residential commuter pattern in the Ottawa Inner Area is represented by all observed trips from/within the district during the AM peak hour and all observed trips to/within the district in the PM peak hour. Based TRANS O-D Survey Report data, typical residential modal shares in the Ottawa Inner Area equate to approximately 35% auto driver, 10% passenger, 20% transit, 35% non-auto.

The TOD modal shares represent an increased transit modal share and a reduced auto modal share compared to the Ottawa Inner Area. Should the development only meet the Ottawa Inner Area modal shares, the development is anticipated to generate an additional 90-95 vehicle trips two-way during the peak hours. A sensitivity analysis has been provided in Section 5.8.6 to demonstrate the impact of the development should the target mode shares not be achieved. However, as the development is in close proximity to the Pimisi LRT station, a reduced auto modal share is anticipated to be achieved.

4.5.3 TDM Program

The proposed development conforms to the City’s TDM initiatives by providing easy access to the local pedestrian, bicycle and transit systems as outlined in **Section 4.1**. A review of the TDM – Measures checklist was conducted and can be found in **Appendix H**. To encourage travel by sustainable modes, the proponent agrees to implement the following TDM measures within the building:

- Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress,
- Display local area maps with walking/cycling access routes and key destinations at major entrances,
- Display relevant transit schedules and route maps at entrances,
- Contract with provider to install on-site carshare vehicles and promote their use by residents,
- Unbundle parking cost from purchase price (condominium) or monthly rent (apartment),
- Provide a multi-modal travel option information package to new residents, and
- Offer personalized trip planning to new residents.

As a condition of Site Plan approval, the proponent has agreed to provide security to the City of Ottawa for costs to produce Miovision traffic count data for underground parking access. Following 80% occupancy, a traffic count will be conducted by the City of Ottawa at the access to the underground parking ramp over a single day (on a Tuesday, Wednesday, or Thursday) for a three-hour period in the morning (7:00-10:00AM) and a three-hour period in the afternoon (3:00-6:00PM). The traffic count data will be used to determine if the target auto modal shares are achieved. The security identified above would cover the City's costs of collecting and reviewing data for the monitoring period. If the City's monitoring data conclusively shows that the target auto modal shares are not achieved to a reasonable extent, further TDM measures that could be considered would include:

- Offer periodic on-site cycling courses for residents
- Coordinate with OC Transpo to provide a transit real-time arrival information display at the main entrance
- Coordinate with bike-share provider to install on-site bikeshare station

The additional TDM measures would be at the cost of the City, and not at the developers expense.

4.6 Neighbourhood Traffic Management

The overall East LeBreton Flats lands are to be accessed through the Booth Street/Fleet Street and Wellington Street/Lett Street intersections. This is consistent with the Block Subdivision Plan, which can be found in **Appendix A**. As the only accesses to the subject lands are provided on Booth Street and Wellington Street, which are classified as arterial roadways in the City's 2013 TMP, the proposed development is not anticipated to have any measurable impact on the residential communities in the site's vicinity.

Concerns have been raised regarding cut-through traffic along Fleet Street and Lett Street during peak hours when queueing occurs on the northbound approach to the Booth Street/Wellington Street/Sir John A MacDonald Parkway intersection. The travelled distance for vehicles entering Fleet Street to Lett Street and turning right onto Wellington Street is approximately 270m. The travelled distance for a vehicle continuing north, turning right on Wellington Street and travelling eastbound to Lett Street is approximately 200m. It is acknowledged that although this is a longer route, some motorists may choose to travel through Fleet Street/Lett Street to Wellington Street. As development progresses within the east LeBreton Flats lands, higher friction is anticipated along these roads due to the increased vehicular, pedestrian and cyclist activity within the east LeBreton Flats lands. The increased friction is anticipated to make this route less enticing for motorists to 'short-cut' through the development. If a high volume of vehicles continues to short-cut and warrant an area traffic management study, hard traffic measures could be considered by the City to limit short-cutting.

Traffic volumes along Lett Street and Lloyd Street, south of Fleet Street are not anticipated to exceed ATM thresholds for local roadways. However, it is noted that the previously approved design for these roadways include roadway narrowings at the Fleet Street intersections.

4.7 Transit

Based on the modal shares presented in **Table 4**, the proposed development is anticipated to generate 310 transit trips (85 in, 225 out) during the weekday AM peak hour and 319 transit trips (191 in, 129 out) during the weekday PM peak hour.

The distribution of transit trips to and from the development has been estimated based on origin-destination data from the TRANS O-D Survey Report. The destinations of trips from the Ottawa Inner Area to all TRANS O-D districts during the AM peak period were used to develop the following transit distribution:

- 70% to/from the east via O-Train Line 1 at Pimisi Station
- 15% to/from the west via O-Train Line 1 at Pimisi Station
- 15% to/from the north via Route 61, 66, or 85 at Stop #1876 and #1877

Winter 2020 transit utilization data was obtained from OC Transpo and is included in **Appendix C**. Based on the fare gate data for the Pimisi Station Line 1, 715 people entered and 1,222 people exited during the AM peak period (6:00-9:00), and 1,379 people entered and 805 people exited during the PM peak period (15:00-18:00). Assuming an average arrival rate over the three hours, this equates to approximately 238 people boarding and 407 people alighting during the AM peak hour, and 460 people boarding and 268 alighting during the PM peak hour. OC Transpo staff have advised the following directional splits for the Pimisi Station:

- | | |
|--|--|
| <p>AM Peak</p> <ul style="list-style-type: none"> • Boarding: 80% Eastbound, 20% Westbound • Alighting: 40% Eastbound, 60% Westbound | <p>PM Peak</p> <ul style="list-style-type: none"> • Boarding: 60% Eastbound, 40% Westbound • Alighting: 20% Eastbound, 80% Westbound |
|--|--|

Existing and projected boarding and alighting information is summarized in the following table.

Table 9: Projected Transit Utilization

Bus Stop	Route	Direction	Boarding			Alighting		
			Existing	Site	Total	Existing	Site	Total
AM Peak								
Pimisi Station	Line 1	Eastbound	190	157	347	163	13	176
		Westbound	48	34	82	244	59	303
1876	61, 63, 66, 75, 85	Eastbound/Northbound	11	34	45	6	0	6
1877	63, 66, 75, 85	Westbound/Southbound	0	0	0	2	13	15
PM Peak								
Pimisi Station	Line 1	Eastbound	276	91	367	54	29	83
		Westbound	184	19	203	214	133	347
1876	61, 63, 66, 75, 85	Eastbound/Northbound	1	19	20	10	0	10
1877	63, 66, 75, 85	Westbound/Southbound	10	0	10	2	29	31

The development is anticipated to add 170 trips (157 boarding, 13 alighting) during the AM peak hour and 120 trips (91 boarding, 29 alighting) during the PM peak hour to O-Train Line 1 Eastbound. Approximately 93 trips (34 boarding, 59 alighting) during the AM peak hour and 152 trip (19 boarding, 133 alighting) during the PM peak hour to O-Train Line 1 Westbound. Average load at departure information for Line 1 at Pimisi Station was unavailable. However, based on OC Transpo service schedules, Line 1 stops at the Pimisi Station on four-minute headways during peak hours. This equates to approximately 14-15 trains with a capacity of 600 people in each direction during the peak hours. Based on the foregoing, no capacity deficiencies are anticipated for Line 1 at the Pimisi Station.

Based on the average bus load at departure information obtained for bus routes at stop #1876 and #1877, these bus routes are anticipated to accommodate the additional peak hour transit trips generated by the proposed development.

4.8 Network Intersections

4.8.1 Existing MMLOS Analysis

The MMLOS guidelines produced by IBI Group in 2015 were used to evaluate the LOS of all study area signalized intersection for each mode of transportation. Schedule B of the City of Ottawa’s Official Plan indicates that all study area intersections are in the Central Policy Area. All intersections are also located within 600m of a rapid transit station. MMLOS targets are from Exhibit 22 of the MMLOS guidelines for the Central Area.

The existing and target PLOS, BLOS, TkLOS and Auto LOS for the study area intersections are summarized in the following table. The Wellington Street westbound approach at Booth Street has been modelled with two through lanes and a right turn taper to account for the wide curb lane and the stopping restriction about 35m in advance of the intersection. Detailed MMLOS calculations are included in **Appendix I**.

Table 10: Intersection MMLOS Summary

Intersection	PLOS	BLOS	TLOS	TkLOS	Auto LOS
Sir John A Macdonald Pkwy/ Wellington St/ Booth St	F	F	F	D	F
Target	A	C	-	E	E
Wellington St/ Lett St	F	F	-	F	A
Target	A	C	-	E	E
Wellington St/ Portage Bridge	F	F	F	B	E
Target	A	A	-	E	E
Booth St/ Albert St	F	D	F	F	F
Target	A	A	-	D	E

Sir John A MacDonald Parkway/Wellington Street/Booth Street

The Sir John A MacDonald Parkway/Wellington Street/Booth Street intersection does not meet the target PLOS, BLOS or Auto LOS. This intersection is also operating with a TLOS F, however as it is not along a rapid transit or transit priority route there is no target TLOS.

As described in Section 3.1, this intersection is currently under construction and will be modified to a protected intersection design. The proposed modifications will reduce the pedestrian crossing distance on all legs of the intersection, providing an improved PLOS. The proposed modifications will provide crossrides on all legs of the intersection, permitting cyclists to perform two-stage left turn maneuvers and providing an improved BLOS A on all approaches.

This intersection is currently operating with an Auto LOS F. A review of the number of vehicles that need to be removed from the study area roadway to achieve the target Auto LOS E is provided in **Section 5.8.7**.

Wellington Street/Lett Street

The Wellington Street/Lett Street intersection does not meet the target PLOS, BLOS or TkLOS.

As the east and west approaches to this intersection have a minimum four-lane divided cross-section, there is limited opportunity to improve the overall PLOS. Consideration could be given to providing zebra striped crosswalks, leading pedestrian intervals, and no right-turn on red to improve the pedestrian level of comfort crossing each approach to the Wellington Street/Lett Street intersection. Zebra striped crosswalks are currently warranted on the east and west approaches based on the vehicle/pedestrian conflict warrants (>400,000 vehicle/pedestrian conflicts over an eight-hour period).

To achieve the BLOS target for the central area, the City could consider implementing a two stage, left-turn box (jug handle) to facilitate the westbound left turn movement for cyclists at the Wellington Street/Lett Street intersection. As this is an existing conditions analysis, the mitigation measure is identified for the City's consideration.

Wellington Street/Portage Bridge

The Wellington Street/Portage Bridge intersection does not meet the target PLOS or BLOS. This intersection is also operating with a TLOS F, however as it is not along a rapid transit or transit priority route there is no target TLOS.

The Wellington Street/Portage Bridge intersection is not a standard configuration and the results of the PLOS and BLOS analysis should be treated with caution. The east and west approaches to the intersection have two stage pedestrian crossings, with a channelized island refuge area. All vehicular movements are fully protected, excluding southbound right turn smart channel, limiting the potential for vehicle/pedestrian conflict and the pedestrian level of comfort crossing this intersection is anticipated to be higher than represented by the PLOS analysis. There is limited opportunity to improve the delay score for each pedestrian crossing, as the intersection is a major link to/from the downtown core and is currently operating with a vehicle LOS E.

The cyclist eastbound and westbound left turn accommodation at the Wellington Street/Portage Bridge intersection governs the BLOS analysis. The on-road cycling facilities require cyclists to cross three lanes of traffic into a pocket bike lane to perform an eastbound or westbound left turn. As this intersection has a two-stage pedestrian crossing on the east and west approaches, cyclists may alternatively choose to dismount adjacent to the curb to cross to the channelized island refuge area using the pedestrian crossing. Cyclists can then mount their bike and enter the pocket bike lane to perform the left turn movement. This approach reduces the level of traffic stress experienced by the cyclist. As this approach is not reflected in the MMLoS guidelines, it is reasonable to assume that the level of service at this intersection is higher than BLOS F.

Booth Street/Albert Street

The Booth Street/Albert Street intersection does not meet the target PLOS, BLOS, TkLOS or Auto LOS. This intersection is also operating with a TLOS F, however as it is not along a rapid transit or transit priority route there is no target TLOS.

As described in Section 3.1, this intersection is anticipated to be reconstructed as part of the City’s Albert Street Cycling and Pedestrian Facilities Project between City Centre Avenue and Empress Avenue. Based on the preliminary functional design, this intersection will be modified to a protected intersection design. The proposed modifications will reduce the pedestrian crossing distance on all legs of the intersection, providing an improved PLOS. The proposed modifications will provide crossrides on all legs of the intersection, permitting cyclists to perform two-stage left turn maneuvers and providing an improved BLOS A on all approaches.

This intersection is currently operating with an Auto LOS F. A review of the number of vehicles that need to be removed from the study area roadway to achieve the target Auto LOS E is provided in **Section 5.8.7**.

4.8.2 2023 Background Traffic

Intersection capacity analysis has been completed for the AM and PM peak hours in the 2023 background traffic condition. For the purposes of this analysis, it has been assumed that the modifications to the Sir John A MacDonald Parkway/Wellington Street/Booth Street and Booth Street/Albert Street intersections, as described in Section 3.1, are constructed.

The MMLOS analysis suggested the City consider providing leading pedestrian intervals at the Wellington Street/Lett Street intersection to improve the PLOS. For the purposes of this analysis, north-south leading pedestrian intervals are assumed to be in place at this intersection.

The results of the analysis are summarized in the following table. Detailed synchro reports are included in **Appendix K**.

Table 11: 2023 Background Intersection Operations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
Sir John A Macdonald Pkwy / Wellington St/ Booth St	AM	0.99	E	NBT/R	35 sec	0.95	E
		0.96	E	EBT			
	PM	1.00	E	WBT	41 sec	0.99	E
		1.00	E	NBT/R			
Wellington St/ Lett St	AM	0.58	A	EBT/R	4 sec	0.56	A
	PM	0.54	A	WBT	6 sec	0.53	A
Wellington St/ Portage Bridge	AM	0.81	D	EBL	26 sec	0.72	C
	PM	0.89	D	SBR	32 sec	0.80	C
Booth St/ Fleet St	AM	12 sec	B	WB	-	-	-
	PM	14 sec	B	WB	-	-	-
Booth St/ Albert St	AM	1.32	F	NBT/R	78 sec	1.01	F
		1.25	F	SBL			
		0.91	E	SBR			
		0.90	E	EBL			
	PM	1.41	F	NBT/R	114 sec	1.25	F
		1.36	F	SBL			
		1.15	F	WBT/R			
		1.15	F	EBL			

Sir John A MacDonald Parkway/Wellington Street/Booth Street

All movements are expected to operate with a LOS E or better during both the AM and PM peak hours. The 95th percentile queue length on the northbound approach is anticipated to be approximately 140m and 130m during the AM and PM peak hours respectively, and extending through the Booth Street/Fleet Street intersection. The 95th percentile queue length on the westbound approach is expected to be approximately 230m during the PM peak hour, extending through the Wellington Street/Lett Street intersection during the PM peak hour.

Wellington Street/Lett Street

With the implementation of north-south leading pedestrian intervals critical movements at the intersection are expected to operate with a LOS A during both the weekday AM and PM peak hours. The 95th percentile queue length on the northbound approach is anticipated to be about 15m during the AM peak and PM peak.

A review of the impacts of a right-turn on red restriction on the northbound approach to the Wellington Street/Lett Street intersection has been conducted and is summarized in **Table 12**. This modification is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 20m during the AM and PM peak hours.

Wellington Street/Portage Bridge

All traffic movements at this intersection are expected to operate with a LOS E or better during both the AM and PM peak hours.

Booth Street/Albert Street

Critical movements at this intersection are anticipated to operate with a LOS F during the AM and PM peak hours. The 95th percentile queue on the northbound approach is anticipated to increase to 235m and 255m during the AM and PM peak hours respectively. This increase is a result of the lane conversion to a through/right turn lane and a left turn lane proposed as part of the intersection reconstruction. Consideration should be given to maintaining the existing lane configuration on the northbound approach to this intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on this approach is anticipated to improve operations and reduce queueing on this approach. Operations at this intersection if the existing lane configuration on the northbound approach is maintained are shown in **Table 12**.

The 95th percentile queue length for the eastbound left turn movement is anticipated to be approximately 170m during the PM peak hour, exceeding the existing storage length and blocking the adjacent through traffic lane. With more than 410-420 vehicles projected to be turning left during each of the AM and PM peak hours, the City should consider implementing dual eastbound left turn lanes when the bus lanes are repurposed along Albert Street. Improved overall intersection operations and a reduced eastbound left turn 95th percentile queue length (80-85m) are anticipated during the AM and PM peak hours if dual eastbound left turn lanes are implemented by the City. The effects of dual eastbound left turn lanes at this intersection are shown in **Table 12**.

Table 12: 2023 Background Intersection with Mitigations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
<i>Northbound Right Turn on Red Restriction</i>							
Wellington Street/ Lett St	AM	0.58	A	EBT/R	5 sec	0.57	A
	PM	0.54	A	WBT	6 sec	0.53	A
<i>Existing Lane Configuration on Northbound Approach</i>							
Booth St/ Albert St	AM	1.07	F	SBL	50 sec	0.79	C
		0.95	E	SBR			
		0.78	C	NB			
	PM	1.19	F	SBL	78 sec	1.06	F
		1.15	F	WBT/R			
		1.07	F	EBL			
0.85	D	NB					
<i>Dual Eastbound Left Turn Lanes</i>							
Booth St/ Albert St	AM	1.14	F	NBT/R	65 sec	0.94	E
		1.08	F	SBL			
		0.95	E	EBL			
	PM	1.23	F	SBL	91 sec	1.13	F
		1.22	F	NBT/R			
		1.15	F	WBT/R			
0.91	E	EBL					

4.8.3 2028 Background Traffic

Intersection capacity analysis has been completed for the AM and PM peak hours in the 2028 background traffic condition. The lane configurations and signal timing plans are consistent with the analysis presented in **Section 4.8.2**. The results of the analysis are summarized in the following table. Detailed synchro reports are included in **Appendix K**.

Table 13: 2028 Background Intersection Operations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
Sir John A Macdonald Pkwy / Wellington St/ Booth St	AM	1.01	F	NBT/R	38 sec	0.98	E
		0.99	E	EBT			
	PM	1.03	F	WBT	46 sec	1.03	F
		1.03	E	NBT/R			
Wellington St/ Lett St	AM	0.59	A	EBT/R	4 sec	0.57	A
	PM	0.55	A	WBT	6 sec	0.54	A
Wellington St/ Portage Bridge	AM	0.82	D	EBL	27 sec	0.73	C
	PM	0.91	E	SBR	33 sec	0.82	D
Booth St/ Fleet St	AM	12 sec	B	WB	-	-	-
	PM	14 sec	B	WB	-	-	-
Booth St/ Albert St	AM	1.35	F	NBT/R	83 sec	1.04	F
		1.28	F	SBL			
		0.94	E	SBR			
		0.93	E	EBL			

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
	PM	1.44	F	NBT/R	122 sec	1.26	F
		1.39	F	SBL			
		1.18	F	WBT/R			
		1.18	f	EBL			

Sir John A Macdonald Parkway/Wellington Street/Booth Street

The northbound and eastbound movements are anticipated to operate with a v/c ratio of 1.01 and 0.99 respectively during the AM peak hour. The 95th percentile queue length on the northbound approach is anticipated to be approximately 145m, extending through the Booth Street/Fleet Street intersection during the AM peak hour.

The westbound through and northbound through/right turn movements are expected to operate with v/c ratios of 1.03 during the PM peak hour. The 95th percentile queue length on the westbound approach is expected to be approximately 240m, extending through the Wellington Street/Lett Street intersection during the PM peak hour. The 95th percentile queue length on the northbound approach is anticipated to be approximately 130m, extending through the Booth Street/Fleet Street intersection during the PM peak hour.

Wellington Street/Lett Street

With the implementation of north-south leading pedestrian intervals critical movements at the intersection are expected to operate with a LOS A during both the weekday AM and PM peak hours. The 95th percentile queue length on the northbound approach is anticipated to be 15m during the AM peak and PM peak.

A review of the impacts of a right-turn on red restriction on the northbound approach to the Wellington Street/Lett Street intersection has been conducted and is summarized in **Table 14**. This modification is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 20m during the AM and PM peak hours.

Wellington Street/Portage Bridge

All traffic movements at this intersection are expected to operate with a LOS E or better during both the AM and PM peak hours.

Booth Street/Albert Street

Critical movements at this intersection are anticipated to operate with a LOS F during the AM and PM peak hours. The 95th percentile queue on the northbound approach is anticipated to increase to 240 and 265m during the AM and PM peak hours respectively. This increase is a result of the lane conversion to a through/right turn lane and a left turn lane. Consideration should be given to maintaining the existing lane configuration on the northbound approach to this intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on this approach is anticipated to maintain an acceptable v/c ratio and reduce queueing on this approach. Operations at this intersection if the existing lane configuration on the northbound approach is maintained are shown in **Table 14**.

The 95th percentile queue length for the eastbound left turn movement is anticipated to increase to approximately 175m during the PM peak hour, exceeding the existing storage length and blocking the adjacent through traffic lane. With more than 420 vehicles projected to be turning left during each of the AM and PM peak hours, the City should consider implementing dual eastbound left turn lanes when the bus lanes are repurposed along Albert Street. Improved overall intersection operations and

a reduced eastbound left turn 95th percentile queue length (85m-90m) are anticipated during the AM and PM peak hours if dual eastbound left turn lanes are implemented by the City. The effects of dual eastbound left turn lanes at this intersection are shown in **Table 14**.

Table 14: 2028 Background Intersection with Mitigations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
<i>Northbound Right Turn on Red Restriction</i>							
Wellington Street/ Lett St	AM	0.58	A	EBT/R	5 sec	0.58	A
	PM	0.55	A	WBT	6 sec	0.54	A
<i>Existing Lane Configuration on Northbound Approach</i>							
Booth St/ Albert St	AM	1.10	F	SBL	52 sec	0.81	D
		0.96	E	SBR			
		0.91	E	EBL			
		0.79	C	NB			
	PM	1.22	F	SBL	84 sec	1.09	F
		1.18	F	WBT/R			
		1.11	F	EBL			
		0.86	D	NB			
<i>Dual Eastbound Left Turn Lanes</i>							
Booth St/ Albert St	AM	1.14	F	NBT/R	65 sec	0.97	E
		1.08	F	SBL			
		0.95	E	EBL			
	PM	1.25	F	SBL	98 sec	1.15	F
		1.25	F	NBT/R			
		1.18	F	WBT/R			
		0.92	E	EBL			

4.8.4 2023 Total Traffic

Intersection capacity analysis has been completed for the AM and PM peak hours in the 2023 total traffic condition. The lane configurations and signal timing plans are consistent with the analysis presented in Section 5.8.2. The results of the analysis are summarized in the following table. Detailed synchro reports are included in **Appendix K**.

Table 15: 2023 Total Traffic Intersection Operations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
Sir John A Macdonald Pkwy / Wellington St/ Booth St	AM	0.99	E	NBT/R	35 sec	0.96	E
		0.97	E	EBT			
	PM	1.01	F	WBT	42 sec	0.99	E
		1.00	E	NBT/R			
Wellington St/ Lett St	AM	0.63	B	EBT/R	5 sec	0.60	A
	PM	0.56	A	WBT	6 sec	0.55	A
Wellington St/ Portage Bridge	AM	0.81	D	EBL	26 sec	0.72	C
	PM	0.89	D	SBR	32 sec	0.81	C
Booth St/ Fleet St	AM	12 sec	B	WB	-	-	-
	PM	14 sec	B	WB	-	-	-
Booth St/ Albert St	AM	1.34	F	NBT/R	80 sec	1.02	F
		1.25	F	SBL			
		0.92	E	SBR			
		0.91	E	EBL			
	PM	1.44	F	NBT/R	118 sec	1.25	F
		1.36	F	SBL			
		1.15	F	WBT/R			
		1.16	F	EBL			

The addition of site generated traffic is not anticipated to have a significant impact on the overall intersection operations within the study area.

With the addition of site generated trips, the critical movements at the Wellington Street/Lett Street intersection are expected to operate with a LOS B or better during both the weekday AM and PM peak hours. The 95th percentile queue length associated with the westbound left turn movement at this intersection is anticipated to be 5-10m during the AM and PM peak hours, respectively. The 95th percentile queue length on the northbound approach is anticipated to be 20m during the weekday AM and PM peak hours. The existing intersection geometry and storage lengths accommodate traffic generated by the development. The impacts of a right-turn on red restriction on the northbound approach is shown in **Table 16**. This modification is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 30-35m during the AM and PM peak hours.

Consistent with the 2023 background traffic condition, critical movements at the Albert Street/Booth Street intersection are anticipated to operate with a LOS F during the AM and PM peak hours. Consideration should be given to maintaining the existing lane configuration on the northbound approach to this intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on the northbound approach is anticipated improve the v/c and reduce queueing on this approach. Operations at this intersection if the existing lane configuration on the northbound approach is maintained are shown in **Table 16**.

The eastbound left turn movement at the Booth Street/Albert Street intersection is anticipated to increase to a v/c ratio of 1.16 (from 1.15 in 2023 background scenario). The addition of site generated traffic is not anticipated to increase the 95th percentile queue length for the eastbound left turn movement during the PM peak hour; however, as was noted in the future background scenario, the 95th percentile queue length is anticipated to exceed the existing storage length and block the adjacent through traffic lane. If dual eastbound left turn lanes are implemented by the City, the 95th percentile queue length is anticipated to decrease to 80-85m during the AM and PM peak hours,

consistent with the 2023 background traffic analysis. The effects of providing dual eastbound left turn lanes at this intersection are shown in **Table 16**.

Table 16: 2023 Total Traffic Intersection with Mitigations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
<i>Northbound Right Turn on Red Restriction</i>							
Wellington Street/ Lett St	AM	0.64	B	EBT/R	7 sec	0.62	B
	PM	0.56	A	WBT	8 sec	0.55	A
<i>Existing Lane Configuration on Northbound Approach</i>							
Booth St/ Albert St	AM	1.07	F	SBL	51 sec	0.80	C
		0.95	E	SBR			
		0.79	C	NB			
	PM	1.21	F	SBL	79 sec	1.07	F
		1.16	F	WBT/R			
		1.08	F	EBL			
		0.87	D	NB			
<i>Dual Eastbound Left Turn Lanes</i>							
Booth St/ Albert St	AM	1.16	F	NBT/R	66 sec	0.95	E
		1.08	F	SBL			
		0.95	E	EBL			
	PM	1.23	F	SBL	94 sec	1.14	F
		1.25	F	NBT/R			
		1.15	F	WBT/R			
		0.91	E	EBL			

4.8.5 2028 Total Traffic

Intersection capacity analysis has been completed for the AM and PM peak hours in the 2028 total traffic condition. The lane configurations and signal timing plans are consistent with the analysis presented in Section 5.8.3. The results of the analysis are summarized in the following table. Detailed synchro reports are included in **Appendix K**.

Table 17: 2028 Total Traffic Intersection Operations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
Sir John A Macdonald Pkwy / Wellington St/ Booth St	AM	1.02	F	NBT/R	38 sec	0.98	E
		0.99	E	EBT			
	PM	1.03	F	WBT	47 sec	1.02	F
		1.03	F	NBT/R			
Wellington St/ Lett St	AM	0.65	B	EBT/R	6 sec	0.62	B
	PM	0.57	A	WBT	7 sec	0.56	A
Wellington St/ Portage Bridge	AM	0.82	D	EBL	27 sec	0.73	C
	PM	0.91	E	SBR	33 sec	0.84	D
Booth St/ Fleet St	AM	12 sec	B	WB	-	-	-
	PM	14 sec	B	WB	-	-	-
Booth St/ Albert St	AM	1.37	F	NBT/R	84 sec	1.04	F
		1.28	F	SBL			
		0.94	E	SBR			
		0.93	E	EBL			
	PM	1.48	F	NBT/R	126 sec	1.27	F
		1.39	F	SBL			
		1.18	F	WBT/R			
		1.18	F	EBL			

The addition of site generated traffic is not anticipated to have a significant impact on the overall intersection operations within the study area in the 2028 horizon year.

With the addition of site generated trips, the critical movements at the Wellington Street/Lett Street intersection are expected to operate with a LOS B or better during both the weekday AM and PM peak hours. The 95th percentile queue length associated with the westbound left turn movement at this intersection is anticipated to be 5-10m during the AM and PM peak hours, respectively. The 95th percentile queue length on the northbound approach is anticipated to be 20m during the weekday AM and PM peak hours. The existing intersection geometry and storage lengths accommodate traffic generated by the development. The impacts of a right-turn on red restriction on the northbound approach is shown in **Table 18**. This modification is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 30-35m during the AM and PM peak hours.

Consistent with the 2028 background traffic condition, critical movements at the Albert Street/Booth Street intersection are anticipated to operate with a LOS F during the AM and PM peak hours. Consideration should be given to maintaining the existing lane configuration on the northbound approach to this intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on the northbound approach is anticipated improve the v/c and reduce queueing on this approach. Operations at this intersection if the existing lane configuration on the northbound approach is maintained are shown in **Table 18**.

The eastbound left turn movement at the Booth Street/Albert Street intersection is anticipated to have a v/c ratio of 1.18, consistent with the 2028 background scenario. The addition of site generated traffic is not anticipated to increase the 95th percentile queue length for the eastbound left turn movement during the PM peak hour; however, as was noted in the future background scenario, the 95th percentile queue length is anticipated to exceed the existing storage length and block the adjacent through traffic lane. If dual eastbound left turn lanes are implemented by the City, the 95th percentile queue length is anticipated to decrease to 85-90m during the AM and PM peak hours,

consistent with the 2028 background traffic analysis. The effects of providing dual eastbound left turn lanes at this intersection are shown in **Table 18**.

Table 18: 2028 Total Traffic Intersection with Mitigations

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
<i>Northbound Right Turn on Red Restriction</i>							
Wellington Street/ Lett St	AM	0.65	B	EBT/R	7 sec	0.63	B
	PM	0.58	A	WBT	8 sec	0.57	A
<i>Existing Lane Configuration on Northbound Approach</i>							
Booth St/ Albert St	AM	1.11	F	SBL	53 sec	0.82	D
		0.98	E	SBR			
		0.92	E	EBL			
		0.80	C	NB			
	PM	1.26	F	SBL	85 sec	1.09	F
		1.18	F	WBT/R			
		1.12	F	EBL			
		0.88	D	NB			
<i>Dual Eastbound Left Turn Lanes</i>							
Booth St/ Albert St	AM	1.19	F	NBT/R	69 sec	0.97	E
		1.10	F	SBL			
		0.98	E	EBL			
	PM	1.25	F	SBL	100 sec	1.16	F
		1.28	F	NBT/R			
		1.18	F	WBT/R			
		0.92	E	EBL			

Based on the analysis, it is recommended the City consider implementing dual eastbound left turn lanes at the Booth Street/Albert Street intersection when the existing bus lanes along Albert Street are repurposed. Dual eastbound left turn lanes are expected to improve the overall intersection operations during both the AM and PM peak hours and reduce queueing. As dual eastbound left turn lanes will be a fully protected phase, it will provide additional safety/comfort for pedestrians crossing the north leg of the intersection, however it will increase the pedestrian crossing distance on the west leg. As the proposed development is not anticipated to add eastbound left turning vehicles to this intersection, this modification would be implemented by the City. It is also recommended that existing lane configuration (through/left turn lane and through/right turn lane) on the northbound approach be maintained when the existing bus lanes along Albert Street are repurposed.

As development of future phases within the east LeBreton Flats lands progress, the impacts of a right-turn on red restriction at the Wellington Street/Lett Street intersection are anticipated to increase. Since the Wellington Street/Lett Street intersection is the only signalized access to the subject lands, a right turn on red restriction on the northbound approach is not recommended.

4.8.6 2028 Total Traffic Sensitivity Analysis

A sensitivity analysis has been conducted to determine the impacts of the proposed development if the target TOD auto modal share is not achieved by the residential development. As identified in Section 5.5, should the development only meet the Ottawa Inner Area 35% auto modal share, the

development is anticipated to generate an additional 90-95 vehicle trips two-way during the peak hours.

This sensitivity analysis has increased the 2028 total traffic volumes to reflect the additional vehicular traffic generated by the proposed development. Intersection capacity analysis has been completed for the AM and PM peak hours. The lane configurations and signal timing plans are consistent with the analysis presented in Section 5.8.3. The results of the analysis are summarized in the following table. Detailed synchro reports are included in **Appendix K**.

Table 19: 2028 Total Traffic – Sensitivity Analysis

Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	V/C	LOS
Sir John A Macdonald Pkwy / Wellington St/ Booth St	AM	1.02	F	NBT/R	39 sec	0.98	E
		0.99	E	EBT			
	PM	1.04	F	WBT	47 sec	1.02	E
		1.03	E	NBT/R			
Wellington St/ Lett St	AM	0.65	B	EBT/R	7 sec	0.63	B
	PM	0.59	A	WBT	8 sec	0.58	A
Wellington St/ Portage Bridge	AM	0.82	D	EBL	27 sec	0.73	C
	PM	0.91	E	SBR	33 sec	0.85	D
Booth St/ Fleet St	AM	12 sec	B	WB	-	-	-
	PM	14 sec	B	WB	-	-	-
Booth St/ Albert St	AM	1.39	F	NBT/R	86 sec	1.05	F
		1.28	F	SBL			
		0.94	E	SBR			
		0.93	E	EBL			
	PM	1.51	F	NBT/R	129 sec	1.28	F
		1.39	F	SBL			
		1.18	F	WBT/R			
		1.18	F	EBL			

The findings of the sensitivity analysis are generally consistent with the 2028 total traffic condition.

Critical movements at the Wellington Street/Lett Street intersection are expected to continue to operate with a LOS B or better during both the weekday AM and PM peak hours. The 95th percentile queue length associated with the westbound left turn movement at this intersection is anticipated to be 10-20m during the AM and PM peak hours, respectively. The 95th percentile queue length on the northbound approach is anticipated to be 20-30m during the weekday AM and PM peak hours. The existing intersection geometry and storage lengths accommodate the additional traffic generated by the development if the target TOD auto modal share is not achieved.

Based on the foregoing sensitivity analysis, no further mitigation measures are anticipated to be required if the development does not achieve the target TOD modal shares.

4.8.7 Demand Rationalization

The required traffic reductions to yield an acceptable LOS 'E' at the study area intersections are summarized in the following table.

Table 20: Demand Rationalization – Vehicle Reductions

	Intersection	Movement	Scenario			
			2023 FB	2028 FB	2023 TT	2028 TT
AM Peak	Sir John A Macdonald Pkwy / Wellington St/ Booth St	NBT/R	-	-9	-	-12
		Booth St/ Albert St	NBT/R	-124	-137	-131
PM Peak Hour	Sir John A Macdonald Pkwy / Wellington St/ Booth St	SBL	-41	-46	-41	-46
		WBT	-	-29	-4	-39
	Booth St/ Albert St	NBT/R	-	-28	-	-29
		NBT/R	-161	-175	-175	-189
		SBL	-41	-44	-41	-44
		WBT	-126	-150	-130	-154
EBL	-53	-62	-53	-62		

Sir John A Macdonald Parkway/Wellington Street/Booth Street

The proposed development is anticipated to add the following traffic to critical movements:

- Three northbound through vehicles during the AM peak hour
- Ten westbound through vehicles during the PM peak hour

During periods of higher congestion, more traffic exiting the site toward the north on Booth Street may choose to use the signalized access at Lett Street and turn right from Wellington Street to avoid congestion on northbound Booth.

Booth Street/Albert Street

The proposed development is anticipated to add the following traffic to critical movements:

- Seven northbound through vehicles during the AM peak hour
- Fourteen northbound through vehicles during the PM peak hour

As identified above, it is recommended that the City maintain the existing lane configuration (through/right turn lane and through/left turn lane) on the northbound approach to this intersection.

Options to displace background traffic at the Booth Street/Wellington Street/Sir John A. Macdonald Parkway and Booth Street/Albert Street intersections include:

- increased use of non-auto modes of transportation;
- alternate time of travel for drivers using the corridor to make use of off-peak capacity; or
- alternate routes for travel.

Alternate north-south interprovincial routes include the Portage Bridge, the Champlain Bridge, Alexandra Bridge and Macdonald-Cartier Bridge. The Chaudière Crossing narrows to a two-lane cross section prior to the Chaudière Bridge. As part of the Domtar lands development, Booth Street will narrow to a two-lane cross section from north of the Canadian War Museum access to the Chaudière Bridge to improve facilities for non-auto modes along this corridor.

Alternative east-west routes outside the study area include Somerset Street West and Gladstone Avenue. It is noteworthy that existing turn restrictions at the Booth Street/Wellington Street/Sir John A. Macdonald Parkway intersection limit the ability for trips from the development to depart south via Booth Street. Trips destined to the south are required to either exit the study area to the east to use north-south routes in the downtown core or exit the study area to the west to use north-south routes such as Parkdale Avenue or Island Park Drive.

Based on the foregoing, the site generated trips are expected to have minimal impact on the critical movements of the study are intersections. A review of the alternative north-south interprovincial routes, and north-south and east-west routes outside the study area are considered outside the scope of this study.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Development Design and Parking

- The overall East LeBreton Flats lands will be accessed through the Booth Street/Fleet Street and Wellington Street/Lett Street intersections. Parking for the development will be underground with access to Lloyd Street. The recently completed Confederation Line construction has developed a median along Booth Street, restricting the Fleet Street intersection to right-in right-out. The Wellington Street/Lett Street intersection will remain signalized.
- Pedestrian facilities will be provided between the main building entrances and the sidewalks along the adjacent roadways.
- A north-south crosswalk is proposed on the west leg and an east-west pedestrian crossover (PXO) is proposed on the north leg of the Fleet Street/Lett Street intersection to provide additional pedestrian connectivity.
- Cyclists can use the underground parking ramp or service entrances off the mid-block passage to connect to the shared traffic lanes along the adjacent roadways.
- A loading area will be provided adjacent to the proposed underground parking ramp. This loading area will generally be used by moving trucks for resident move-in or move-out. A fence or wall will be provided between the loading area and the underground parking ramp to provide safety for residents using the loading area.
- A total of 326 vehicle parking spaces (270 resident, 56 visitor) and 639 bicycle parking spaces (589 underground, 50 surface) are proposed for the development, exceeding the minimum requirements of the Zoning By-law.
- No parking is proposed for the commercial and day care uses as none are required.
- The proposed 326 vehicle parking spaces do not exceed the maximum requirement of the Zoning By-law.

Boundary Street MMLoS

- PLOS (Target 'A'):
 - With no sidewalk currently provided on the west side of Lett Street (North-South), the south side of Fleet Street, and both sides of Lloyd Street and Lett Street (East-West) the PLOS for these roadways is deemed 'F'.
- BLOS (Target 'D'):
 - Each boundary roadway achieves a BLOS 'B', surpassing the target.
- TLOS and TkLOS
 - Not applicable as Boundary streets are not bus or truck routes.
- AutoLOS (Target 'E')
 - Each boundary roadway achieves an Auto LOS 'A', surpassing the target.
- The approved design for the boundary roadways will provide new pedestrian facilities along the boundary roadways, achieving the target PLOS 'A' along Lett Street (North-South), Fleet Street, and Lloyd Street.
- Consideration could be given to providing a sidewalk on the south side of Lett Street (east-west) as part of the future park to the south. A sidewalk on the south side of Lett Street (East-West) will achieve the target PLOS 'A'.

Access Intersections Design, TDM, Neighbourhood Traffic Management, and Transit

- The width of the underground parking ramp adheres to the requirements of the ZBL.

- The overall width of the combined underground parking ramp and loading area is 9.7m, exceeding the requirements of the City's Private Approach By-law. As the loading area will only be used for infrequent move-in move-out, and garbage operations, and a depressed curb return will be provided to delineate the underground parking ramp from the loading area, a waiver to the Section 25 (c) of the City's Private Approach By-law is requested.
- The location of the proposed underground parking ramp adheres to the requirements of the City's Private Approach By-law.
- A maximum grade of 6% for a distance of 8.4m from the back of sidewalk is consistent with the TAC recommendations and is anticipated to provide appropriate sight lines for vehicles exiting the ramp to the sidewalk and roadway. A waiver to the City's PABL is recommended.
- As Lett Street and Lloyd Street are local roadways and carry low traffic volumes, the available SSD and ISD are considered acceptable.
- Based on the landscape plan, the trees immediately north and south of the access will be red maple and sugar maple trees with a 50mm diameter. These trees will have a high canopy and will not represent an obstruction to sightlines.
- The proposed development conforms to the City's Transportation Demand Management initiatives by providing easy access to the local pedestrian, bicycle and transit systems.
- To encourage travel by sustainable modes, the proponent agrees to implement the following TDM measures within the building:
 - Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress,
 - Display local area maps with walking/cycling access routes and key destinations at major entrances,
 - Display relevant transit schedules and route maps at entrances,
 - Contract with provider to install on-site carshare vehicles and promote their use by residents,
 - Unbundle parking cost from purchase price (condominium) or monthly rent (apartment),
 - Provide a multi-modal travel option information package to new residents, and
 - Offer personalized trip planning to new residents.
- As a condition of Site Plan approval, the proponent has agreed to provide security to the City of Ottawa for costs to produce Miovision traffic count data for underground parking access. The traffic count data will be used to determine if the target auto modal shares are achieved. The security identified above would cover the City's costs of collecting and reviewing data for the monitoring period.
- As the only accesses to the subject lands are provided on Booth Street and Wellington Street, which are classified as arterial roadways in the City's 2013 TMP, the proposed development is not anticipated to have any measurable impact on the residential communities in the site's vicinity.
- Traffic volumes along Lett Street and Lloyd Street, south of Fleet Street are not anticipated to exceed Area Traffic Management thresholds for local roadways. However, it is noted that the previously approved design for these roadways include roadway narrowings at the Fleet Street intersections.
- No capacity deficiencies are anticipated for Line 1 at the Pimisi Station.
- Based on the average bus load at departure information obtained for bus routes at stop #1876 and #1877, these bus routes are anticipated to accommodate the additional peak hour transit trips generated by the proposed development.

Intersection MMLOS Analysis

- None of the signalized intersections within the study area meet the target PLOS and BLOS. All intersections within the study area except the Booth Street/Albert Street and Wellington Street/Lett Street intersection meet the target TkLOS.

- All of the study area intersections are not located along a Transit Priority Corridor and do not have a target TLOS in the MMLOS Guidelines.
- The Sir John A Macdonald Parkway/Wellington Street/Booth Street and Albert Street/Booth Street intersections do not meet the target Auto LOS.
- Wellington Street/Portage Bridge intersection: This is not a standard configuration and the results of the PLOS and BLOS analysis should be treated with caution. The pedestrian and cycling facilities are anticipated to have a higher PLOS and BLOS than represented by the analysis. Critical movements at this intersection are currently operating with a vehicle LOS E during the PM peak hour.
- Wellington Street/Sir John A MacDonald Parkway/Booth Street intersection: This intersection is currently under construction and will be modified to a protected intersection design. The proposed modifications will improve the PLOS and BLOS at this intersection.
- Wellington Street/Lett Street intersection: The City could consider implementing leading pedestrian intervals and a jug handle to facilitate the westbound left turn movement for cyclists.
- Albert Street/Booth Street intersection: This intersection is anticipated to be reconstructed as part of the City's Albert Street Cycling and Pedestrian Facilities Project between City Centre Avenue and Empress Avenue. Based on the preliminary functional design, this intersection will be modified to a protected intersection design. The proposed modifications will improve the PLOS and BLOS at this intersection.

Future Background Intersection Operations

- Under the 2023 and 2028 background and total traffic conditions, critical movements at the Wellington Street/Sir John A MacDonald Parkway/Booth Street and Albert Street/Booth Street intersections are anticipated to operate with LOS F during the AM and PM peak hours.
- Consideration should be given to maintaining the existing lane configuration on the northbound approach to the Albert Street/Booth Street intersection when the intersection is redesigned as part of the Albert Street reconstruction project. Maintaining the existing lane configuration on this approach is anticipated to maintain an acceptable v/c ratio and reduce queueing on this approach.
- With more than 420 vehicles projected to be turning left during each of the AM and PM peak hours, the City should consider implementing dual eastbound left turn lanes at the Albert Street/Booth Street intersection when the bus lanes are repurposed along Albert Street. Improved overall intersection operations and a reduced eastbound left turn 95th percentile queue length (85m-90m) are anticipated during the AM and PM peak hours if dual eastbound left turn lanes are implemented by the City.

Future Total Intersection Operations

- The addition of site generated traffic is not anticipated to have a significant impact on the overall intersection operations within the study area.
- The existing Wellington Street/Lett Street intersection geometry and storage lengths accommodate traffic generated by the development.
- The impacts of a right-turn on red restriction on the northbound approach to the Wellington Street/Lett Street is not anticipated to have a significant impact on the overall operations of the intersection; however it is anticipated to increase the 95th percentile northbound queue length to 30-35m during the AM and PM peak hours.
- As development of future phases within the east LeBreton Flats lands progress, the impacts of a right-turn on red restriction at the Wellington Street/Lett Street intersection are anticipated to increase. Since the Wellington Street/Lett Street intersection is the only signalized access to the subject lands, a right turn on red restriction on the northbound approach is not recommended.

- The findings of the sensitivity analysis are generally consistent with the 2028 total traffic condition. No further mitigation measures are anticipated to be required if the development does not achieve the target TOD modal shares.

Demand Rationalization

- Continued support of transportation solutions that maximize the transit, bike and pedestrian modes of travel will be critical in this area.
- Options to displace traffic along the study area roads include increased use of non-auto modes of transportation to/from the downtown core, alternate time of travel for drivers using the corridor to make use of off-peak capacity and alternate routes for travel to/from the downtown core.
- A review of the alternative north-south interprovincial routes, and north-south and east-west routes outside the study area are considered outside the scope of this study.

NOVATECH

Prepared by:



Brad Byvelds, P. Eng.
Project Coordinator | Transportation/Traffic

APPENDIX A


BLOCK SUBDIVISION PLAN

Fichier:G:\048\480000-LeBreton\Service 068\Ca\Nicolas\Decontamination South of LeBreton\Annexes\Annexes brutes\EXHIBIT-3.dwg



NOTE: PROJECTION NAD 83, MTM 3°; ZONE 9

Project	National Capital Commission LeBreton Flats Infrastructure and Remediation Project
Title	BLOCK SUBDIVISION OF LEBRETON FLATS

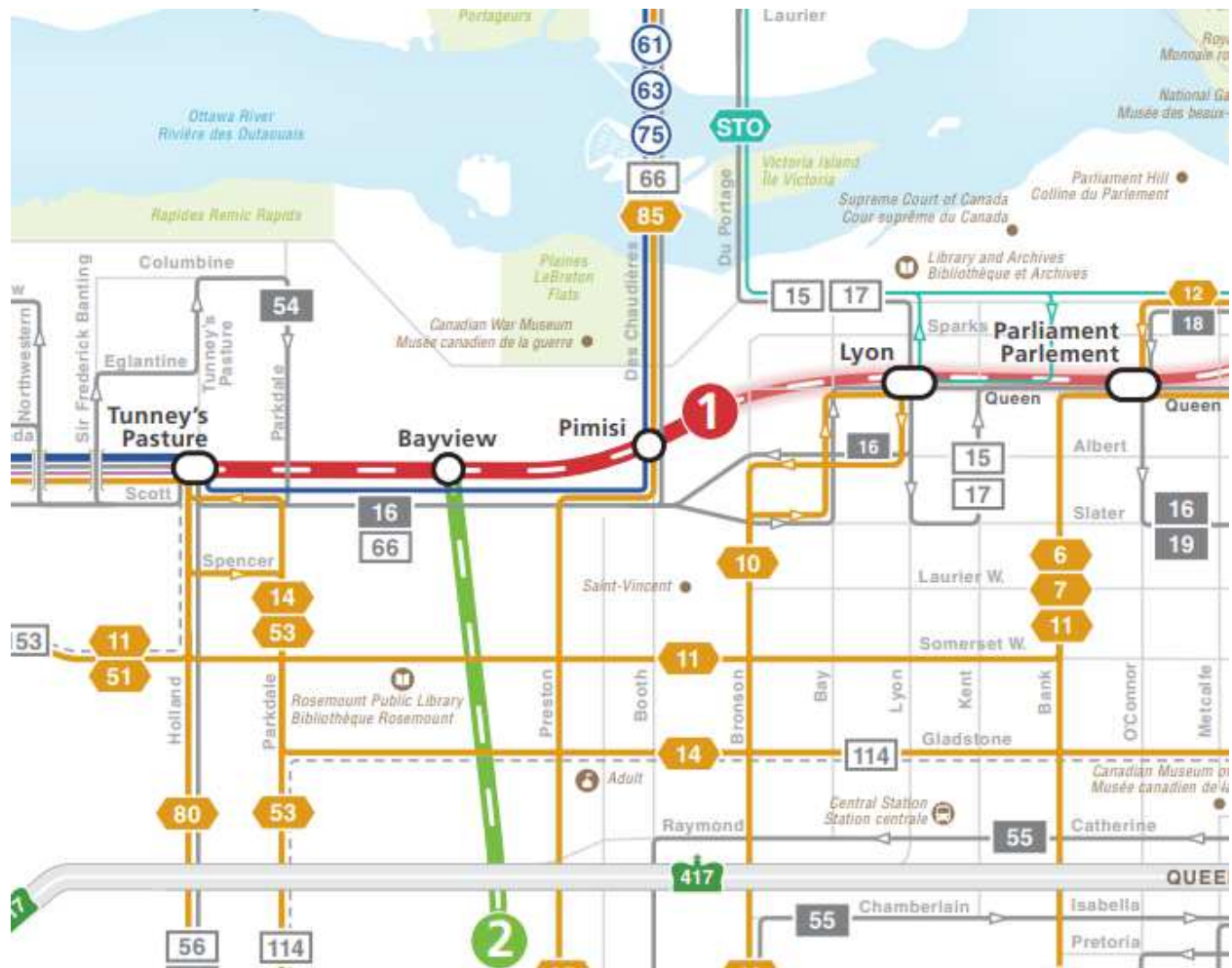
		Dessau-Soprin inc. 920, Blvd Saint-Joseph Hull (Quebec) J8Z 1S9 Phone: (819) 770-6832 Fax: (819) 778-3786
Prepared: D.MORIN	Discipline: AR	Project Manager: D.MORIN
Drawing: F.BOUDREAU	Scale: 1:4000	Sequence No. Rev.:
Verified: C.MARCOTTE	Date: 2002-11-18	
Project: 04800000110AR00020B	Lot: 110	Disc: AR
Drawing No.: 00020B	Rev.: 0	

APPENDIX B

PROPOSED SITE PLAN

APPENDIX C

OC TRANSPORATION INFORMATION



 EAST
EST

○ Blair





○ Cyrville

○ St-Laurent

○ Tremblay

■ VIA

○ Hurdman  SOUTH
SUD → 

○ Lees

24 min.

○ uOttawa

○ Rideau

○ Parliament
Parlement

○ Lyon

○ Pimisi

○ Bayview 

○ Tunney's Pasture

 WEST
OUEST

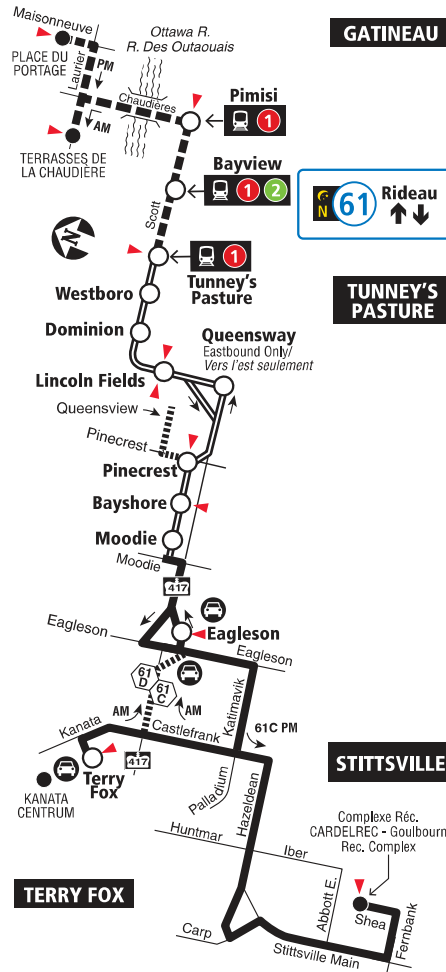


**TERRY FOX
STITTSVILLE**
**TUNNEY'S PASTURE
GATINEAU**

Rapid

7 days a week / 7 jours par semaine

All day service and limited overnight
Service toute la journée et limité la nuit



- Transitway & Station
- Peak trips / Trajets de pointe
- Selected time periods / Périodes sélectionnées
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

When O-Train Line 1 is not running overnight, Route 61 will be extended downtown to Rideau Station. / Lorsque la ligne 1 de l'O-Train ne circule pas la nuit, le circuit 61 sera prolongée au centre-ville jusqu'à la station Rideau.

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

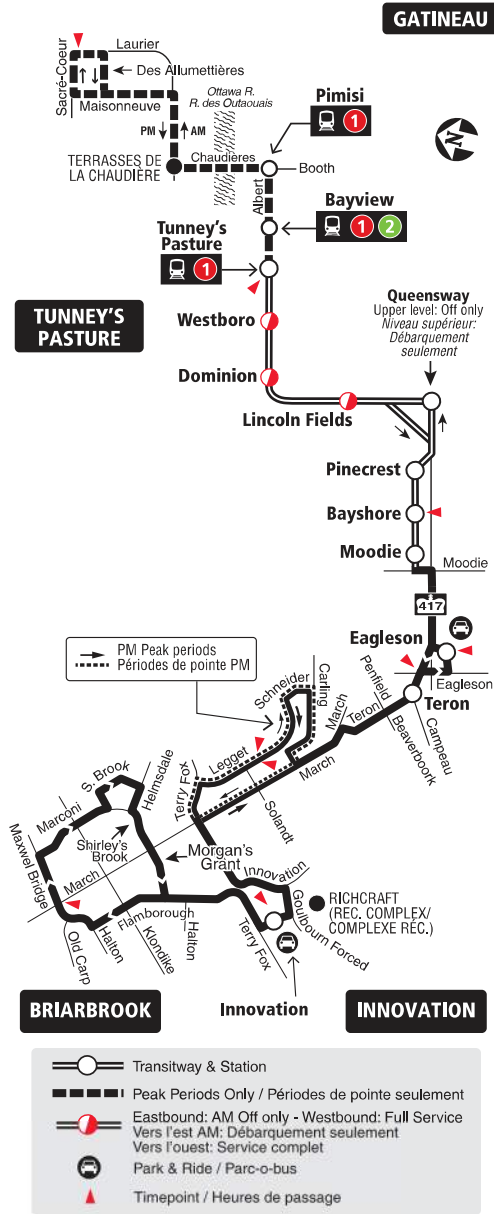
Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

INFO 613-741-4390
octranspo.com



INNOVATION BRIARBROOK TUNNEY'S PASTURE GATINEAU

7 days a week / 7 jours par semaine
All day service
Service toute la journée



2019.07

Starting July 14, 2019
À partir du 14 juillet 2019

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

OC Transpo INFO 613-741-4390
octranspo.com



66

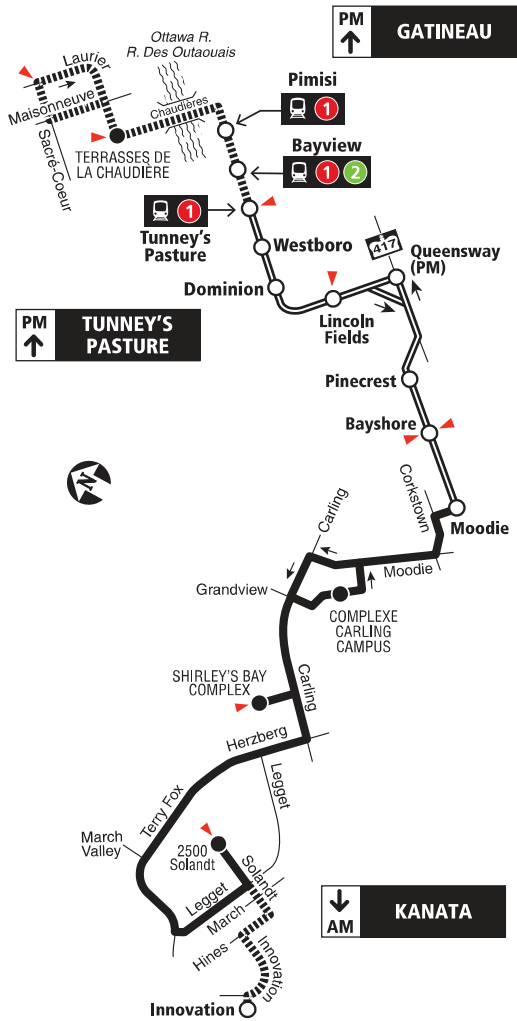
KANATA TUNNEY'S PASTURE GATINEAU

Local

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



- Transitway & Station
- Some trips / Quelques trajets
- Timepoint / Heures de passage

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

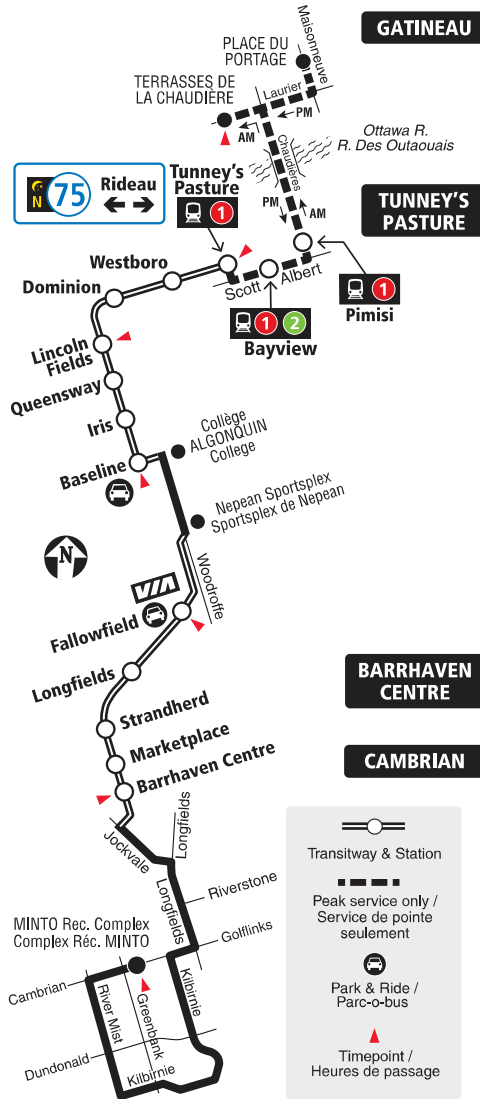
Lost and Found / Objets perdus..... 613-563-4011
 Security / Sécurité..... 613-741-2478

INFO 613-741-4390
octranspo.com



**CAMBRIAN
BARRHAVEN C.
TUNNEY'S PASTURE
GATINEAU**

7 days a week / 7 jours par semaine
All day service and limited overnight
Service toute la journée et limité la nuit



When O-Train Line 1 is not running overnight, Route 75 will be extended downtown to Rideau Station. / Lorsque la ligne 1 de l'O-Train ne circule pas la nuit, le circuit 75 sera prolongée au centre-ville jusqu'à la station Rideau.

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

OC Transpo INFO 613-741-4390
octranspo.com



85

GATINEAU BAYSHORE

Fréquent

7 days a week / 7 jours par semaine

All day service
Service toute la journée



2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
 Security / Sécurité **613-741-2478**

OC Transpo INFO 613-741-4390
 octranspo.com

Winter 2020 (5 Jan 2020 - 7 Mar 2020)

Stop No.	Location	Route	Direction	AM			PM			24-HR		
				Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
1876	BOOTH / WELLINGTON	61	EB	3	0	30				3	2	29
		63	OB	0	0	41				0	0	34
		66	EB				0	8	15	0	9	13
		75	NB	8	6	30				8	6	30
		85	EB	0	0	21	1	2	12	3	7	13
1877	BOOTH / SIR JOHN A MACDONALD	63	IB				0	0	46	0	0	30
		66	WB	0	2	21				0	2	21
		75	SB				8	0	37	8	0	37
		85	WB	0	0	16	2	2	29	7	3	18
3010	PIMISI A	61	EB	94	11	30				107	11	31
		63	OB	93	13	41				105	13	34
		66	EB				25	6	16	29	6	14
		75	NB	75	8	29				75	8	29
		85	EB	143	114	21	43	132	11	353	661	13
	PIMISI B	61	WB				13	72	20	13	72	20
		63	IB				26	182	33	26	186	22
		66	WB	8	22	19				8	22	19
		75	SB				43	185	28	43	185	28
		85	WB	186	44	26	127	189	24	613	451	20
	PIMISI C	16	WB	0	0	5	0	2	21	2	11	10
		57	WB							0	0	0
		61	WB							0	0	1
		75	SB							0	0	2
	PIMISI D	16	EB	3	4	17	5	2	4	14	9	8
		57	EB							0	0	1
		61	EB							0	0	2
		75	NB							0	0	2
	PIMISI STATION LINE 1				<i>Fare Gate Entry Exit Averages</i>							
					<i>Entry</i>	<i>Exit</i>		<i>Entry</i>	<i>Exit</i>		<i>Entry</i>	<i>Exit</i>
				715	1222		1379	805		3052	2891	

APPENDIX D

TRAFFIC COUNT INFORMATION



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

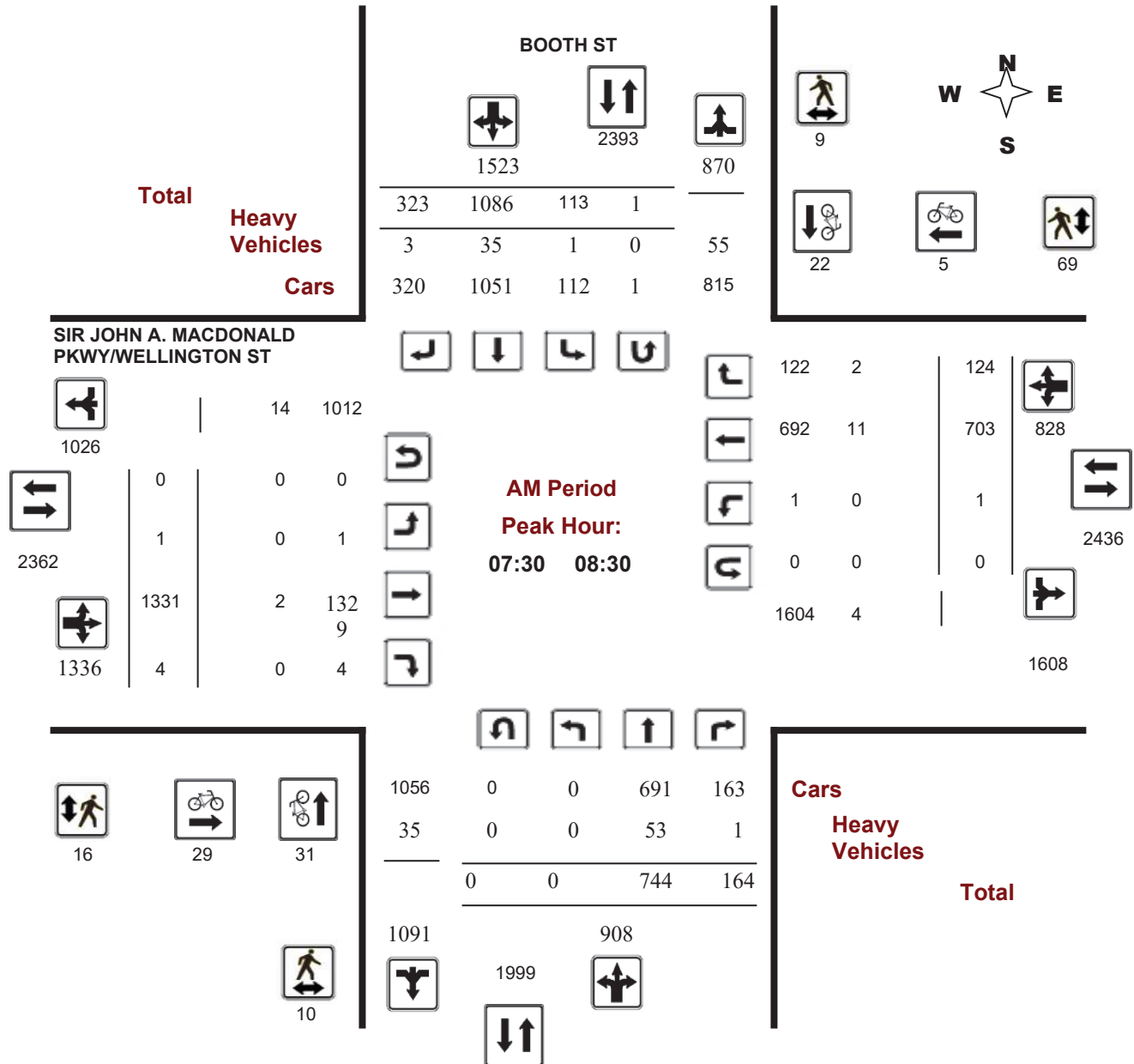
BOOTH ST @ SIR JOHN A. MACDONALD PKWY/WELLINGTON ST

Survey Date: Thursday, June 08, 2017

Start Time: 07:00

WO No: 37114

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

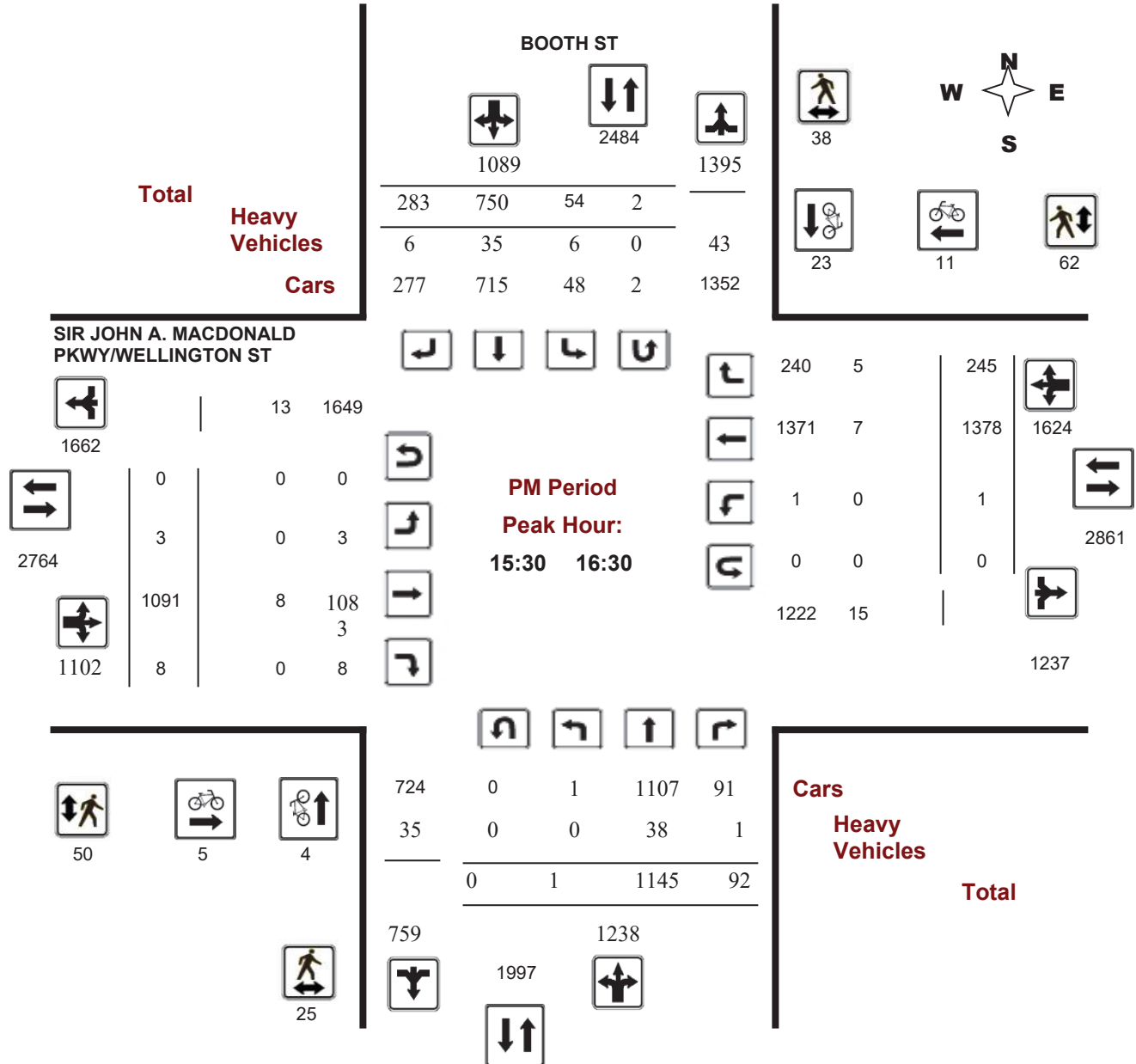
BOOTH ST @ SIR JOHN A. MACDONALD PKWY/WELLINGTON ST

Survey Date: Thursday, June 08, 2017

Start Time: 07:00

WO No: 37114

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

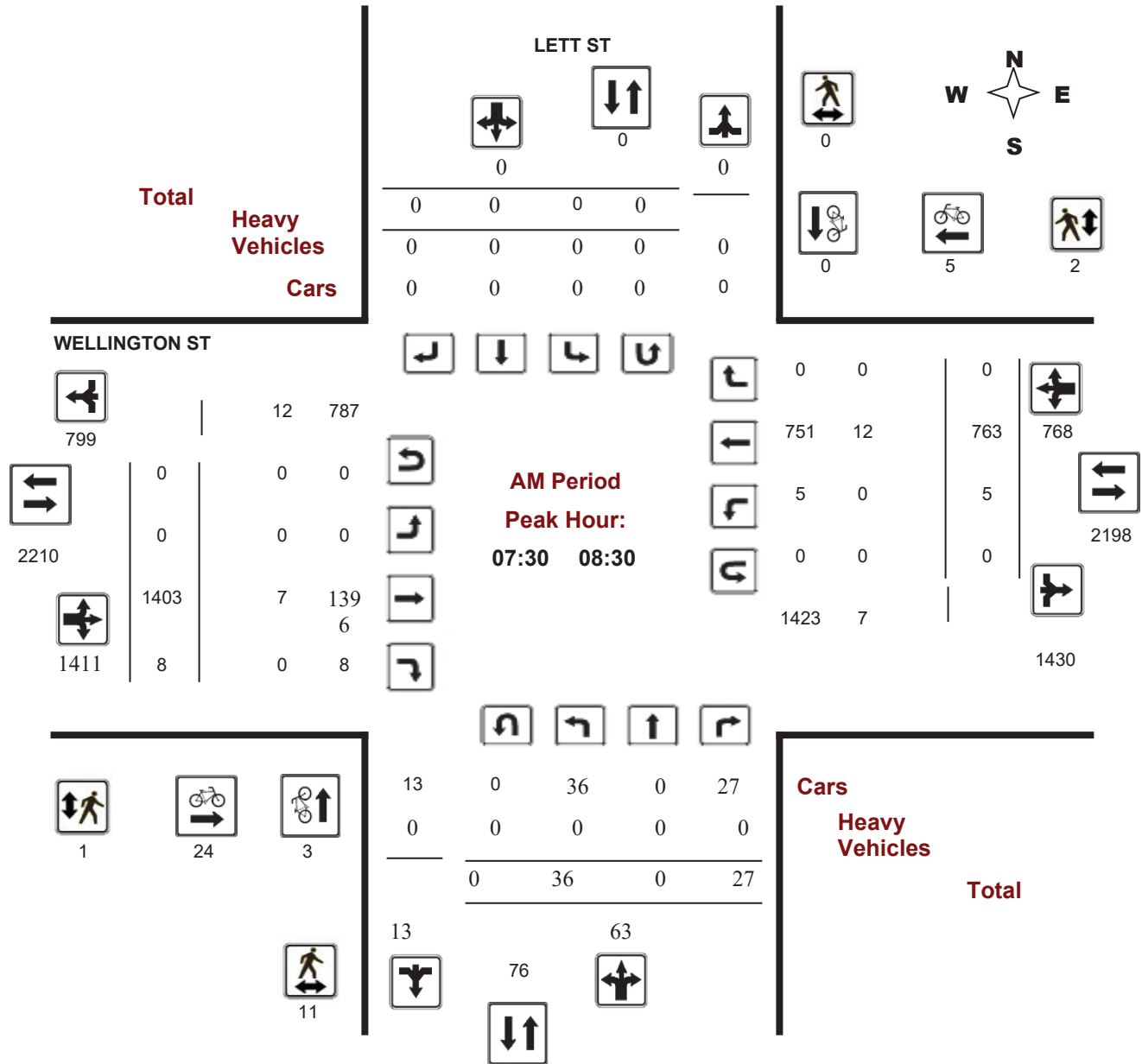
WELLINGTON ST @ LETT ST

Survey Date: Wednesday, August 31, 2016

Start Time: 07:00

WO No: 36259

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

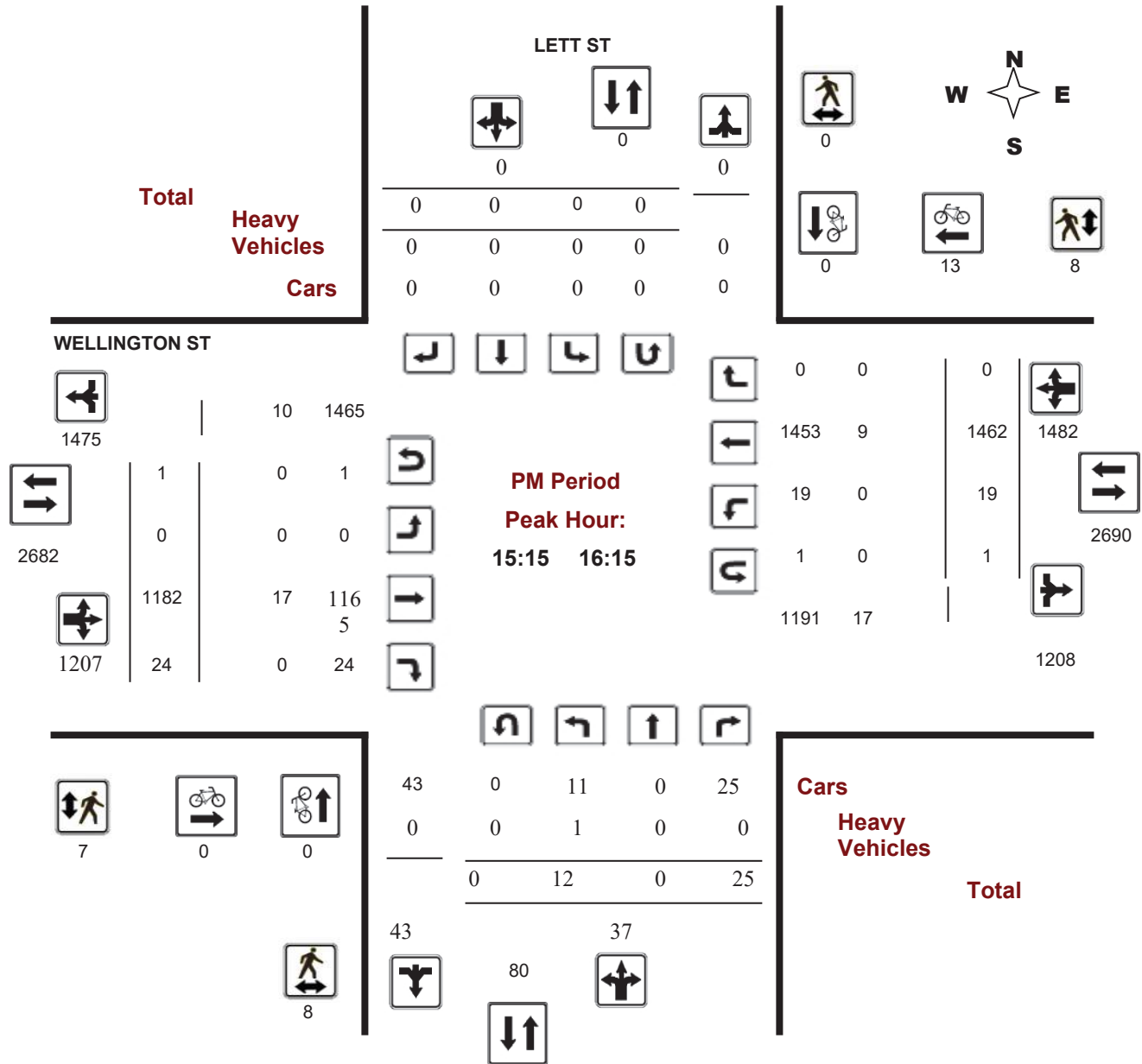
WELLINGTON ST @ LETT ST

Survey Date: Wednesday, August 31, 2016

Start Time: 07:00

WO No: 36259

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

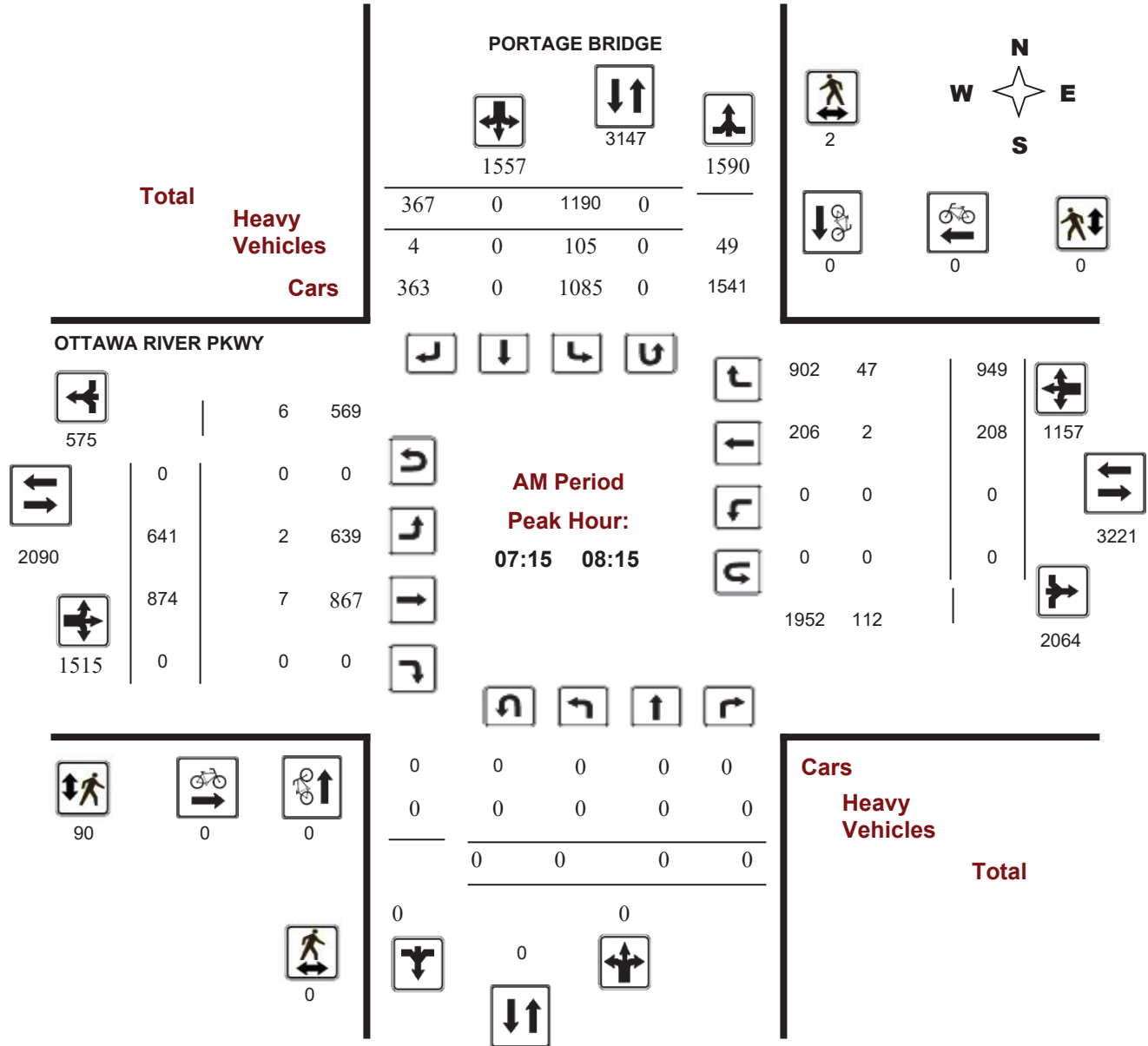
OTTAWA RIVER PKWY @ PORTAGE BRIDGE

Survey Date: Wednesday, March 23, 2016

Start Time: 07:00

WO No: 35813

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

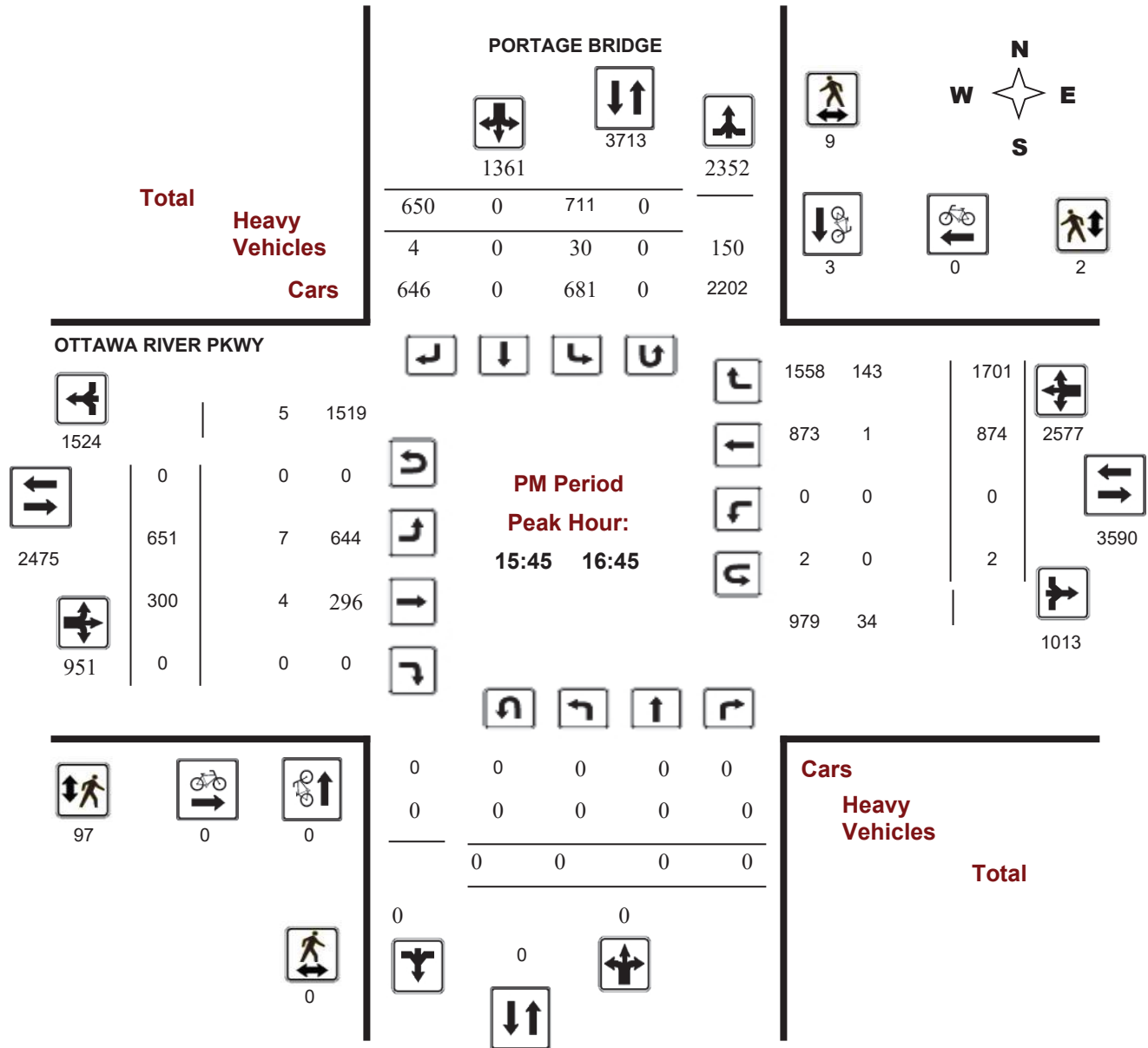
OTTAWA RIVER PKWY @ PORTAGE BRIDGE

Survey Date: Wednesday, March 23, 2016

Start Time: 07:00

WO No: 35813

Device: Miovision

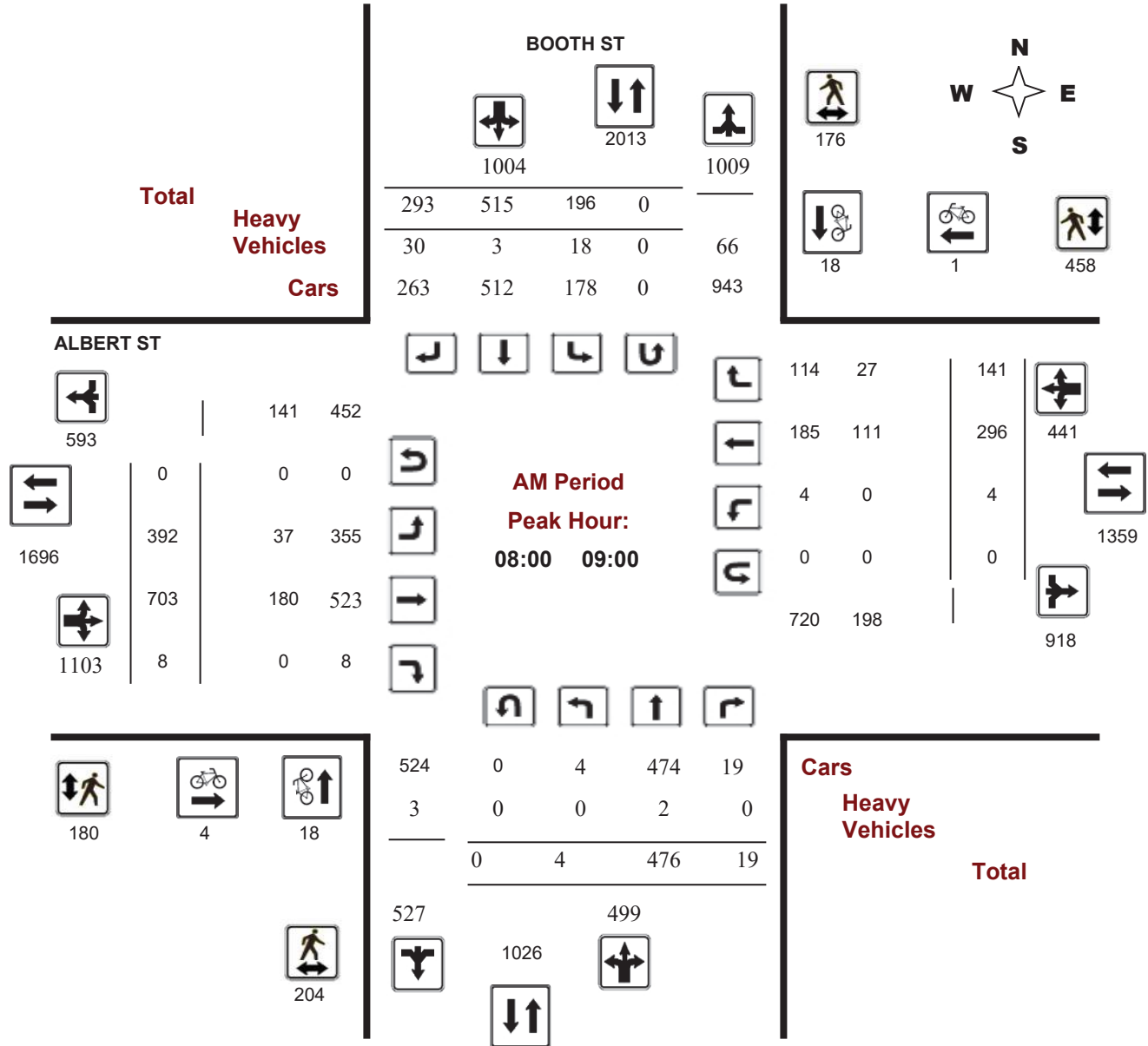


Survey Date: Thursday, June 08, 2017

Start Time: 07:00

WO No: 37113

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

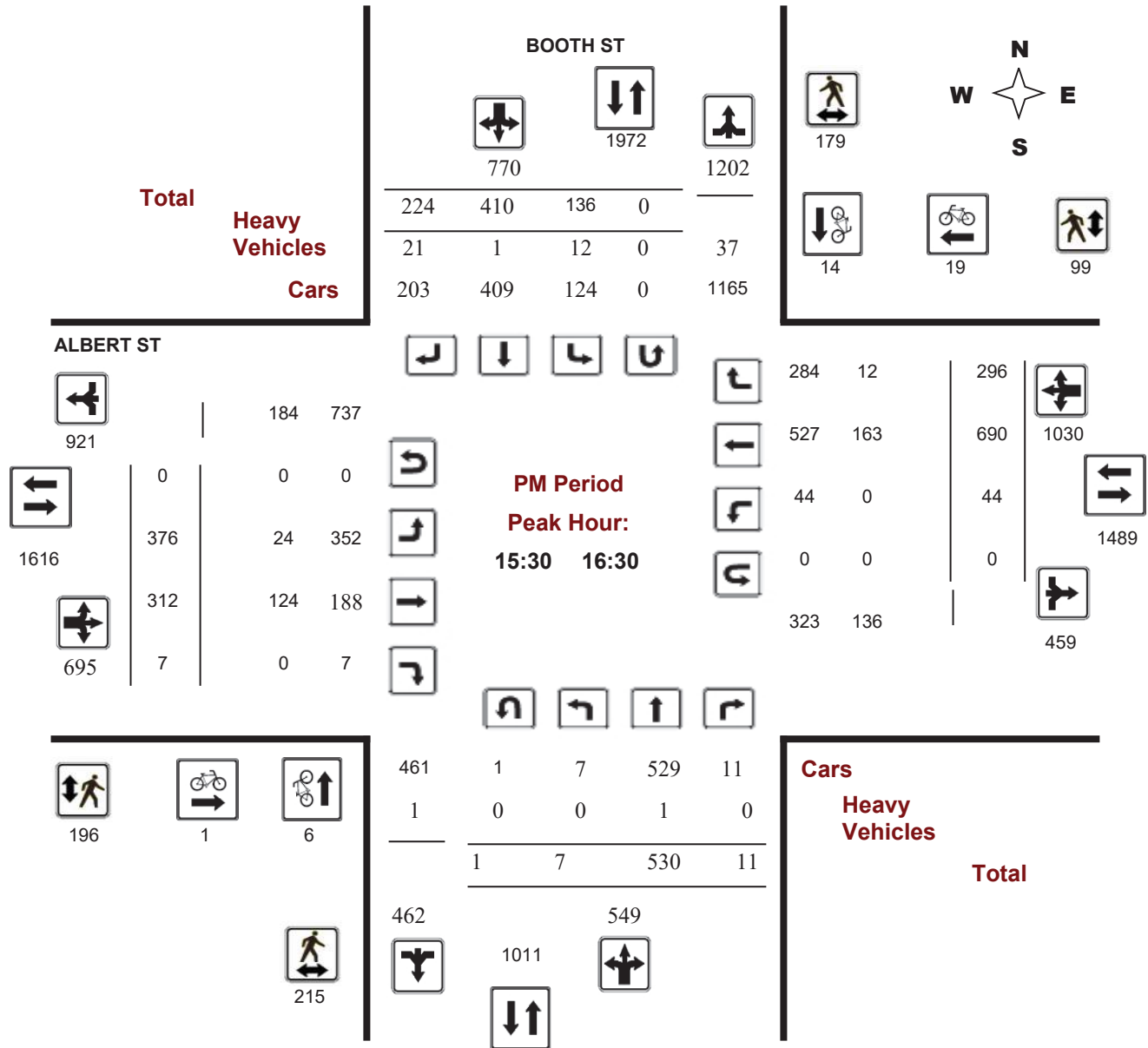
ALBERT ST @ BOOTH ST

Survey Date: Thursday, June 08, 2017

Start Time: 07:00

WO No: 37113

Device: Miovision



Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

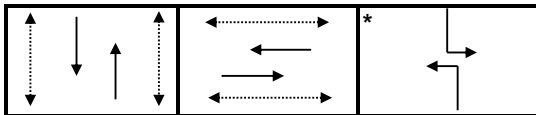
Intersection:	Main: Booth	Side: SJAM/Wellington
Controller:	MS-3200	TSD: 6567
Author:	Matthew Anderson	Date: 21-Oct-2019

Existing Timing Plans†

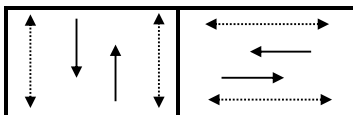
	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	95	85	120	75	85			
Offset	31	58	3	23	58			
NB Thru	35	35	53	35	35	7	21	3.3+3.6
SB Thru	35	35	53	35	35	7	21	3.3+3.6
EB Thru	45	39	56	40	39	7	24	3.7+2.7
WB Thru	45	39	56	40	39	7	24	3.7+2.7
NB Left	15	11	11	-	11	-	-	3.3+2.8
SB Left	15	11	11	-	11	-	-	3.3+2.8

Phasing Sequence‡

Plan: 1, 2, 3 & 5



Plan: 4



- Notes:**
- 1) NB Left movement is for buses only.
 - 2) EB traffic can only proceed straight through.
 - 3) WB traffic cannot turn left except from 7am to 1pm on Sundays for NCC Bike Days.
 - 4) The WB right turn is prohibited on red.

Schedule

Weekday		Weekend	
Time	Plan	Time	Plan
0:15	4	0:15	4
6:00	1	8:00	2
9:30	2	12:00	5
15:00	3	18:00	2
18:00	2	22:00	4
23:45	4		

Notes

- †: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn
◄.....► Pedestrian signal

Cost is \$57.63 (\$51 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

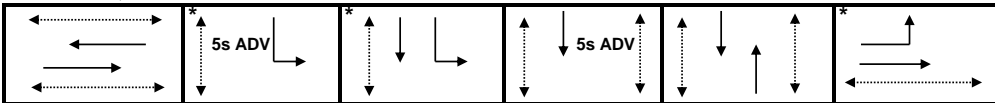
Intersection:	Main: Albert	Side: Booth
Controller:	ATC-3	TSD: 5465
Author:	Matthew Anderson	Date: 21-Oct-2019

Existing Timing Plans†

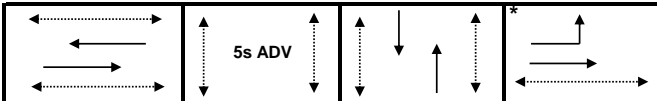
	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 11	Walk	DW	A+R
Cycle	120	85	120	85	85	120			
Offset	104	38	9	3	38	104			
EB Thru	55	50	71	37	50	67	7	23	3.3+3.2
WB Thru	37	37	42	37	37	36	7	23	3.3+3.2
SB Left	25	-	11	13	-	15	-	-	3.3+3.2
NB Thru	40	35	38	35	35	38	7	21	3.3+3.2
SB Thru	65	35	49	48	35	53	7	21	3.3+3.2
EB Left	18	13	29	-	13	31	-	-	3.3+3.2

Phasing Sequence*

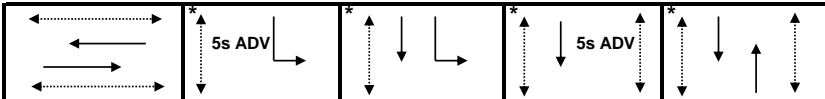
Plan: 1,3 & 11



Plan: 2 & 5



Plan: 4



Notes:

- 1) All advanced walks are 5 seconds.
- 2) Plans 1, 3, and 11, have an alternative walk time of 10 seconds for the NS thru movements.
- 3) The SB thru movement is prohibited from 11:00pm to 6:00am.
- 4) The SB and WB right turn on red is prohibited on weekdays from 7:00am to 9:00pm.
- 5) The WB left turn is prohibited on weekdays from 7:00am to 9:00am, and 3:30pm to 5:30pm.

Schedule

Weekday

Time	Plan
0:15	4
6:00	1
8:00	11
9:30	2
15:00	3
18:30	2
23:00	4

Saturday

Time	Plan
0:15	4
6:00	2
12:00	5
18:00	2
23:00	4

Sunday

Time	Plan
0:15	4
8:00	2
12:00	5
18:00	2
23:00	4

Notes

- †: Time for each direction includes amber and all red intervals
 ‡: Start of first phase should be used as reference point for offset
 Asterisk (*) Indicates actuated phase
 (fp): Fully Protected Left Turn
 ◀.....▶ Pedestrian signal

Cost is \$57.36 (\$51 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

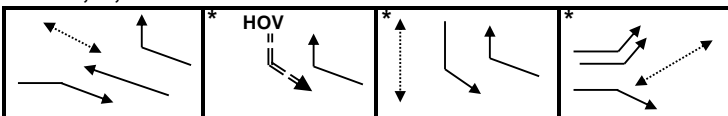
Intersection:	Main: Wellington	Side: Portage Bridge
Controller:	MS-3200	TSD: 5474
Author:	Matthew Anderson	Date: 21-Oct-2019

Existing Timing Plans†

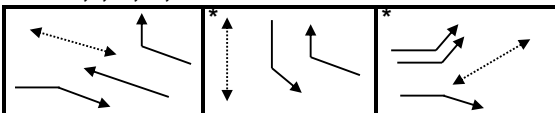
	Plan							Ped Minimum Time		
	Night 4	Evening 9	Off Peak 10	AM Peak 12	Weekend 17	PM Peak 20	AM Late 22	Walk	DW	A+R
Cycle	FREE	FREE	FREE	FREE	FREE	FREE	FREE			
Offset	X	X	X	X	X	X	X			
EB Thru	max=26.5	max=27.5	max=36.5	max=27.5	max=36.5	max=36.5	max=27.5	-	-	3.3+3.2
WB Thru	max=26.5	max=27.5	max=36.5	max=27.5	max=36.5	max=36.5	max=27.5	7	13	3.3+3.2
WBRT	max=26.1	max=31.1	max=41.1	max=51.1	max=31.1	max=31.1	max=41.1	-	-	3.3+2.8
SB HOV	-	-	-	max=13.1	-	-	max=13.1	-	-	3.3+2.8
SB Thru	max=26.1	max=31.1	max=41.1	max=51.1	max=31.1	max=31.1	max=36.1	26	12	3.3+2.8
EBLT	max=20.8	max=26.8	max=33.8	max=40.8	max=45.8	max=55.8	max=60.8	25	12	3.3+2.5

Phasing Sequence‡

Plan: 1,12,22



Plan: 4,9,10,17,20



- Notes:**
- 1) For all plans, the EW thru movements have minimum recalls of 10 seconds green. There are no ped recalls
 - 2) For all plans the maximum splits provided will be extended if the pedestrian phases are actuated to satisfy the walk and flashing-don't-walk intervals.

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
6:35	12
9:00	22
9:30	10
14:30	20
19:00	9
22:30	4

Weekend

Time	Plan
0:15	4
7:00	10
10:00	17
22:00	4

Notes

- †: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn
◄.....► Pedestrian signal

Cost is \$57.63 (\$51 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

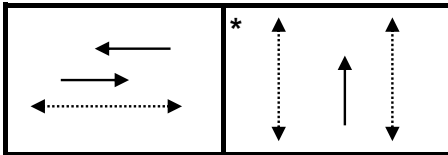
Intersection:	Main: Wellington	Side: Lett
Controller:	MS-3200	TSD: 6565
Author:	Matthew Anderson	Date: 21-Oct-2019

Existing Timing Plans[†]

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	95	80	120	70	80			
Offset	60	X	27	X	X			
EB Thru	61	46	86	36	46	15	9	3.7+2.1
WB Thru	61	46	86	36	46	-	-	3.7+2.1
NB Thru	34	34	34	34	34	7	21	3.3+2.6

Phasing Sequence[‡]

Plan: All



Schedule

Weekday

Time	Plan
0:15	4
6:00	1
9:30	2
15:00	3
18:00	2
22:00	4

Weekend

Time	Plan
0:15	4
8:00	2
12:00	5
18:00	2
22:00	4

Notes

- †: Time for each direction includes amber and all red intervals
- ‡: Start of first phase should be used as reference point for offset
- Asterisk (*) Indicates actuated phase
- (fp): Fully Protected Left Turn
- ◄.....► Pedestrian signal

Cost is \$57.63 (\$51 + HST)

APPENDIX E

COLLISION RECORDS



City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2018

Location: ALBERT ST @ BOOTH ST

Traffic Control: Traffic signal

Total Collisions: 51

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Jan-11, Sat,07:26	Rain	Rear end	P.D. only	Ice	South	Turning left	Pick-up truck	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-07, Fri,16:05	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Feb-14, Fri,07:30	Snow	Angle	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2014-Feb-24, Mon,10:27	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2014-Mar-06, Thu,16:06	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	

2014-Mar-22, Sat, 11:47	Snow	Other	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Curb

2014-May-05, Mon, 18:05	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle

2014-May-10, Sat, 13:44	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle

2014-Aug-02, Sat, 12:35	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2014-Sep-19, Fri, 15:53	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2014-Dec-07, Sun, 21:11	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2014-Dec-12, Fri, 14:06	Clear	Turning movement	P.D. only	Wet	North	Turning right	Passenger van	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Jan-15, Fri,16:30	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Skidding/sliding
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Unknown	Other motor vehicle
2016-Feb-17, Wed,19:31	Clear	Angle	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-Feb-25, Thu,19:28	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jul-06, Wed,07:25	Clear	Turning movement	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Municipal transit bus	Other motor vehicle
2016-Jul-10, Sun,11:59	Clear	Sideswipe	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle
					West	Stopped	Automobile, station wagon	Cyclist
2016-Jul-16, Sat,10:21	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning left	Truck - closed	Other motor vehicle
2016-Aug-17, Wed,01:56	Clear	SMV other	P.D. only	Dry	West	Unknown	Automobile, station wagon	Fence/noice barrier

2016-Sep-18, Sun,10:29	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2016-Nov-16, Wed,23:30	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-29, Tue,06:39	Snow	Angle	P.D. only	Wet	North	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2016-Dec-17, Sat,12:20	Snow	Angle	P.D. only	Loose snow	North	Turning right	Passenger van	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
2017-Jan-20, Fri,08:59	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - open	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2017-Feb-03, Fri,15:41	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Delivery van	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-09, Thu,09:10	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2017-Feb-15, Wed,10:54	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Delivery van	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Mar-14, Tue,13:45	Snow	Turning movement	P.D. only	Loose snow	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2017-Apr-03, Mon,13:13	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-May-11, Thu,09:18	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Truck and trailer	Other motor vehicle
					South	Going ahead	Truck and trailer	Other motor vehicle
2017-Jun-02, Fri,14:35	Clear	SMV other	P.D. only	Dry	North	Going ahead	Pick-up truck	Ran off road
2017-Jul-10, Mon,22:55	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-11, Tue,16:40	Clear	Turning movement	Non-fatal injury	Wet	West	Turning right	Automobile, station wagon	Cyclist
					West	Going ahead	Bicycle	Other motor vehicle
2017-Jul-23, Sun,15:00	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-27, Sun,22:59	Clear	Turning movement	P.D. only	Dry	West	Turning right	Municipal transit bus	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2017-Sep-14, Thu,07:50	Clear	Angle	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Oct-31, Tue,16:27	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-17, Fri,22:04	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Dec-07, Thu,20:51	Clear	Turning movement	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Dec-12, Tue,09:21	Snow	Rear end	P.D. only	Packed snow	North	Going ahead	Passenger van	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2017-Dec-23, Sat,14:08	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Turning right	Automobile, station wagon	Other motor vehicle
2018-Mar-23, Fri,08:35	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle
					South	Turning right	Municipal transit bus	Other motor vehicle
2018-Apr-10, Tue,07:21	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-May-17, Thu,21:51	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Cyclist
2018-May-30, Wed,06:06	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Delivery van	Cyclist
					West	Going ahead	Bicycle	Other motor vehicle
2018-Jun-12, Tue,16:30	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2018-Aug-10, Fri,17:52	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Truck - open	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Sep-14, Fri,14:58	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Truck - closed	Other motor vehicle

					South	Turning left	Automobile, station wagon	Other motor vehicle
2018-Sep-22, Sat, 12:45	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Oct-20, Sat, 17:00	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-02, Fri, 07:47	Rain	Rear end	Non-fatal injury	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle

Location: BOOTH ST @ FLEET ST

Traffic Control: Stop sign

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-22, Wed, 13:10	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Sep-15, Thu, 09:10	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Bicycle	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Cyclist	

Location: BOOTH ST @ SIR JOHN A. MACDONALD PKWY/WELLINGTON ST

Traffic Control: Traffic signal

Total Collisions: 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
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2014-Feb-18, Tue,16:15	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2014-Mar-20, Thu,08:19	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
2014-Apr-08, Tue,16:00	Rain	Rear end	Non-fatal injury	Wet	North	Going ahead	Municipal transit bus	Other motor vehicle	
					North	Turning right	Pick-up truck	Other motor vehicle	
2014-Jun-09, Mon,17:20	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jun-15, Sun,09:15	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-18, Mon,12:20	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Nov-10, Mon,09:00	Clear	SMV other	Non-fatal injury	Dry	North	Turning right	Municipal transit bus	Pedestrian	1
2014-Dec-13, Sat,16:50	Clear	Turning movement	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	

					North	Turning left	Passenger van	Other motor vehicle
2015-Jan-05, Mon,14:08	Clear	Rear end	P.D. only	Wet	South	Changing lanes	Unknown	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2015-Jan-21, Wed,19:19	Clear	SMV other	P.D. only	Wet	East	Turning left	Automobile, station wagon	Ran off road
2015-Jan-28, Wed,10:07	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Delivery van	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Feb-12, Thu,10:10	Clear	Rear end	P.D. only	Slush	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2015-Feb-13, Fri,13:13	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-22, Sun,08:52	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-May-28, Thu,16:14	Clear	Turning movement	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Cyclist
					West	Going ahead	Bicycle	Other motor vehicle

					South	Stopped	Automobile, station wagon	Cyclist
2015-Jul-20, Mon,16:15	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Aug-01, Sat,01:38	Clear	Turning movement	P.D. only	Dry	East	Turning left	Truck and trailer	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Aug-18, Tue,08:20	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Sep-03, Thu,09:48	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Nov-05, Thu,16:51	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Fire vehicle	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Nov-17, Tue,20:00	Clear	Turning movement	P.D. only	Dry	West	Turning right	Truck - dump	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Nov-26, Thu,23:43	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Turning left	Truck - dump	Other motor vehicle
2015-Dec-01, Tue,05:40	Clear	Sideswipe	P.D. only	Dry	West	Turning right	Delivery van	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Oct-14, Wed,17:09	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
					East	Unknown	Automobile, station wagon	Other motor vehicle
2015-Oct-02, Fri,08:00	Clear	Rear end	P.D. only	Dry	East	Stopped	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-25, Fri,22:21	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2016-Apr-07, Thu,13:44	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2016-May-13, Fri,18:03	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle

2016-Jun-24, Fri,13:42	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-04, Sun,13:30	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-03, Mon,12:15	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-06, Tue,08:45	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Municipal transit bus	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-04, Sun,13:30	Clear	Rear end	Non-fatal injury	Dry	South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-19, Fri,17:11	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Unknown	Other motor vehicle
2016-Jan-15, Fri,18:43	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle

2017-Jan-14, Sat,18:44	Clear	Angle	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-20, Mon,08:05	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Mar-21, Tue,18:19	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2017-May-02, Tue,14:53	Rain	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-18, Sun,13:23	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-04, Tue,15:22	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-13, Thu,19:30	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2017-Oct-06, Fri,13:09	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Delivery van	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2017-Oct-16, Mon,17:54	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2017-Oct-22, Sun,07:13	Clear	SMV other	P.D. only	Dry	South	Going ahead	Pick-up truck	Pole (sign, parking meter)
2017-Nov-08, Wed,11:23	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Nov-10, Fri,10:26	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-19, Sun,11:03	Snow	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-23, Thu,18:28	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-02, Sat,16:08	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-24, Fri,10:45	Snow	Sideswipe	P.D. only	Packed snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Oct-20, Fri,16:00	Clear	Rear end	P.D. only	Dry	East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jan-07, Sun,20:10	Snow	Angle	P.D. only	Packed snow	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Apr-09, Mon,17:57	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2018-Apr-23, Mon,18:20	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle
					North	Merging	Passenger van	Other motor vehicle
2018-Jul-04, Wed,11:43	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle

2018-Nov-16, Fri,06:39	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					East	Stopped	Pick-up truck	Other motor vehicle
2018-Dec-08, Sat,22:32	Snow	Turning movement	P.D. only	Packed snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jan-13, Sat,03:02	Snow	SMV other	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Skidding/sliding
2018-Dec-01, Sat,17:01	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

Location: OTTAWA RIVER PKWY @ PORTAGE BRIDGE

Traffic Control: Traffic signal

Total Collisions: 29

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-08, Wed,16:30	Clear	Rear end	P.D. only	Ice	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jan-11, Sat,08:01	Freezing Rain	SMV other	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Skidding/sliding	
2014-Jan-11, Sat,08:13	Freezing Rain	SMV other	P.D. only	Ice	West	Turning right	Automobile, station wagon	Pole (sign, parking meter)	
2014-Apr-12, Sat,15:50	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Motorcycle	Skidding/sliding	

2014-Apr-16, Wed,13:31	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Pole (utility, power)
2014-May-11, Sun,10:20	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle
					North	Going ahead	Passenger van	Cyclist
2014-Jul-18, Fri,09:28	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2014-Aug-20, Wed,15:45	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-10, Wed,09:11	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-24, Wed,05:33	Snow	SMV other	P.D. only	Wet	South	Turning left	Automobile, station wagon	Curb
2014-Dec-24, Wed,13:50	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-Jan-09, Thu,09:25	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle

					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Feb-14, Fri,07:30	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Pick-up truck	Skidding/sliding
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Apr-30, Wed,06:15	Rain	Rear end	P.D. only	Wet	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Feb-04, Wed,15:16	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Feb-25, Wed,14:29	Clear	Sideswipe	P.D. only	Dry	South	Overtaking	Unknown	Other motor vehicle
					South	Turning right	Bus (other)	Other motor vehicle
2015-Dec-30, Wed,22:06	Snow	Rear end	Non-fatal injury	Slush	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jun-07, Sun,03:55	Clear	SMV other	P.D. only	Dry	West	Going ahead	Pick-up truck	Ran off road
2016-Jan-04, Mon,19:48	Snow	Sideswipe	P.D. only	Loose snow	East	Turning left	Pick-up truck	Other motor vehicle
					East	Turning left	Pick-up truck	Other motor vehicle

2016-Jul-09, Sat,17:39	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2016-Aug-25, Thu,12:10	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Changing lanes	Passenger van	Other motor vehicle

2017-Mar-22, Wed,10:12	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle

2017-Apr-02, Sun,22:50	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle

2017-May-16, Tue,14:57	Clear	Other	P.D. only	Dry	North	Reversing	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2017-May-23, Tue,17:28	Clear	Angle	P.D. only	Dry	East	Turning left	Unknown	Other motor vehicle
					North	Turning right	Passenger van	Other motor vehicle

2017-Apr-03, Mon,18:00	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2017-May-26, Fri,09:40	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2018-Sep-29, Sat,13:02	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2018-Jun-19, Tue,16:00	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Merging	Automobile, station wagon	Other motor vehicle

Location: WELLINGTON ST @ LETT ST

Traffic Control: Traffic signal

Total Collisions: 9

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jan-14, Wed,15:28	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-29, Thu,11:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Oct-05, Mon,08:50	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	

2016-Apr-04, Mon,12:24	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle

2016-Apr-06, Wed,17:37	Snow	Angle	P.D. only	Slush	East	Turning right	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle

2016-Aug-10, Wed,07:41	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle

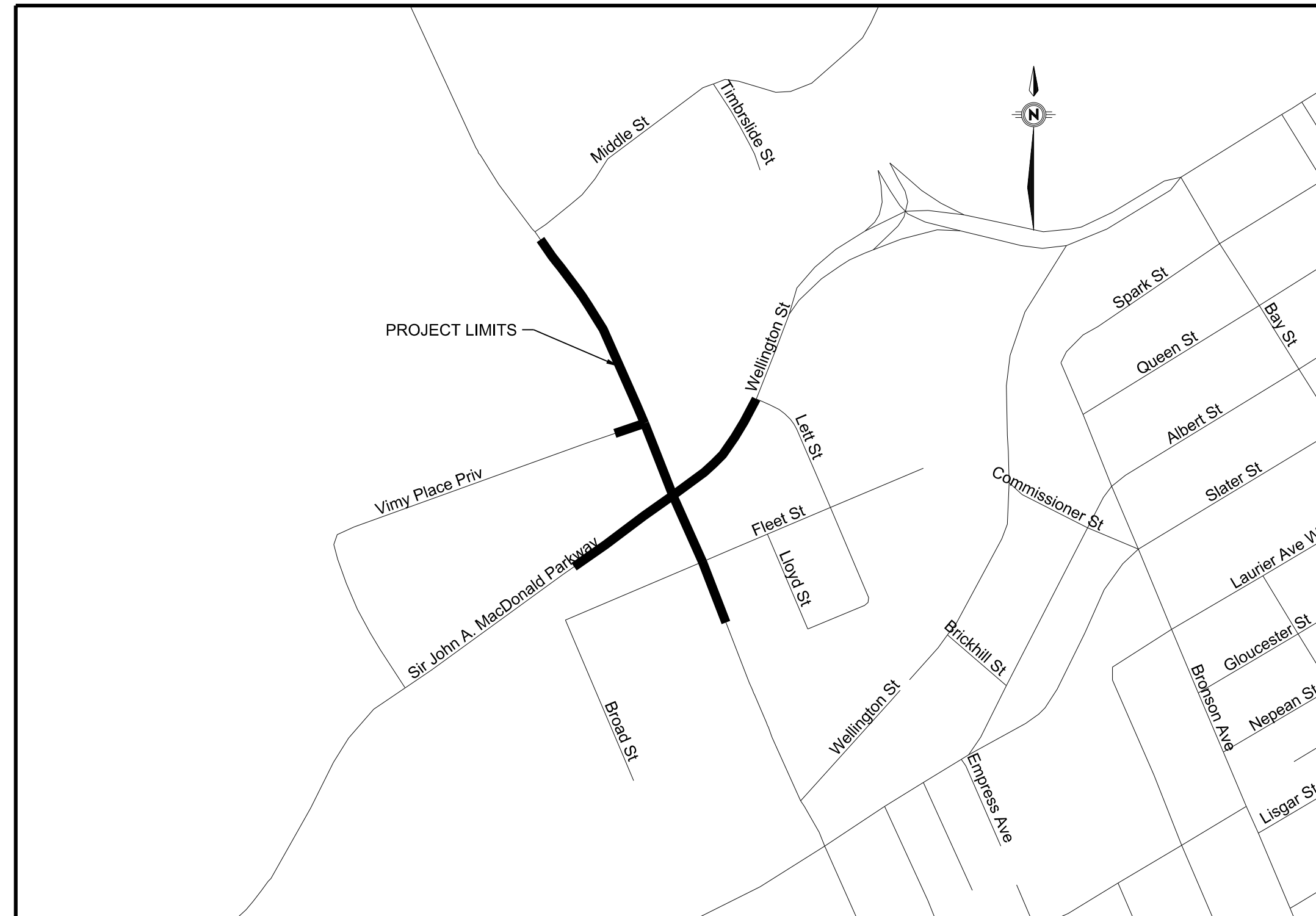
2016-Sep-19, Mon,15:51	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2017-Jun-02, Fri,15:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2017-Aug-26, Sat,10:50	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Delivery van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

APPENDIX F

AREA ROADWAY PROJECTS



BOOTH STREET CYCLING FACILITIES OTTAWA RIVER PATHWAY TO FLEET STREET

ISSUED FOR CONSTRUCTION JULY 26, 2019

**BOOTH STREET
CYCLING FACILITIES
OTTAWA RIVER PATHWAY TO FLEET STREET**

PAVEMENT MARKINGS AND SIGNAGE 2
STA. 10+150 TO STA. 10+270
(FOR INFORMATION ONLY)

Contract No. Dwg. No. 043

Sheet 43 of 47

Asset No.

Asset Group

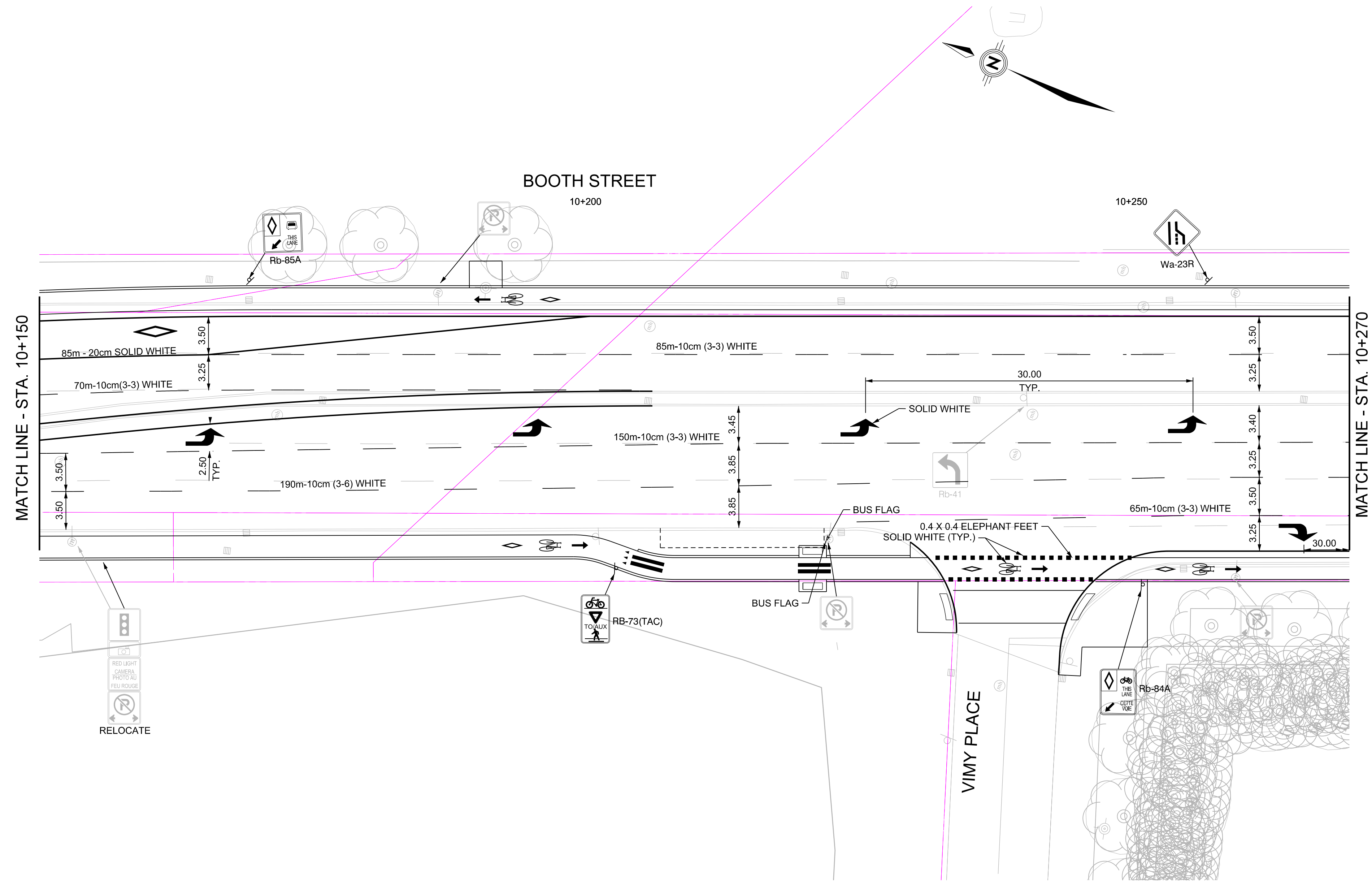
PARSONS

Des. G.H. Chk'd. C.R.
Dwn. G.H. Chk'd. C.R.
Utility Circ. No. Index No.
Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR MUNICIPAL CONSENT	CR	28/02/2019
2	ISSUED FOR DEVELOPMENT REVIEW	CR	27/06/2019
3	ISSUED FOR CONSTRUCTION	CR	26/07/2019



**BOOTH STREET
CYCLING FACILITIES
OTTAWA RIVER PATHWAY TO FLEET STREET**

**PAVEMENT MARKINGS AND
SIGNAGE 3
STA. 10+270 TO STA. 10+380
(FOR INFORMATION ONLY)**

Contract No. Dwg. No. **044**

Sheet 44 of 47

Asset No.

Asset Group

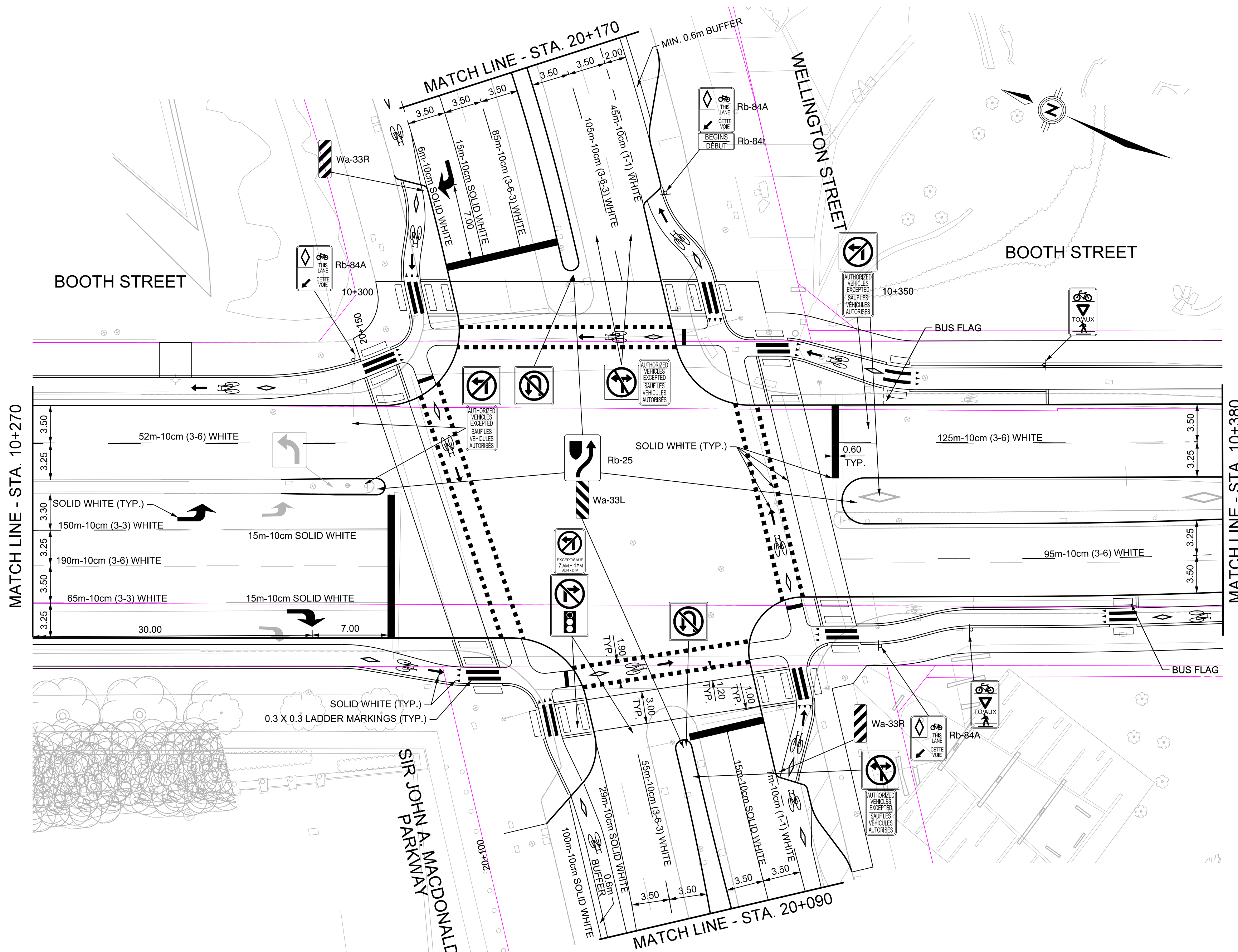
PARSONS

Des. G.H. Chk'd. C.R.
Dwn. G.H. Chk'd. C.R.
Utility Circ. No. Index No.
Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR MUNICIPAL CONSENT	CR	28/02/2019
2	ISSUED FOR DEVELOPMENT REVIEW	CR	27/06/2019
3	ISSUED FOR CONSTRUCTION	CR	26/07/2019



**BOOTH STREET
CYCLING FACILITIES
OTTAWA RIVER PATHWAY TO FLEET STREET**

**PAVEMENT MARKINGS AND
SIGNAGE 4**

STA. 10+380 TO LIMIT OF CONSTRUCTION
(FOR INFORMATION ONLY)

Contract No. Dwg. No. 045

Sheet 45 of 47

Asset No.

Asset Group

A. C. Gonthier, P.Eng. Amir Zahabi
Project Manager
Director

PARSONS

Des. G.H. Chk'd. C.R.

Dwn. G.H. Chk'd. C.R.

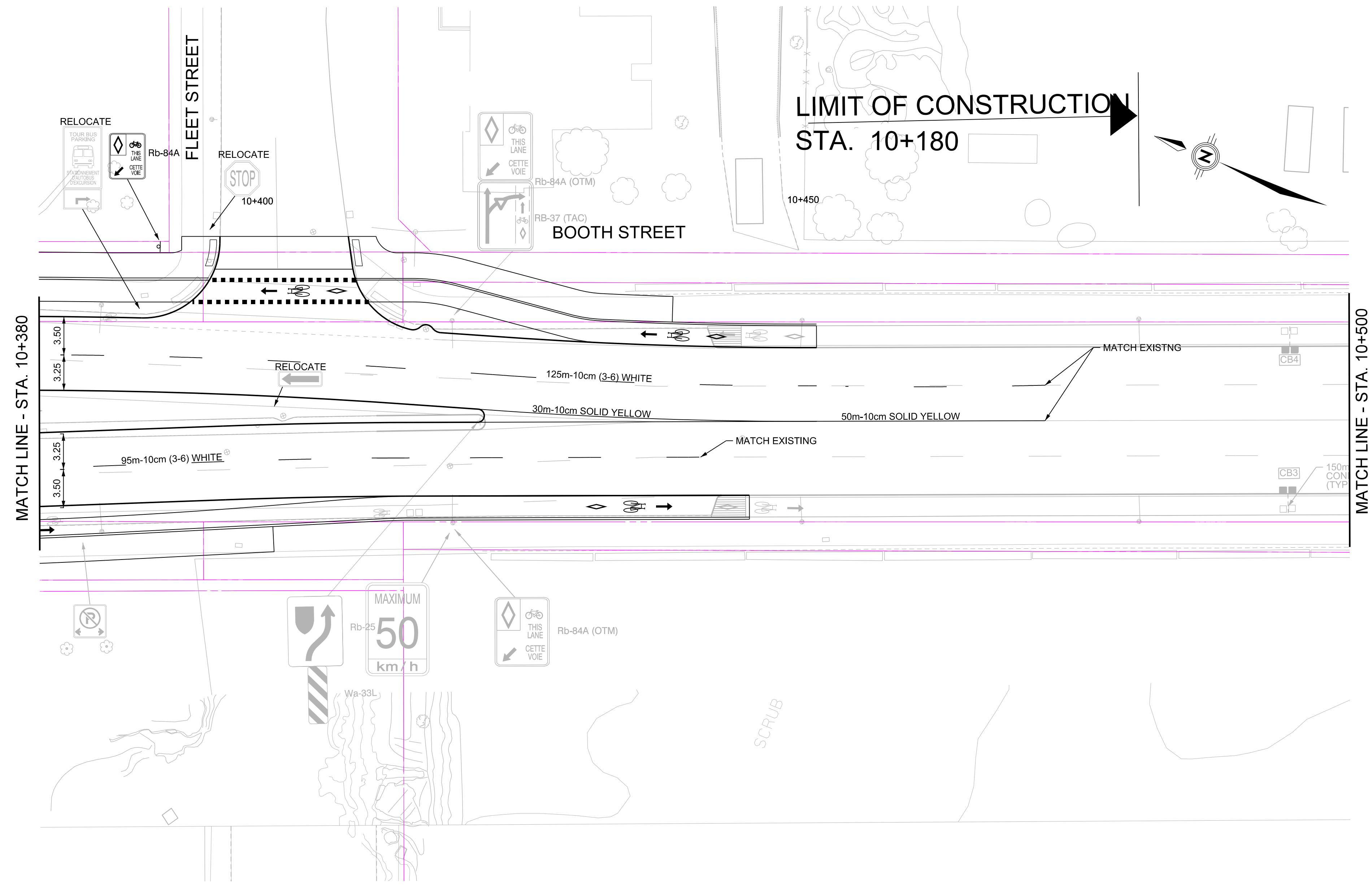
Utility Circ. No. Index No.

Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR MUNICIPAL CONSENT	CR	28/02/2019
2	ISSUED FOR DEVELOPMENT REVIEW	CR	27/06/2019
3	ISSUED FOR CONSTRUCTION	CR	26/07/2019



**BOOTH STREET
CYCLING FACILITIES
OTTAWA RIVER PATHWAY TO FLEET STREET**

**PAVEMENT MARKINGS AND
SIGNAGE 5**

**LIMIT OF CONSTRUCTION TO STA. 20+090
(FOR INFORMATION ONLY)**

A. C. Gonthier, P.Eng. Director
Amir Zahabi Project Manager

PARSONS

Contract No. 046
Dwg. No. 47
Sheet 46 of 47

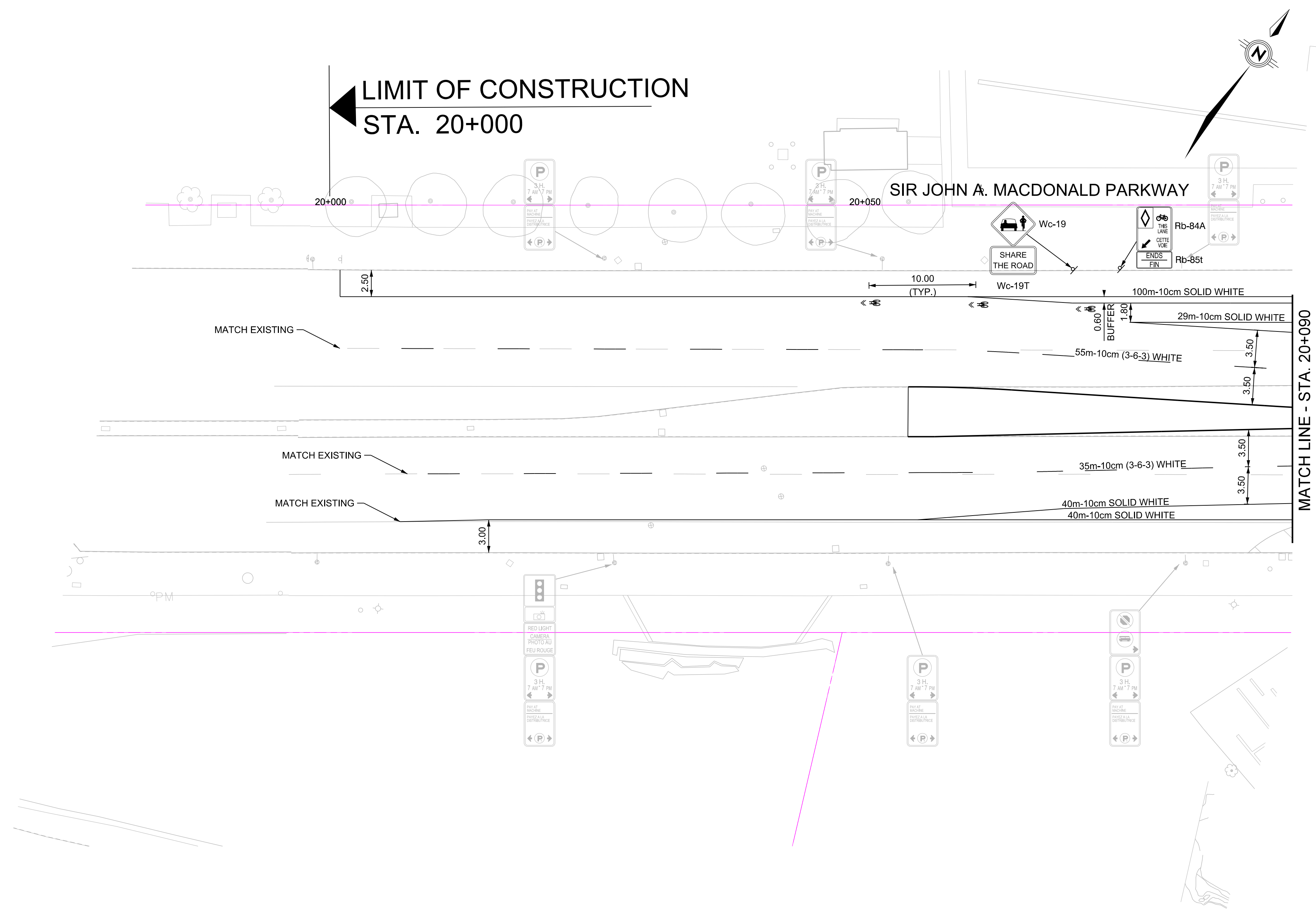
Asset No.
Asset Group

Des. G.H. Chk'd. C.R.
Dwn. G.H. Chk'd. C.R.
Utility Circ. No. Index No.
Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR MUNICIPAL CONSENT	CR	28/02/2019
2	ISSUED FOR DEVELOPMENT REVIEW	CR	27/06/2019
3	ISSUED FOR CONSTRUCTION	CR	26/07/2019



**BOOTH STREET
CYCLING FACILITIES
OTTAWA RIVER PATHWAY TO FLEET STREET**

**PAVEMENT MARKINGS AND
SIGNAGE 6**

**STA. 20+170 TO LIMIT OF CONSTRUCTION
(FOR INFORMATION ONLY)**

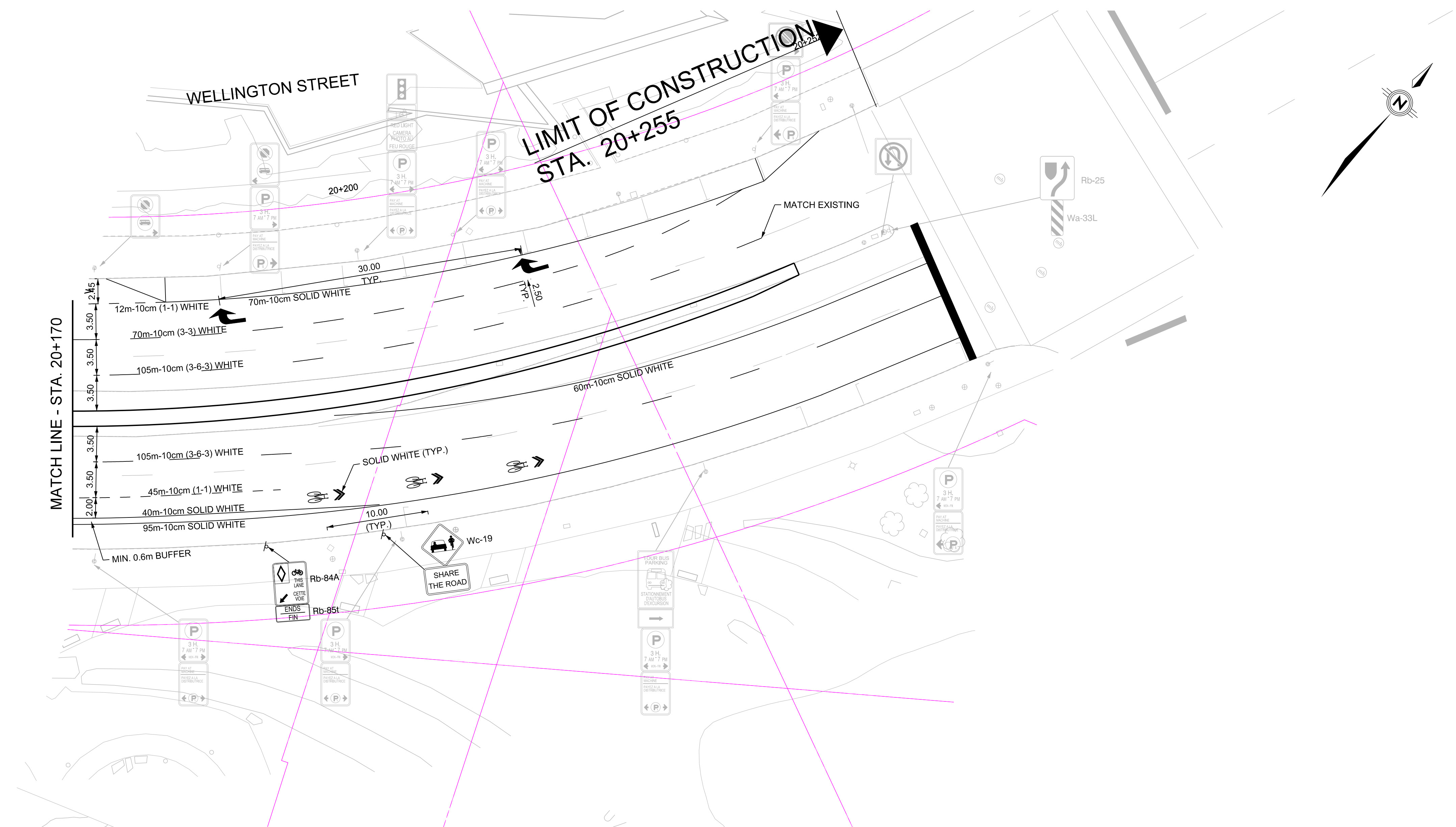
A. C. Gonthier, P.Eng. Director | Amir Zahabi Project Manager

PARSONS

Contract No. 047 | Dwg. No. 47
Sheet 47 of 47

Des. G.H. | Chk'd. C.R.
Dwn. G.H. | Chk'd. C.R.
Utility Circ. No. | Index No.
Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10



NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR MUNICIPAL CONSENT	CR	28/02/2019
2	ISSUED FOR DEVELOPMENT REVIEW	CR	27/06/2019
3	ISSUED FOR CONSTRUCTION	CR	26/07/2019



INFRASTRUCTURE SERVICES

ALAIN C. GONTHIER, P.Eng.
DIRECTOR
INFRASTRUCTURE SERVICES



Robinson
Consultants

ALBERT STREET CYCLING & PEDESTRIAN FACILITIES

CONTRACT NO. ISD12-5096

ISSUED FOR COMMENTS
MAY 29, 2019

APPENDIX G

EXCERPTS FROM OTHER AREA DEVELOPMENTS

3.3 SITE TRAFFIC GENERATION

The projected site traffic was generated for both the As of Right zoning as well as the Proposed zoning, as outlined in the following subsections.

3.3.1 As of Right Zoning

The lands are currently zoned as R50 [951] H(20), GM7 [119] H(25), or GM7 [119] H(33). Based on this zoning, the highest and best land uses in terms of traffic generation potential were developed to simulate what could potentially be built on the subject property under the current zoning by-law. The assumed land uses include residential mid-rise and high-rise apartment buildings, retail space, and office space.

The *Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition)* was used to estimate traffic generated by the assumed land uses. The ITE land uses were 222 – High Rise Apartments, 223 – Mid-Rise Apartments, 710 – General Office Space, and 826 – Specialty Retail Centre.

Table 1 summarizes the trip generation forecasts under the As of Right zoning, with the ensuing sections describing each step of the calculation.

Table 1 Trips Generated by the As of Right Zoning

	1000'S GFA / # UNITS	MORNING PEAK HOUR			AFTERNOON PEAK HOUR			
		In	Out	Total	In	Out	Total	
Step 1: ITE Trip Generation Rates								
223 – Mid-Rise Apartment	814	31%	69%	0.39	58%	42%	0.47	
222 – High-Rise Apartment	115	25%	75%	0.31	61%	39%	0.43	
826 – Specialty Retail Center	10	0%	0%	0.00	44%	56%	4.62	
710 – General Office	51	88%	12%	1.10	17%	83%	1.49	
Step 2: Auto Trips Generated								
223 – Mid-Rise Apartment	814	100	221	321	220	160	380	
222 – High-Rise Apartment	115	9	26	35	30	19	49	
826 – Specialty Retail Center	10	0	0	0	20	25	45	
710 – General Office	51	49	7	56	13	64	77	
Step 3: Conversion from Auto Trips to Person Trips								
Total Development	Trip Gen		158	254	412	283	268	551
	Transit Share	10%	16	26	42	28	27	55
	Auto Occupancy	1.1	16	26	42	28	27	55
	Total Person Trips		190	306	496	339	322	661
Step 4: Person Trips by Modal Share								
Total	Auto	15%	28	46	74	51	48	99

		1000'S GFA / # UNITS	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
			In	Out	Total	In	Out	Total
Development	Passenger	5%	10	15	25	17	16	33
	Transit	65%	124	199	323	220	210	430
	Walk / Bike	15%	28	46	74	51	48	99

3.3.2 Proposed Zoning

The *Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition)* was used to estimate traffic generated by the proposed zoning and conceptual plan shown in **Figure 2**. The ITE land use codes were 222 – High Rise Apartments, 710 – General Office Space, 826 – Specialty Retail Centre, and 590 - Library.

Table 2 summarizes the trip generation forecasts under the proposed zoning, with the ensuing sections describing each step of the calculation.

Table 2 Trips Generated by the Proposed Development

		1000'S GFA / # UNITS	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
			In	Out	Total	In	Out	Total
Step 1: ITE Trip Generation Rates								
222 – High-Rise Apartment		672	25%	75%	0.30	61%	39%	0.34
710 – General Office Building		183	88%	12%	1.70	17%	83%	1.55
826 – Specialty Retail Center		92	0%	0%	0.00	44%	56%	2.63
590 – Library		215	71%	29%	1.04	48%	52%	7.30
Step 2: Auto Trips Generated								
222 – High-Rise Apartment		672	50	151	201	138	89	227
710 – General Office Building		183	273	37	310	48	235	283
826 – Specialty Retail Center		92	0	0	0	106	136	242
590 – Library		215	159	65	224	754	816	1570
Step 3: Conversion From Auto Trips to Person Trips								
Total Development	Trip Gen		482	253	735	1046	1276	2322
	Transit Share	10%	48	25	73	105	127	232
	Auto Occupancy	1.1	48	25	73	105	127	232
	Total Person Trips		578	303	881	1256	1530	2786
Step 4: Person Trips by Modal Share								
Total Development	Auto	15%	87	45	132	188	229	417
	Passenger	5%	28	15	43	64	77	141
	Transit	65%	376	198	574	816	995	1811
	Walk / Bike	15%	87	45	132	188	229	417

3.3.3 Conversion of ITE Rates to Person Trips

The notion of quantifying the volume of “person” trips expected to be generated by a given development is becoming a commonly accepted practice. It is aimed at quantifying the expected demands across the primary modes of transportation.

To convert ITE rates to person trips, the rates obtained from the ITE Trip Generation Manual were adjusted to account for an inherent transit mode share and auto occupancy. An assumed transit share of 10% was thought to be inherent within the ITE rates and an auto occupancy rate of 1.1 persons per vehicle was also assumed to be inherent within the ITE rates.

Step 3 of **Table 1** and **Table 2** outlines the conversion from auto trips to person trips.

3.3.4 Net New Site Trips

The person trips were then assigned to the four primary mode shares (i.e. auto, passenger, transit, and active modes). As the subject site is located next to the future PIMISI LRT station, it is well within the area of influence of a Transit-Oriented Development. As outlined in the City of Ottawa's *Transit-Oriented Development (TOD) Plans (2014)*, the mode share targets include the following:

- Transit – 65%
- Active Modes – 15%
- Auto Passenger – 5%
- Auto Driver – 15%

Step 4 of **Table 1** and **Table 2** summarizes the expected person trips by mode share.

It is common to consider internal capture rates within mixed use developments as motorists from portions of the development can be destined to other portions of the development (i.e. motorists from a restaurant may also visit a bank on the same site). Due to the proximity to the future LRT station, the internal capture percentage would be negligible as the auto mode share of the proposed development is anticipated to be very low. To remain conservative, an internal capture rate - which would have reduced the volume of vehicle trips generated - was not applied.

The As of Right zoning is anticipated to generate approximately 496 and 661 person trips during the AM and PM peak hours, respectively. In terms of vehicle trips, the As of Right zoning is anticipated to generate 74 auto trips during the AM peak hour and 99 auto trips during the PM peak hour. In terms of transit trips, the As of Right zoning is also anticipated to generate 323 and 430 transit trips during the AM and PM peak hours, respectively.

The proposed zoning is anticipated to generate approximately 881 and 2786 person trips during the AM and PM peak hours, respectively. In terms of vehicle trips, the proposed zoning is anticipated to generate approximately 132 auto trips during the AM peak hour and 417 auto trips during the PM peak hour. In terms of transit trips, the proposed zoning is also anticipated to generate 574 and 1811 transit trips during the AM and PM peak hours, respectively.

3.3.5 Traffic Distribution and Assignment

The distribution of traffic to / from the study area was determined through examination of the TRANS Committee's 2011 Origin-Destination (O-D) Survey for the Ottawa Inner Area.

Table 3 provides a summary of the estimated distribution of traffic generated by the proposed development.

The anticipated site traffic generated by the proposed development was assigned to the boundary road network using a logical pattern of primary roads. It should be noted that certain traffic restrictions (i.e. westbound left turns are prohibited during the peak hours from Albert Street to Booth Street and eastbound right turns are prohibited from Slater street to Bronson Avenue) influenced the assignment of traffic as outlined below. The distribution and assignment assumptions were consistent for both the As of Right zoning and the Proposed zoning scenarios.

Figure 12 and **Figure 13** illustrate the assignment of site traffic generated by the As of Right zoning.

Figure 14 and **Figure 15** illustrate the assignment of site traffic generated by the Proposed zoning.

Table 3 Traffic Distribution to / from the Ottawa Inner Area District

CARDINAL DIRECTION	% DISTRIBUTION	VIA (TO / FROM)			
		Booth	Bronson	Slater	Albert
North	5%	5%			
East	30%		3%	27%	
South	10%		10%		
West	15%		15%		
Internal	40%	2%	24%	10%	4%
Total	100%	7%	52%	37%	4%

AM Peak Hour

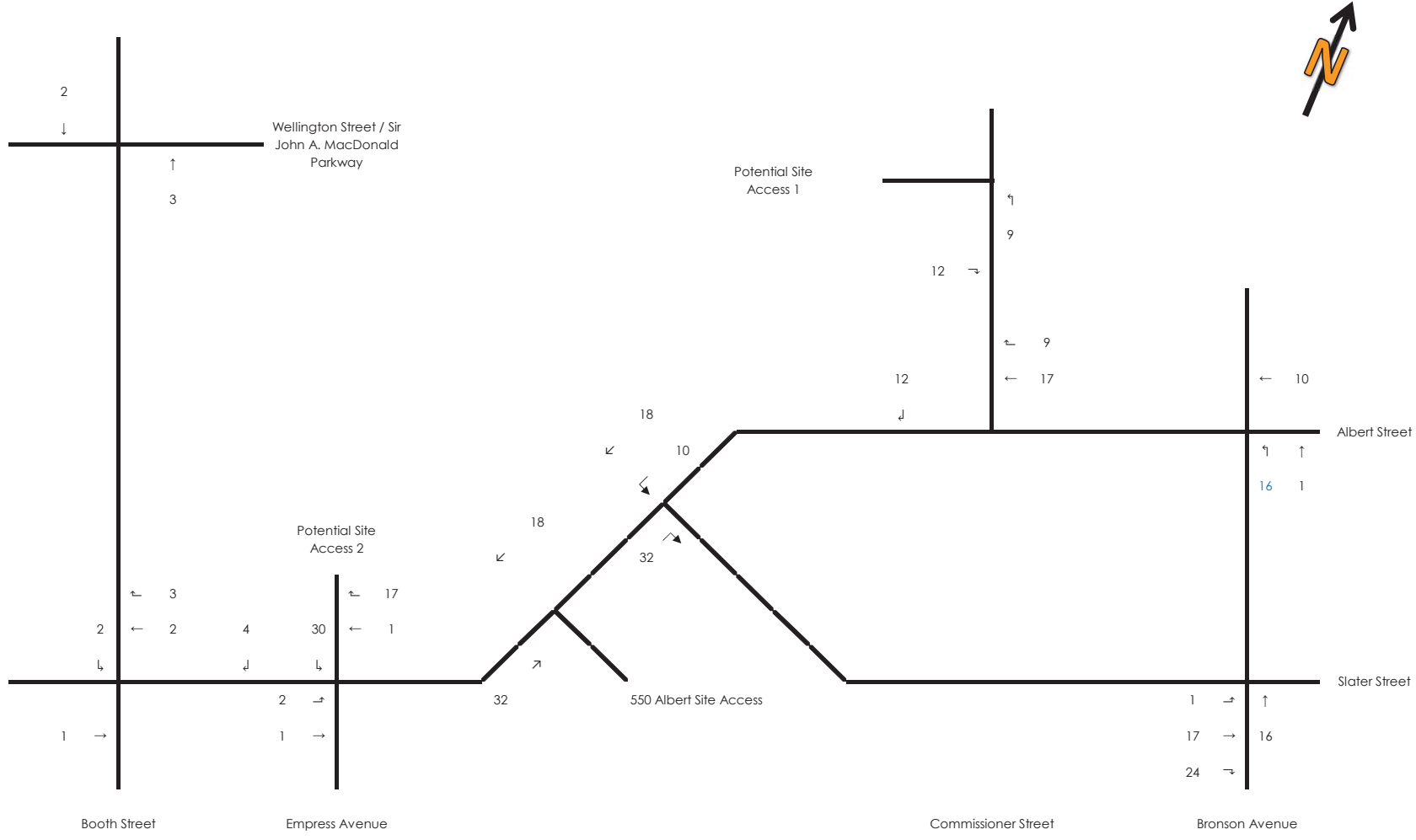


Figure 12: Site Traffic Volumes - As of Right Zoning
AM Peak Hour

PM Peak Hour

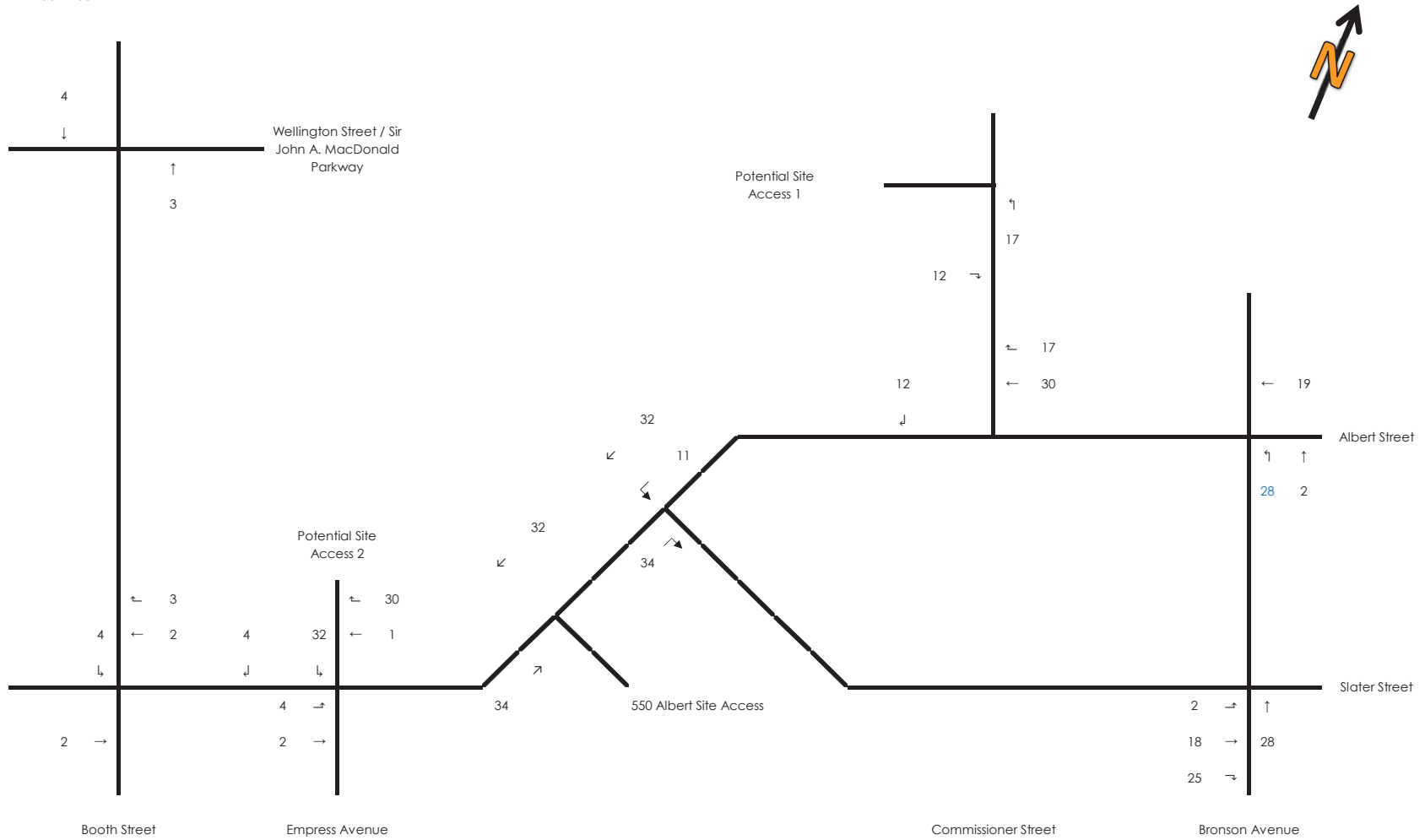


Figure 13: Site Traffic Volumes - As of Right Zoning

PM Peak Hour

AM Peak Hour

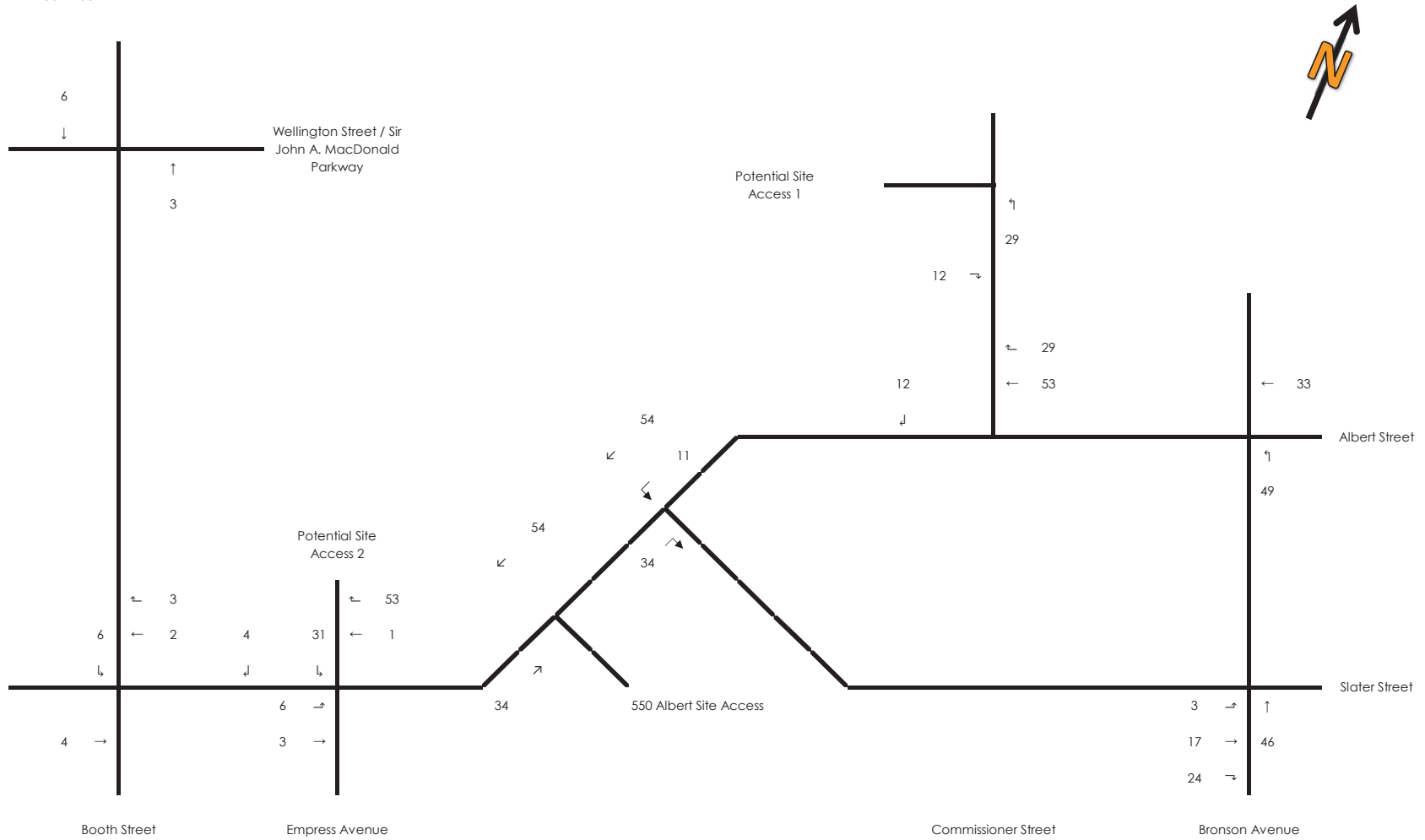


Figure 14: Site Traffic Volumes - Proposed Zoning

AM Peak Hour

PM Peak Hour

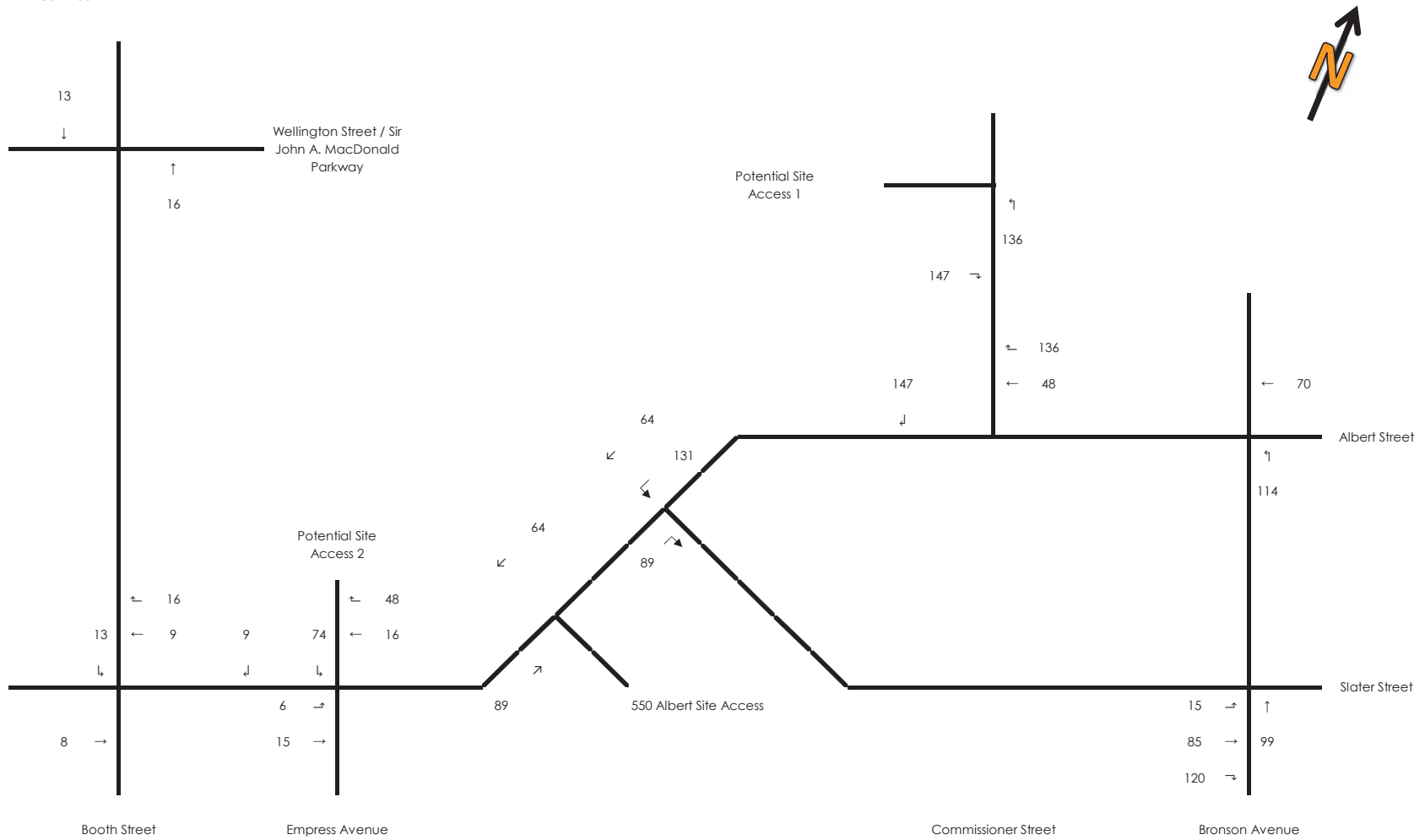


Figure 15: Site Traffic Volumes - Proposed Zoning

PM Peak Hour

geometry, assumed for the analysis herein, no peak hour vehicle volume reduction is required during the afternoon rush hour to achieve acceptable levels of service of LoS 'E' or better along the corridor.

As it was determined in the MMTIS that future vehicle volume reductions would be required to improve existing conditions as well as to accommodate the future traffic associated with the Zibi development, these revised volume reductions have been incorporated in the ensuing projected conditions analysis (Section 5).

4.3 Site Trip Generation

4.3.1 PHASE I

Appropriate trip generation rates for the proposed Phase I development consisting of approximate 50,000 ft² of retail, 38,000 ft² of office, a 7,000 ft² community centre, and 315 residential units¹ were obtained from the 9th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual, which are summarized in Table 4.

Table 4: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
		Condominiums	ITE 230
Office	ITE 720	$T = 2.39(X);$	$T = 2.74(X);$ $\ln(T) = 0.90 \ln(X) + 1.53$
Specialty Retail Centre	ITE 826	$T = 1.36(X);$ $T = 1.20(X) + 10.74$	$T = 2.71(X);$ $T = 2.40(X) + 21.48$
Recreational Community Centre	ITE 495	$T = 2.05(X);$	$T = 2.74(X);$
Notes: T = Average Vehicle Trip Ends X = 1000 ft ² Gross Floor Area du = dwelling units Specialty Retail AM Peak is assumed to be 50% of the PM Peak			

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development. This approach is considered appropriate within the industry for urban infill developments.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. As such, the person trip generation for the proposed site is summarized in Table 5.

¹ The residential units were calculated based on the assumption of approximately 850 ft² per unit. The total GFA of the residential area proposed for Phase I is 267,784 ft², which equates to approximately 315 units.

Table 5: Modified Person Trip Generation

Land Use	Area	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Condominiums	315 du	28	140	168	134	66	200
Office	38,000 ft ²	93	25	118	44	115	159
Specialty Retail Centre	49,908 ft ²	51	41	92	80	104	184
Recreational Community Centre	7,000 ft ²	12	7	19	12	13	25
Total Person Trips		184	213	397	270	298	568

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

The person trips shown in Table 5 for the proposed site were then reduced by modal share values (including a reduction for ‘pass-by’ trips) based on the site’s mixed use, location, and proximity to adjacent communities, employment, other shopping uses, transit availability, and bicycle and pedestrian system connections. Modal share and ‘pass-by’ values for condominium, office, specialty retail, and community centre land uses within the proposed development are summarized in Tables 5, 6, 7, and 8, respectively.

Given the close proximity to Ottawa’s/Hull’s downtown, the implementation of Gatineau’s RapiBus, the construction of Ottawa’s Confederation LRT line, the limited interprovincial bridge capacity and the proposed development’s pedestrian/bike-oriented design, the following modal share values are considered justifiable/appropriate.

Table 6: Condominium Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	25%	7	35	42	34	17	51
Auto Passenger	5%	2	7	9	7	3	10
Transit	50%	14	70	84	67	33	100
Non-motorized	20%	5	28	33	26	13	39
Total Person Trips	100%	28	140	168	134	66	200
Total ‘New’ Auto Trips		7	35	42	34	17	51

Table 7: Office Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	30%	28	8	36	14	35	49
Auto Passenger	5%	5	1	6	3	6	9
Transit	45%	42	11	53	19	51	70
Non-motorized	20%	18	5	23	8	23	31
Total Person Trips	100%	93	25	118	44	115	159
Total ‘New’ Auto Trips		28	8	36	14	35	49

Table 8: Specialty Retail Centre Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	20%	11	9	20	16	21	37
Auto Passenger	5%	2	2	4	4	6	10
Transit	20%	10	8	18	16	20	36
Non-motorized	55%	28	22	50	44	57	101
Total Person Trips	100%	51	41	92	80	104	184
Less Retail 30% Pass-By		-3	-3	-6	-6	-6	-12
Total 'New' Auto Trips		8	6	14	10	15	25

Table 9: Recreational Community Centre Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	20%	3	2	5	3	3	6
Auto Passenger	5%	1	1	2	1	1	2
Transit	20%	2	1	3	2	2	4
Non-motorized	55%	6	3	9	6	7	13
Total Person Trips	100%	12	7	19	12	13	25
Total 'New' Auto Trips		3	2	5	3	3	6

The following Table 10 provides a summary of potential two-way vehicle trips to/from the proposed development with a reduction of 10% for multi-purpose trips (i.e. drivers stopping at two destinations within one trip).

Table 10: Total Phase I Site Vehicle Trip Generation

Land Use	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Condominiums	7	35	42	34	17	51
General Office Building	28	8	36	14	35	49
Specialty Retail Centre	11	9	20	16	21	37
Recreational Community Centre	3	2	5	3	3	6
Retail Pass-By (30%)	-3	-3	-6	-6	-6	-12
Multi-Purpose Trips (10%)	-5	-5	-10	-6	-7	-13
Total 'New' Auto Trips	41	46	87	55	63	118

As shown in Table 10, the resulting number of potential 'new' two-way vehicle trips for the proposed Phase I development is approximately 90 and 120 veh/h during the weekday morning and afternoon peak hours, respectively. With regard to site-generated transit ridership it is estimated to be 160 to 210 persons per hour two-way total.

4.3.2 PHASE 2 TO 8

Trip generation for Phases 2 to 8 for the proposed development are included herein to assess the traffic impact of full site development at the site's signalized intersection to Booth Street. This is necessary to ensure that the intersection is designed initially to its optimal/ultimate requirements and does not have to

be redone at a later date. The current phasing plan is included as Appendix K. Currently, the proposed Phases 3, 4 and 5 west of Booth Street will consist of approximately 760 dwelling units², 81,000 ft² of office and 45,300 ft² of retail. Phases 2, 6, 7 and 8 east of Booth Street currently proposed to have approximately 350 dwelling units, 4,000 ft² of retail and an approximate 100 room hotel. The trip generation method outlined for Phase 1 was also applied to all other phases, and the resultant projected new auto trips are summarized in Table 11.

Table 11: Phases 2 to 8 Site Trip Generation

Land Use	Area	AM Peak (veh/h)			PM Peak (veh/h)		
		In	Out	Total	In	Out	Total
Condominiums	1,106 du	23	109	132	106	52	158
Office	81,000 ft ²	60	16	76	27	68	95
Specialty Retail Centre	49,300 ft ²	13	10	23	19	24	43
Hotel	100 rooms	14	11	25	14	14	28
Retail Pass-By (30%)		-4	-4	-8	-6	-6	-12
Multi-Purpose Trips (10%)		-10	-14	-24	-15	-16	-31
Total 'New' Auto Trips		96	128	224	145	136	281

As shown in Table 11, the resulting number of potential 'new' two-way vehicle trips for the proposed Phases 2 to 8 of the development is approximately 225 and 280 veh/h during the weekday morning and afternoon peak hours, respectively. The total site trip-generation for all phases is approximately 315 and 400 veh/h two-way total. With regard to site-generated transit ridership for all three phases, it is estimated to be 420 to 525 persons per hour two-way total.

4.4 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on the different types of land uses, existing volume splits at study area intersections, the MMTIS, and our knowledge of the surrounding area. The resultant distribution is outlined as follows:

Residential

- 75% to/from the south (Ottawa); and
- 25% to/from the north (Gatineau).

Office/Retail

- 50% to/from the south (Ottawa); and
- 50% to/from the north (Gatineau).

Based on these distributions, 'new' and 'pass-by' site-generated trips for Phase I are assigned to study area intersections, which are illustrated in Figure 7. 'New' and 'pass-by' site-generated trips for Phases 1 to 8 are illustrated in Figure 8.

² The residential units were calculated based on the assumption of approximately 850 ft² per unit. The total GFA of the residential area proposed for Phases II and III is 938,500 ft², which equates to approximately 1106 units.

Figure 7: Phase I Site-Generated Traffic Volumes (New and Pass-by)

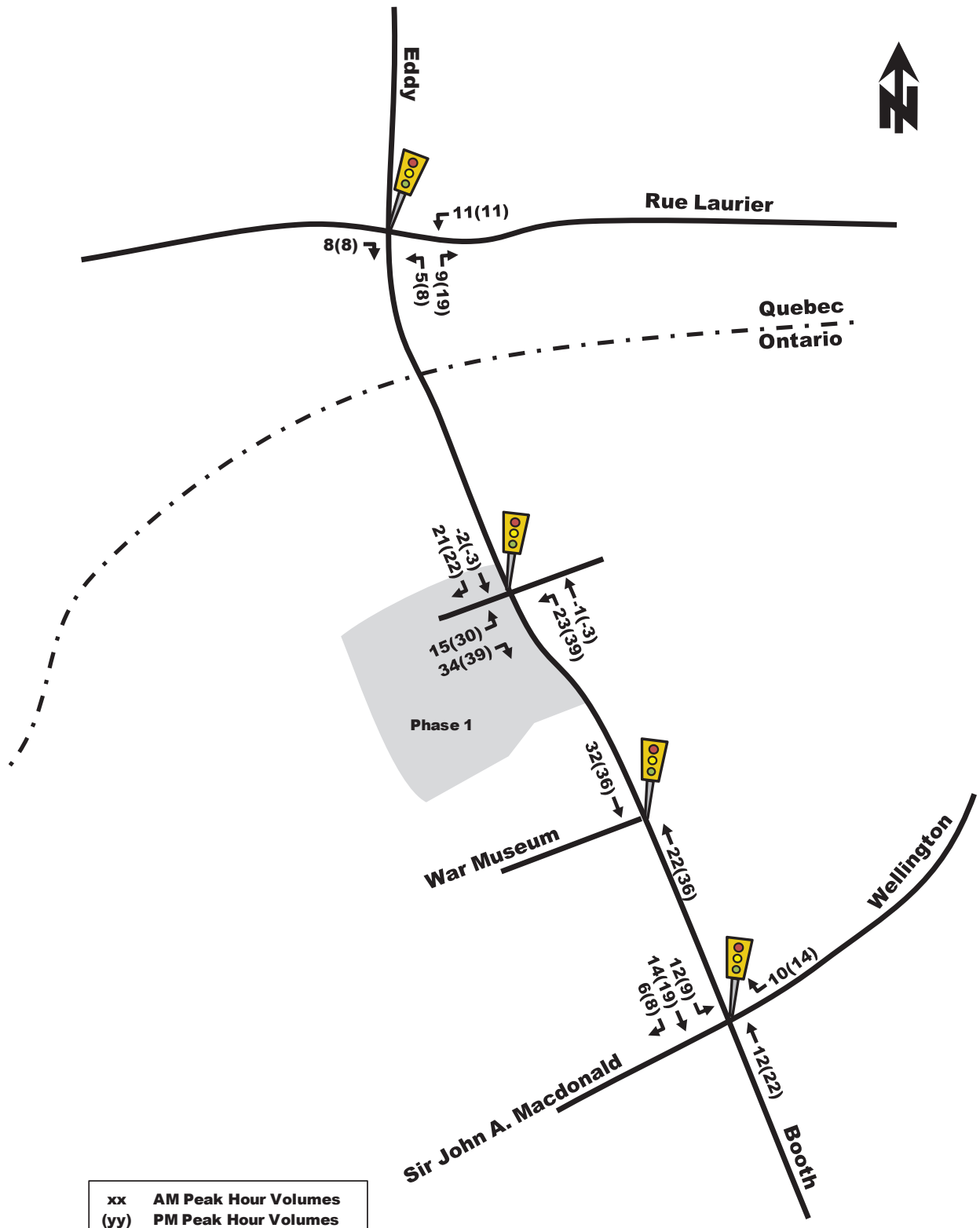
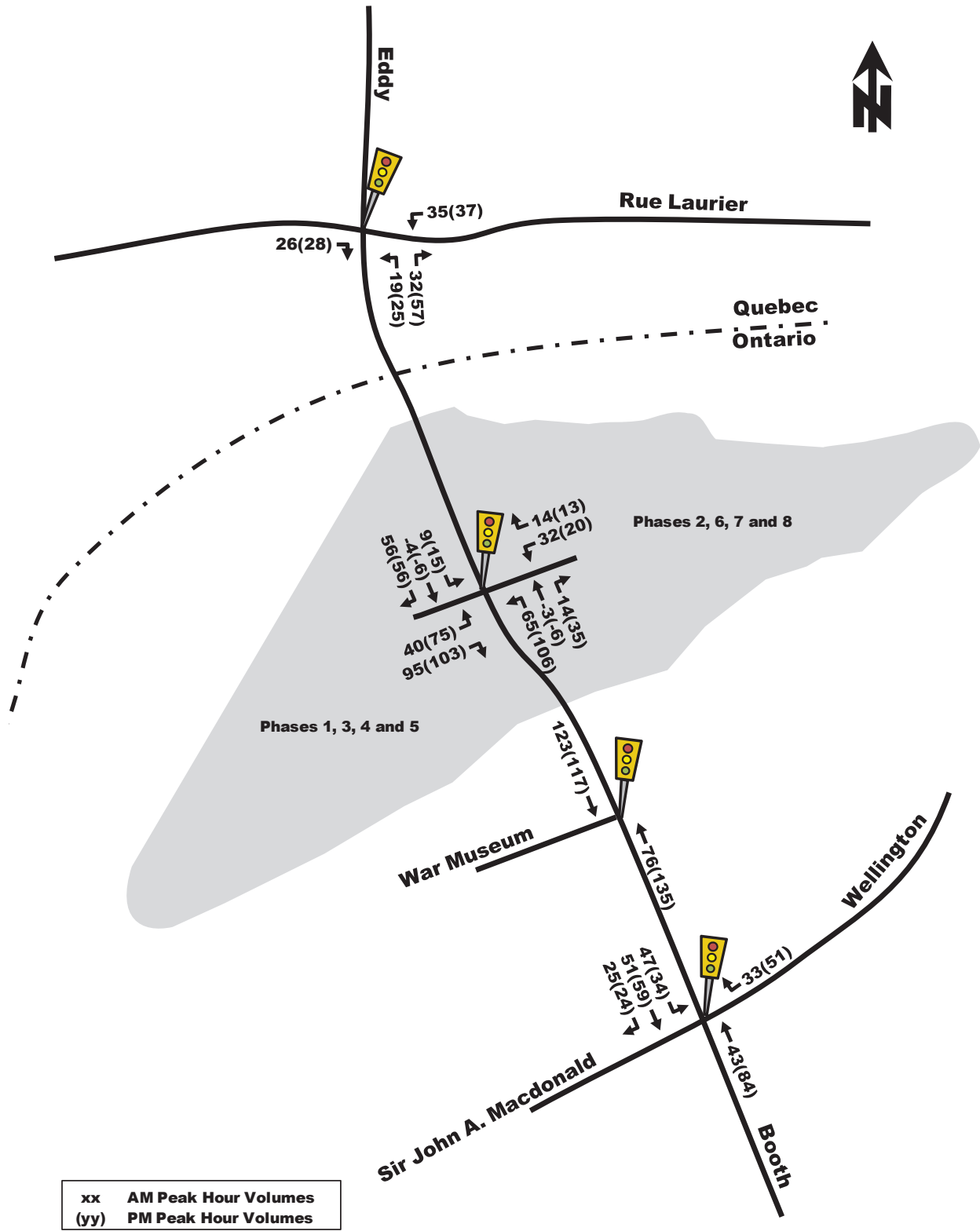


Figure 8: Phases 1 to 8 Site-Generated Traffic Volumes (New and Pass-by)



Revised: 8 July 2019

OUR REF: 602835-03000

Windmill Green Fund LPV
1306 Wellington Street West
Suite 201
Ottawa, ON K1Y 3B2**Attention: Scott Bentley**

Dear Scott:

**Re: Zibi Ontario Phase 1
Transportation Impact Study (4 September 2015) Addendum No. 4.
Block 207**

1. INTRODUCTION

This brief letter report has been prepared to satisfy the submission requirements of the City of Ottawa for the Site Plan Control application for **Block 207** of the Zibi Ontario Phase 1 Development.

Previous transportation planning documents prepared by Parsons for the proposed development include: *Domtar Lands Redevelopment - Multi-Modal Transportation Impact Study* dated 21 April 2014; *Zibi Ontario Phase 1A Transportation Impact Study* dated 4 September 2015; *Zibi Ontario Phase 1A Response to City of Ottawa Comments* dated 5 January 2016, 20 July 2017 and 16 November 2017 (Addendum No. 1, 2, and 3, respectively)

The most current version of the Phase 1 Plan is attached, which shows the subject Block 207 in the southwest quadrant of the Booth/Chaudière intersection.

2. PREVIOUS TIA SUBMISSION (4 SEPTEMBER 2015)

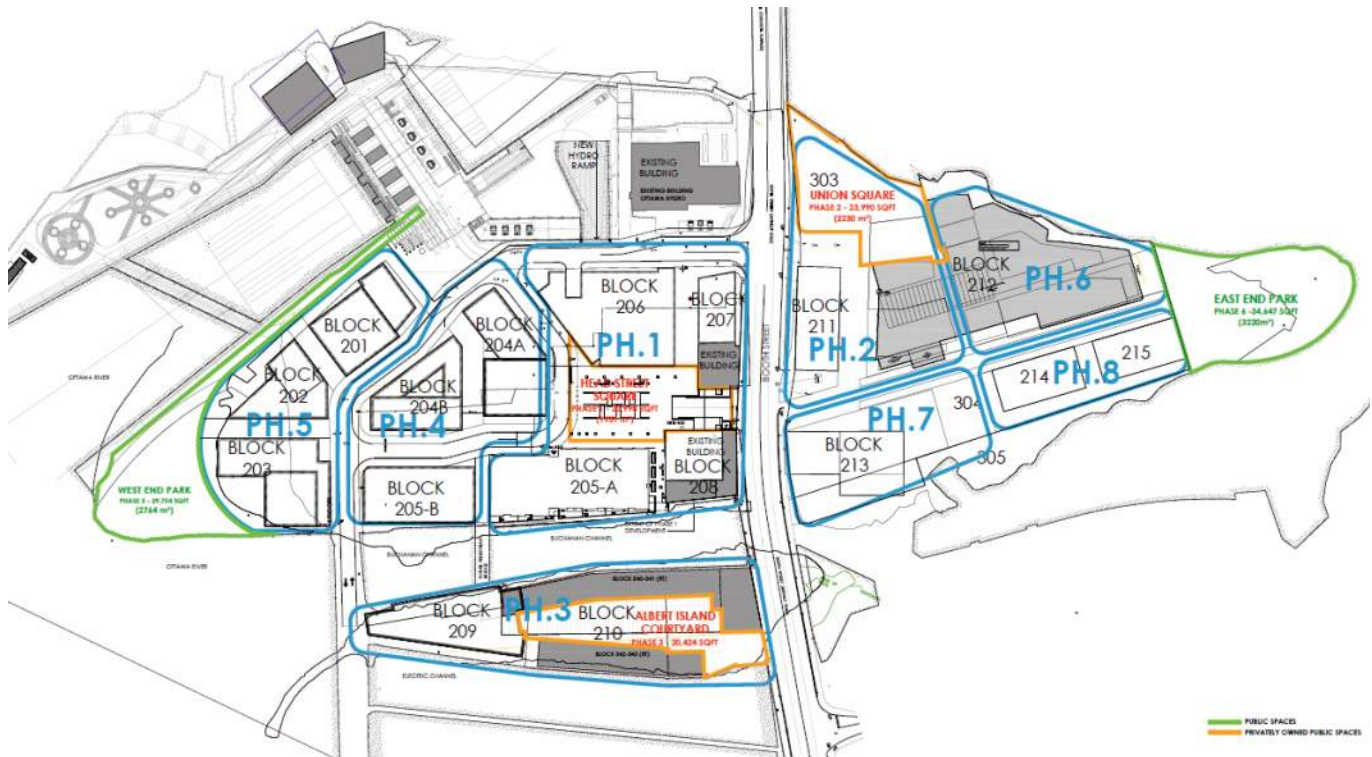
The original Transportation Impact Study prepared by Parsons included all development for Zibi Ontario Phase 1, including approximately 50,000ft² retail, 38,000ft² office, 315 residential units, and 7,000ft² community space comprised of two sub-phases, namely:

- Phase 1a - Blocks 301 (interim parking), 208 and 205A (25,000 ft² office, 25,000 ft² retail and 67 residential units),
- Phase 1b - Blocks 207 and 206.

At the time, Block 207 was envisioned to consist of 40,000 ft² office/retail, with an approximate equal split of office and retail space, while Block 206 would be predominantly a residential building.

Note that the title of the September 2015 TIA refers to Phase 1A, but it actually reflects the entire Phase 1 (i.e., A and B). The TIS indicated that the entire Phase 1 development was projected to generate approximately 90 and 120 veh/h during the weekday morning and afternoon peak hours, respectively.

Furthermore, the RMA for the Booth/Chaudière intersection was approved as part of the submission, and it is understood that these works, supporting the full development, will be completed by 2019.



3. BLOCK 207 SUBMISSION

The attached Site Plan for the subject Block 207 indicates a GFA of 70,200 ft² office/retail, which is approximately 50% greater than the size of land use assumed in the original submission. However, it is understood that the proposed split is 54,119 ft² office (floors 2-6), 6,928 ft² retail and 9,153 ft² restaurant (ground floor), which results in additional office space and reduced retail space than assumed in the original TIS. The updated total office space associated with Phase 1 is approximately 72,500 ft² (versus 38,000 ft² previously assumed), updated total retail space is approximately 28,300 ft² (versus 50,000 ft² previously assumed) and newly proposed 9,153 ft² of restaurant space. The number of residential units remains unchanged at approximately 300 units.

The projected vehicle trip generation associated with the resulting increased office space (and reduced retail space) for Block 207 is 70 veh/h and 85 veh/h, during the weekday morning afternoon peak hours respectively. When also accounting for the previously approved Blocks 205A, 208 and 301, the combined total is 110 veh/h and 140 veh/h respectively. These totals are within 20 veh/h of the volume projections forecasted as part of the original TIA (namely 90 and 120 veh/h as indicated in Section 2), and therefore no further analysis is required.

With regard to vehicle parking, a total of 68 spaces are proposed, with 32 on P1 and 36 on P2. The By-Law requirement is for 56 spaces. Vehicle access for these spaces will be through Block 301 which is being constructed as part of Phase 1A. With regard to bicycle parking, the By-Law requirement is for 26 spaces, however, 32 are proposed with 18 in the garage and 14 outside adjacent to the west wall of the Block 207 building in the pedestrian alley.

PARSONS

Pedestrian access to Block 207 will be from both the east and west side of the building (Booth St and Ahearn Pedestrian St). In the short term, vehicles will enter the underground parking garage via a temporary ramp in Block 301. When Block 206 is eventually built, the temporary ramp into 301 will be replaced by a permanent ramp in Block 206.

When Block 206 is introduced (future application), resulting in an estimated 250 residential units and 7,000 ft² community space, the total projected vehicle trip generation using the standard approach is 140 and 170 veh/h during the weekday morning and afternoon peak hours, respectively. These totals are within 50 veh/h of the volume projections forecasted as part of the original TIA (namely 90 and 120 veh/h as indicated in Section 2), and therefore consideration could be given at that time for additional transportation study requirements. It should be noted, however, that the on-site parking supply will have a significant impact on the magnitude of peak hour site-generated traffic. If a reduced amount of parking is provided (even though By-Law requirement is met) than the estimated peak hour traffic volume based on floor area of proposed land use or number of residential units, will be much higher than the actual realized volume.

Based on the foregoing, the proposed Zibi Ontario Phase 1 development, and Block 207, continues to be recommended from a transportation perspective. If there are any questions, please contact the undersigned.

Sincerely,



Mark Baker, P.Eng.
Senior Transportation Engineer

attachment



17 June 2019

OUR REF: 602835-03000

Windmill Green Fund LPV
1306 Wellington Street West
Suite 201
Ottawa, ON K1Y 3B2

scott.bentley@zibi.ca

Attention: Scott Bentley

Dear Scott:

**Re: Zibi Ontario Phase 1: *Transportation Impact Study (4 September 2015)*
*Addendum No. 5 for Block 211***

1. INTRODUCTION

This brief letter report has been prepared to satisfy the submission requirements of the City of Ottawa for the Site Plan Control application for **Block 211** of the Zibi Ontario development.

Previous transportation planning documents prepared by Parsons for the proposed development include: *Domtar Lands Redevelopment - Multi-Modal Transportation Impact Study* dated 21 April 2014; *Zibi Ontario Phase 1A Transportation Impact Study* dated 4 September 2015; *Zibi Ontario Phase 1A Response to City of Ottawa Comments* dated 5 January 2016, 20 July 2017 and 16 November 2017 (Addendum No. 1, 2, and 3, respectively), and Addendum #4 for Block 207 dated 4 March 2019.

The most current Zibi Ontario Context and Blocking Plan is provided in Figure 1, with the subject Block 211 located in the southeast quadrant of the Booth/Chaudière East intersection, highlighted in yellow.

2. PREVIOUS TIA SUBMISSION (4 SEPTEMBER 2015)

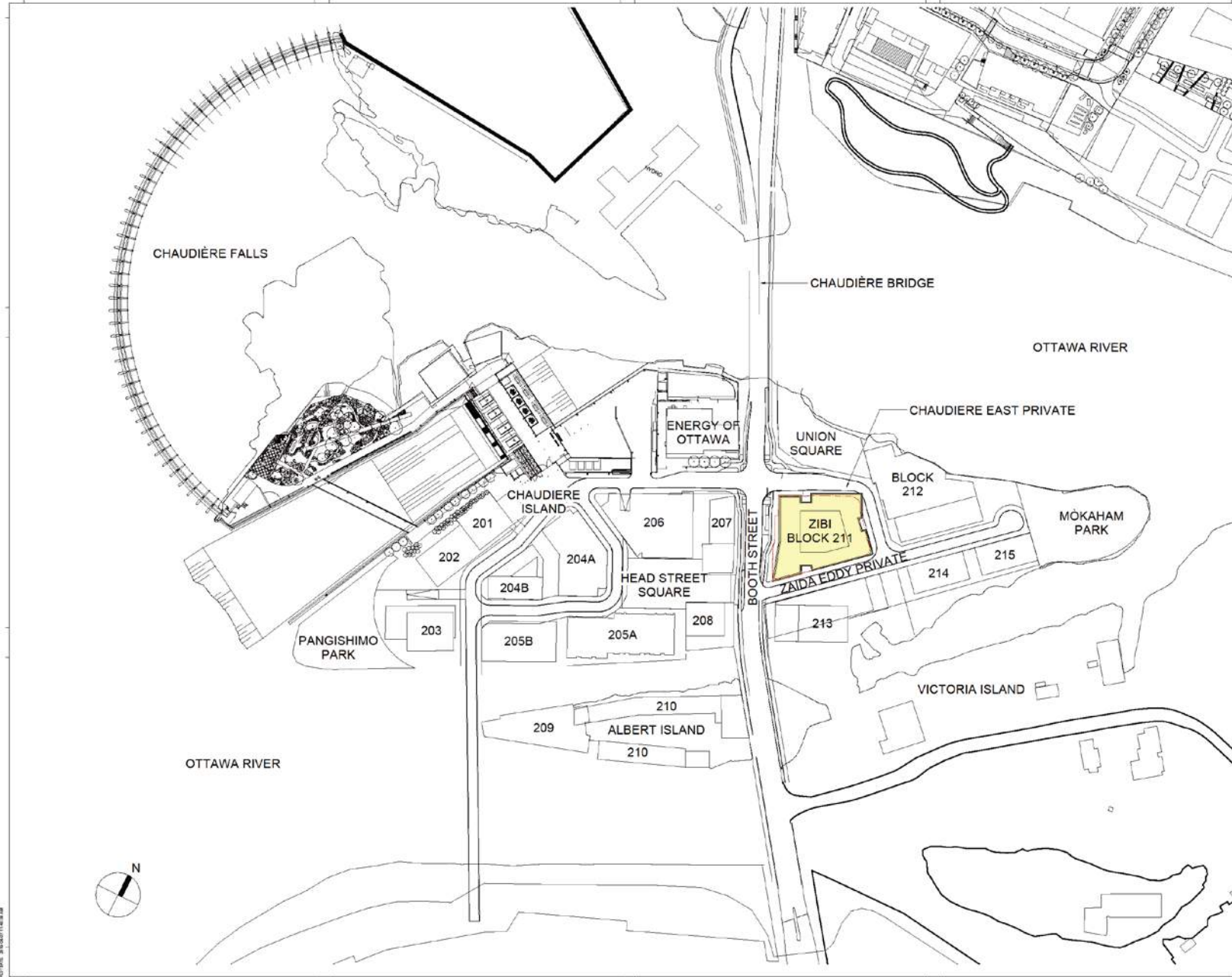
The original Transportation Impact Study prepared by Parsons included all development for Zibi Ontario Phase 1, including approximately 50,000 ft² retail, 38,000 ft² office, 315 residential units, and 7,000 ft² community space comprised of two sub-phases, namely:

- Phase 1a - Blocks 301 (interim parking), 208 and 205A (25,000 ft² office, 25,000 ft² retail and 67 residential units),
- Phase 1b - Blocks 207 and 206.

At the time, Block 207 was envisioned to consist of 40,000ft² office/retail, with an approximate equal split of office and retail space, while Block 206 would be predominantly a residential building.

As context, note that the title of the September 2015 TIA refers to Phase 1A, but it actually reflects the entire Phase 1 (i.e., A and B). The TIS indicated that the entire Phase 1 development was projected to generate approximately 90 and 120 veh/h during the weekday morning and afternoon peak hours, respectively. Furthermore, the RMA for the Booth/Chaudière intersection was approved as part of the submission, and it is understood that these road works, supporting the full development, will be completed by 2019. The contract drawings for the adjacent section of Booth Street, including the Booth/Chaudière East and Booth/Head/Zaida Eddy intersections are included as Attachment #1.

Figure 1: Context and Blocking Plan



PROJECT
zibi
dream h2o

CLIENT
ZIBI

DATE
12/12/2012

NO.	REVISION	DATE

PROPOSAL

DESCRIPTION
ZIBI BLOCK 211

ENGINEERING CONSULTANTS
KPMB
44 Bank Street
Toronto, Ontario, M5X 1S2
Canada
Tel: +1 (416) 213-2626
Fax: +1 (416) 213-2627

ARCHITECTS
KPMB
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Toronto, Ontario, M5J 1X6, Canada
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ENGINEERING ARCHITECTS
adaperson
403 Wellington Street West, 315
Floor Toronto, Ontario, M5J 1R7, Canada
Tel: +1 (416) 597-5228
Fax: +1 (416) 597-7118

SEAL
Professional Engineer
No. 100000000000000

DRAWING TITLE
CONTEXT PLAN

NO.	DATE	BY	CHECKED	STATUS

PROJECT NO. ZIBI BLOCK 211

DRAWING NO. A001

The revised Site Plan for the subject Block 207 indicated a GFA of 70,209 ft² office/retail, which is approximately 50% greater than the size of land use assumed in the original submission. However, it is understood that the proposed split is 54,477 ft² office (floors 2-6), 6,928 ft² retail and 8,804 ft² restaurant (ground floor), which results in additional office space and reduced retail space than assumed in the original TIS. The updated total office space associated with Phase 1 is approximately 72,500 ft² (versus 38,000 ft² previously assumed), updated total retail space is approximately 28,300 ft² (versus 50,000 ft² previously assumed) and newly proposed 8,800 ft² of restaurant space. The number of residential units remains unchanged at approximately 300 units.

The projected vehicle trip generation associated with the increased office space (and reduced retail space) for Block 207, as well as the previously approved Blocks 205A, 208 and 301, was 110 veh/h and 140 veh/h during the weekday morning and afternoon peak hours, respectively. These totals are within 20 veh/h of the volume projections forecasted as part of the original TIA (namely 90 and 120 veh/h as indicated in Section 2), and therefore no further transportation-related analysis was required for the revised Block 207.

3. BLOCK 211 SITE PLAN SUBMISSION

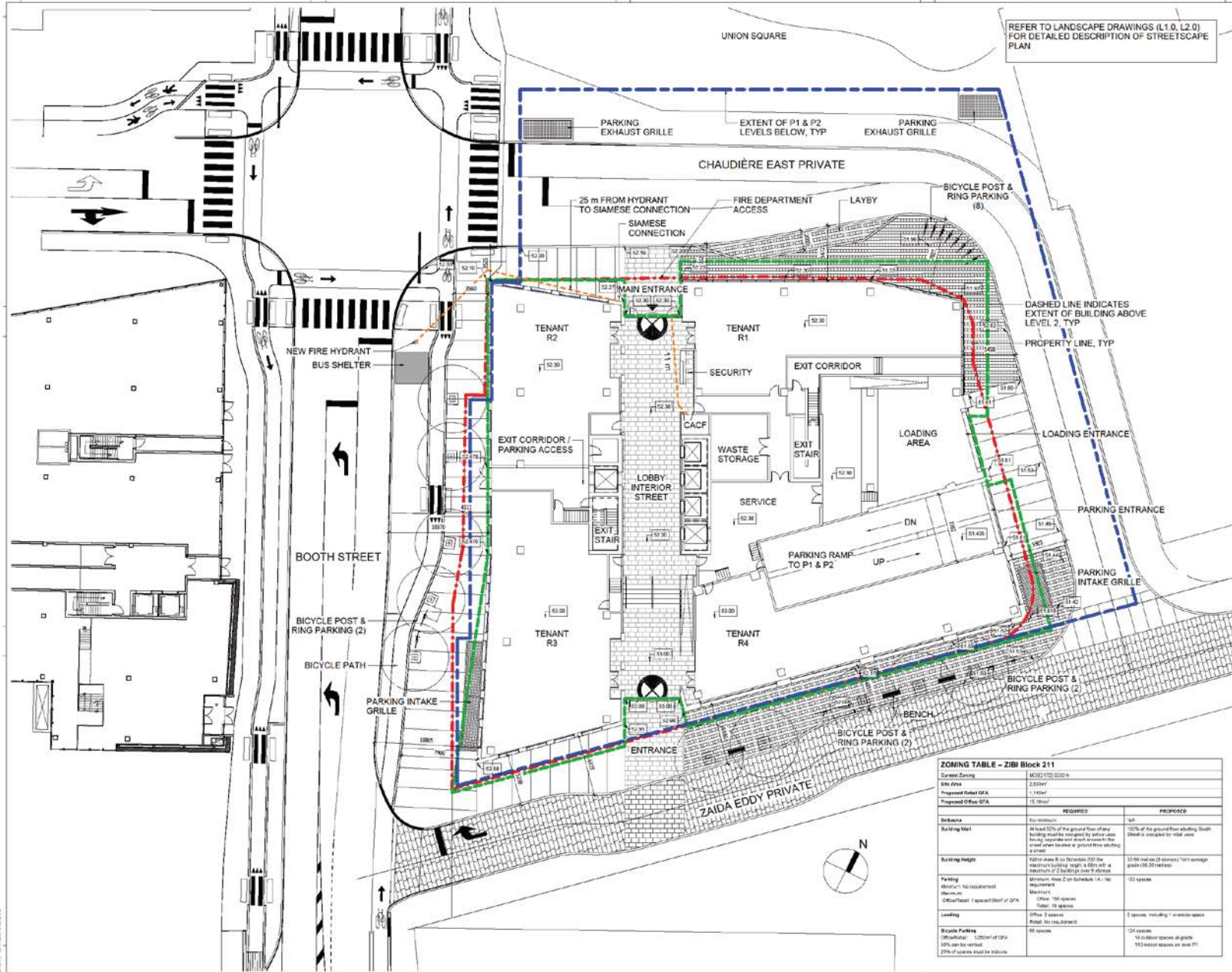
The current submission is for Block 211 which is located on the east side of Booth Street in the southeast quadrant of the Booth Street/Chaudière East intersection. In the previously approved plans, Block 211 was comprised of 60,166 ft² of residential condominium development (70 to 80 units). The current proposal/Site Plan for Block 211 as shown in Figure 2, is comprised of approximately 163,300 ft² (15,164 m²) of office with 12,270 ft² (1140 m²) of ground floor supporting retail accommodated in a 9 storey building with 2 levels of below grade parking. With regard to any projected change in block traffic generation, the approved residential use was projected to generate an approximate two-way total of 15 veh/h during the weekday morning and afternoon peak hours. As the proposed use is office with a negligible parking requirement, it's traffic generation will be different and needs to be quantified. It is assumed that the ground floor retail is service/support retail and not destination retail and as such will have no/negligible peak hour vehicle trips. It's trip generation will be predominately pedestrian oriented from the immediate neighborhood.

In doing peak hour traffic generation for Block 211, there are two approaches. The first would be to use the office trip generation rates used in the previous Zibi transportation studies which were based on modal share assumptions and an unconstrained parking supply. Under this approach the auto driver modal share would be 30% with the balance (70%) being transit (45%), bike/walk (20%) and auto passengers (5%). The result of using this approach would be a weekday commuter peak hour two-way vehicle trip generation of 155 veh/h to 180 veh/h during the morning and afternoon peak hours, respectively. This would be approximately 140 veh/h and 165 veh/hr greater than what the initially assumed residential condominium use would generate. As this net increase is considered significant, it would have an impact on the operation of site access intersections and on the adjacent section of Booth Street. This analysis approached, however, is based on a readily available supply of parking to accommodate 155 to 180 peak hour vehicle trips. Given the proposed office tenant, the parking supply will be extremely low (tenant requires only 2 parking spaces and City By-Law requires 0 parking spaces). As such, the traditional approach for site traffic generation is not appropriate in this instance, and an alternative approach giving consideration to the minimal parking supply will be used for assessing the traffic impacts/requirements of Block 211.

As noted, the approximately 175,500 ft² (16,305m²) office/retail proposal for Block 211 is for a tenant with a related By-law requirement for 0 parking spaces and a tenant requirement for 2 parking spaces. This parking requirement would obviously have a negligible traffic impact; however, service vehicle and drop-off/pick-up traffic would have to be accounted for.

On the topic of parking supply, we are advised that Block 211 has the capacity to economically provide approximately 150 parking spaces, however, the significant majority of these would be to accommodate the parking requirements of adjacent development blocks on the east side of Booth Street, which in total cannot provide sufficient parking for their own respective requirements. As such, the Block 211 parking supply would be shared parking for use by adjacent projects and potentially by general public.

Figure 2: Site Plan



PROJECT: zibi

CLIENT: dream C TRIO

DATE:

DESCRIPTION:

SCALE:

DATE:

PROJECT NO.: ZBI BLOCK 211

DRAWING NO.: A003

REVISIONS:

APPROVALS:

EXECUTIVE ARCHITECT: adrian

DEVELOPER: KPMB

ENGINEERING CONSULTANTS: MTD

DEVELOPER'S ARCHITECT: adrian

DATE:

SCALE:

DATE:

PROJECT NO.: ZBI BLOCK 211

DRAWING NO.: A003

REVISIONS:

Included as Attachment #2 to this report is a table of the current anticipated parking supply/demand on a block by block basis for the Ontario component of Zibi. Specifically, with regard to the east side of Booth Street, the key parking data is summarized in Table 1.

Table 1: Chaudière East: Parking Supply/Demand Estimate

	Residential Units	Retail GFA (m ²)	Office GFA (m ²)	Anticipated Parking Provision	Anticipated Market Demand	By-law Requirement	Visitor Requirement
Block 211	-	-	16,314	150	122	0	0
Block 212	-	1,394	18,580	45	192	0	0
Block 213-214-215	245	372	-	221	136	0	23
Total Spaces	245	1,766	34,894	416	450	0	23

As can be seen from review of Table 1, the proposed office use for Block 211 has a 0 By-law parking requirement, and as the tenant has identified a requirement for only 2 assigned spaces, the balance of the parking supply (148 spaces) will be shared parking for use by Block 212 (which has a projected supply/demand deficiency of approximately 150 spaces (192-45) and is anticipated to have office and some retail uses on the ground and lower floors. With regard to non-auto parking, the Site plan identifies 6 motorcycle spaces and 110 level one bicycle parking spaces.

4. PROJECTED BLOCK 211 VEHICLE TRIP GENERATION

When initially constructed with its 150 parking spaces, Block 211 will be the first block developed on the east side of Booth Street. As such, there will be no shared parking with other development blocks in this sector. This will occur when the adjacent Block 212 is developed. Initially Block 211 parking will most likely be used as follows:

- By the 2 vehicles required by the Block 211 tenants;
- By small Block 211 service vehicles (van size);
- By visitors and retail patrons to Block 211;
- As overflow parking by tenants, residents, visitors to Zibi development on the west side of Booth Street; and
- By employees working in Block 211 who choose to drive and pay for daily, monthly, or annual parking.

So, the question is, what will be the peak hour traffic generation from the 150-space parking garage under this usage scenario. A simplistic approach is to use the following assumptions:

- The functional capacity of the garage is assumed to be 90% of capacity due to employee absenteeism and the challenge of finding the few remaining open parking spaces in a 90% full garage;
- Commuter peak hours have spread in the Ottawa-Gatineau area to be approximately 3 hours in both the morning and afternoon peak periods. As such, the peak hour of garage traffic generation could be assumed to be approximately 35% to 40% of the number of vehicles parking in the garage, and
- 3% to 5%, or 5 parking spaces, are reserved for service or equivalent type vehicles that travel to/from the site outside of the morning and afternoon peak hour.

Based on the foregoing, an estimate of the garage's peak hour vehicle trip generation is as follows:

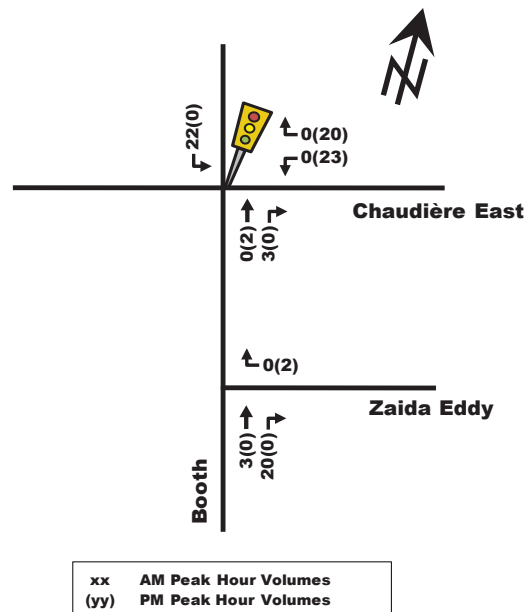
- 150 spaces x 90% functional capacity = 135 spaces.
- 135 spaces - 5 service vehicle spaces = 130 spaces
- 130 spaces x 0.35 peak hour factor = 45 veh/h inbound in the morning peak hour and outbound during the afternoon peak hour.
- The peak hour traffic generation in the opposite direction of peak flow is 10% of peak flow which equates to 5 veh/h outbound in the morning peak and inbound in the afternoon peak.

Based on the foregoing assumptions, Block 211's garage traffic generation is estimated to be 50 veh/h two-way total during peak hours.

In addition to the garage-generated traffic, there will also be peak hour drop-off/pick-up traffic due to the restricted parking provision, that should be accounted for. This is estimated to be 10 veh/h two-way total, or 20% of the garage traffic generation. In total, the Block 211 peak hour vehicle trip generation is estimated to be 60 veh/h two-way total (50 + 10).

As identified in Section 3, Block 211’s previously proposed residential use was projected to generate 15 veh/h two-way total. As such, the net change as a result of the current office proposal is 45 veh/h two-way total (60 – 15). When accounting for the directional distribution of the 15 veh/h generation by the initial residential scenario and the 10 veh/h using the lay-by lane, the net result is only 45 veh/h in and 45 veh/h out during the morning and afternoon peak hour respectively as depicted in Figure 3. The distribution is based on 50/50 split between Ontario and Quebec as per the original TIA.

Figure 3: Assignment of Block 211’s Net Increase in Peak Hour Traffic Generation



5. TRAFFIC IMPACT ANALYSIS

To determine the Impact/requirements of Block 211’s net traffic increase, the Figure 3 volumes were added to the Figure 11 volumes contained in the Zibi Ontario TIA (Full Zibi Development Total Projected Volumes). The resultant volumes are depicted in Figure 4 and the related levels of service at the Booth/Chaudière intersection are presented in Table 2, Row 1. As noted in the TIA, because of the projected failed conditions along the Booth Street Corridor, up to 380 veh/h southbound in the morning peak hour would have to be removed/assigned elsewhere for the corridor to operate at LoS E or better. When this reduction is applied to the Figure 4 volumes, the resulting levels of services are included in Row 2 of Table 2. All related SYNCHRO analysis is included in Attachment 3.

As can be seen in reviewing the Table 2 content, there is no change in level of service at the Booth/Chaudière intersection due to the changes in Block 211 land use, and in fact the v/c ratios remain effectually the same (Row 1 versus Row 3). And as per the TIA scenario with 380 veh/h removed from the southbound through traffic, the subject intersection will be at an acceptable (E or better) for all time periods, except for the critical northbound through movement which is projected to have a LoS F and a v/c ratio of 1.01. To get this ratio below 1.0, approximately 30 veh/h of northbound through traffic would have to be removed during the afternoon peak hour.

No mitigation measures are considered since the previously discussed LOS do not exceed the City’s permissible operational thresholds (i.e. v/c < 0.90). Note that the intersections are in separate coordinated signal control areas, and therefore the intersections are coordinated with neighbouring intersections west and east of the corridors, respectively.

SITE TRIP GENERATION

In order to estimate the impact of the subject development on the road network, it is necessary to estimate the traffic growth associated with the subject developments. Appropriate trip generation rates for the proposed development were obtained from the Ninth Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The trip generation rates and rate equations are summarized in Table 3.

Table 3: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates		
		AM Peak	PM Peak	SAT Peak
High-Rise Residential Condominium	ITE 230	$T = 0.44 (du);$ $\ln(T) = 0.80 \ln (du) + 0.26$	$T = 0.52 (du);$ $\ln(T) = 0.82 \ln (du) + 0.32$	$T = 0.47 (du);$ $T = 0.29 (du) + 42.63$
General Office Building	ITE 710	$T = 1.56(X);$ $\ln(T) = 0.80 \ln(X) + 1.57$	$T = 1.49(X);$ $T = 1.12(X) + 78.45$	$T = 0.43 (X);$ N/A
Shopping Center	ITE 820	$T = 0.96(X);$ $\ln(T) = 0.61 \ln(X) + 2.24$	$T = 3.71(X);$ $\ln(T) = 0.67 \ln(X) + 3.31$	$T = 4.82;$ $\ln (T) = 0.65 \ln(x) + 3.78$

Notes: T = Average Vehicle Trip Ends
X = 1000 ft² Gross Floor Area
du = dwelling units

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development. This approach is considered appropriate within the industry for urban infill developments.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. Using these factors, along with the rate equations in Table 3, the person trip generation for the proposed site was calculated. This is summarized in Table 4.

Table 4: Modified Person Trip Generation

Land Use	Area	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)			SAT Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total	In	Out	Total
High-Rise Condominium	1,632 du	106	521	627	517	255	772	362	309	671
General Office Building	181,027 ft ²	352	48	400	62	304	366	54	47	101
Specialty Retail	117,380 ft ²	138	85	223	416	451	867	655	606	1,261
Total Person Trips		596	654	1,250	995	1,010	2,005	1,071	962	2,033

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

The person trips shown in Table 4 for the proposed site were then reduced by modal share values, including a reduction for pass-by trips and multi-purpose trips for the retail land use based on the site's location and proximity to adjacent communities, employment, other shopping uses, and transit availability. In addition, future transit modal splits are likely to be even greater as the implementation of the City's LRT is completed. High transit mode shares were allocated to the land uses due to the close proximity of the future LRT station in addition to the ease in which it can be accessed. Transit mode shares as high as 65% can be assumed in trip-generation according to the Transit-Oriented Development (TOD) Plan, nonetheless lower values were used to output a worst-case scenario.

Modal share, pass-by, and multi-purpose values for condominium, office, and retail land uses within the proposed development for horizon years 2020 and 2025 are summarized in Tables 5 to 9 with the total site-generated vehicle traffic for both horizon years summarized in Tables 10 and 11. To account for a gradual shift towards transit use over time, a greater transit mode share was used for the 2025 horizon than the 2020 horizon. It has been assumed that the shopping centre land use would draw a higher vehicle mode share and is less likely to change over time. The shopping center trips were assumed to have the same mode splits in both horizon years.

Tables 5 and 6 summarize the forecasted trip generation for condominium and office land uses for horizon year 2020.

Table 5: Condominium Modal Site Trip Generation - 2020

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)			SAT Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total	In	Out	Total
Auto Driver	30%	32	157	189	156	77	233	109	93	202
Auto Passenger	10%	11	52	63	52	26	78	37	31	68
Transit	45%	48	234	282	232	114	346	162	139	301
Non-motorized	15%	15	78	93	77	38	115	54	46	100
Total Person Trips	100%	106	521	627	517	255	772	362	309	671
Auto Trips		AM Peak (Autos/hr)			PM Peak (Autos/hr)			SAT Peak (Autos/hr)		
Total New Residential Condos Auto Trips		32	157	189	156	77	233	109	93	202

Table 6: Office Modal Site Trip Generation - 2020

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)			SAT Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total	In	Out	Total
Auto Driver	30%	106	15	121	19	92	111	17	15	32
Auto Passenger	10%	36	5	41	7	31	38	5	4	9
Transit	45%	158	21	179	27	136	163	24	21	45
Non-motorized	15%	52	7	59	9	45	54	8	7	15
Total Person Trips	100%	352	48	400	62	304	366	54	47	101
Auto Trips		AM Peak (Autos/hr)			PM Peak (Autos/hr)			SAT Peak (Autos/hr)		
Total New Office Auto Trips		106	15	121	19	92	111	17	15	32

Tables 7 and 8 summarize the forecasted trip generation for condominium and office land uses for horizon year 2025.

Table 7: Condominium Modal Site Trip Generation - 2025

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)			SAT Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total	In	Out	Total
Auto Driver	25%	27	131	158	130	64	194	91	78	169
Auto Passenger	5%	6	26	32	26	13	39	18	16	34
Transit	55%	58	286	344	284	140	424	199	169	368
Non-motorized	15%	15	78	93	77	38	115	54	46	100
Total Person Trips	100%	106	521	627	517	255	772	362	309	671
Auto Trips		AM Peak (Autos/hr)			PM Peak (Autos/hr)			SAT Peak (Autos/hr)		
Total New Residential Condos Auto Trips		27	131	158	130	64	194	91	78	169

Table 8: Office Modal Site Trip Generation - 2025

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)			SAT Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total	In	Out	Total
Auto Driver	25%	88	12	100	16	76	92	14	12	26
Auto Passenger	5%	18	3	21	3	16	19	3	3	6
Transit	55%	194	26	220	34	167	201	29	25	54
Non-motorized	15%	52	7	59	9	45	54	8	7	15
Total Person Trips	100%	352	48	400	62	304	366	54	47	101
Auto Trips		AM Peak (Autos/hr)			PM Peak (Autos/hr)			SAT Peak (Autos/hr)		
Total New Office Auto Trips		88	12	100	16	76	92	14	12	26

Table 9 summarizes the forecasted trip generation for the shopping centre land uses for both horizon years, 2020 and 2025, given that the mode shares are assumed to remain constant.

Table 9: Shopping Centre Modal Site Trip Generation - 2020/2025

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)			SAT Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total	In	Out	Total
Auto Driver	60%	83	51	134	250	271	521	393	364	757
Auto Passenger	15%	21	13	34	63	68	131	99	91	190
Transit	20%	28	17	45	83	90	173	131	121	252
Non-motorized	5%	6	4	10	20	22	42	32	30	62
Total Person Trips	100%	138	85	223	416	451	867	655	606	1,261
Auto Trips		AM Peak (Autos/hr)			PM Peak (Autos/hr)			SAT Peak (Autos/hr)		
Autos (Mode Share - 60%)		83	51	134	250	271	521	393	364	757
Less Pass-by (35%)		-23	-23	-46	-91	-91	-182	-132	-132	-264
Total New Shopping Center Auto Trips		60	28	88	159	180	339	261	232	493

The following Tables 10 and 11 provides a summary of potential two-way vehicle trips to/from the proposed development for the two horizon years.

Table 10: Total Site Vehicle Trip Generation 2020

Travel Mode	AM Peak (veh/hr)			PM Peak (veh/hr)			SAT Peak (veh/hr)		
	In	Out	Total	In	Out	Total	In	Out	Total
Residential Condos	32	157	189	156	77	233	109	93	202
General Office Building	106	15	121	19	92	111	17	15	32
Shopping Center	83	51	134	250	271	521	393	364	757
Shopping Center Pass-by (35%)	-23	-23	-46	-91	-91	-182	-132	-132	-264
Office Multi-Purpose (10%)	-11	-2	-12	-2	-9	-11	-2	-2	-3
Shopping Center Multi-Purpose (10%)	-6	-2	-9	-16	-18	-34	-26	-23	-49
Total New Auto Trips	181	196	377	316	322	638	359	315	675

Table 11: Total Site Vehicle Trip Generation 2025

Travel Mode	AM Peak (veh/hr)			PM Peak (veh/hr)			SAT Peak (veh/hr)		
	In	Out	Total	In	Out	Total	In	Out	Total
Residential Condos	27	131	158	130	64	194	91	78	169
General Office Building	88	12	100	16	76	92	14	12	26
Shopping Center	83	51	134	250	271	521	393	364	757
Shopping Center Pass-by (35%)	-23	-23	-46	-91	-91	-182	-132	-132	-264
Office Multi-Purpose (10%)	-9	-1	-10	-1	-8	-9	-1	-1	-3
Shopping Center Multi-Purpose (10%)	-6	-3	-9	-16	-18	-34	-26	-23	-49
Total New Auto Trips	160	167	327	288	294	582	339	298	636

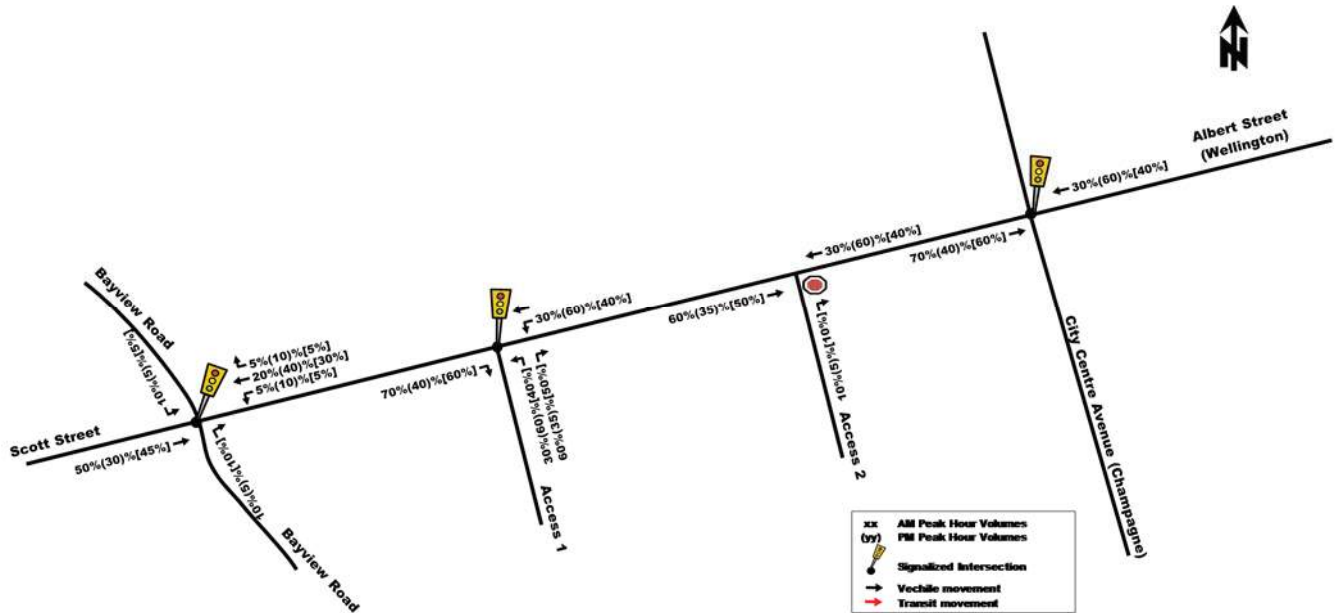
As shown in Table 10, the forecast 2020 new two-way vehicle trip generation for the proposed development is approximately 377, 638, and 675 veh/h during the weekday morning, afternoon peak hours, and Saturday peak hours, respectively.

As shown in Table 11, the forecast 2025 new two-way vehicle trips for the proposed development is approximately 327, 582, and 636 veh/h during the weekday morning, afternoon peak hours, and Saturday peak hours, respectively. These numbers have decreased, compared to the 2020 horizon, due to the projected changes to the mode share.

VEHICLE TRAFFIC DISTRIBUTION AND ASSIGNMENT

To determine how the projected traffic would access the site, a trip distribution and assignment exercise has been completed. Several resources were drawn upon to determine a suitable trip distribution for the proposed site, including the 2011 NCR Household Origin – Destination Survey, the existing east-west volume splits along Albert Street, and local knowledge of the surrounding area. It was determined that due to the mix of land uses and the location of the site, the existing on street volume split would be appropriate indicator of the potential site trip distribution. Figure 9 details the site trip distribution.

Figure 9: New Site-Generated Traffic - Percentage Distribution



Based on these distributions, new and pass-by site-generated trips were assigned to study area intersections, which are illustrated as Figures 10 and 11 for horizon years 2020 and 2025.

Figure 10: New and Pass-by Site-Generated Traffic Volumes - 2020

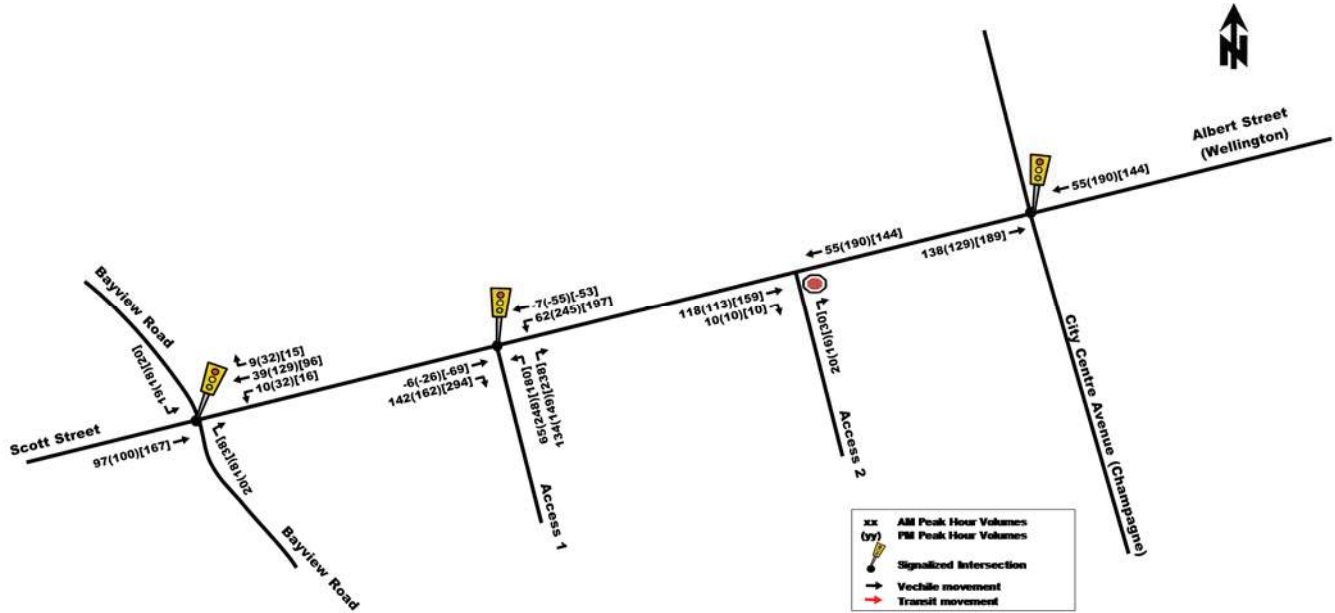
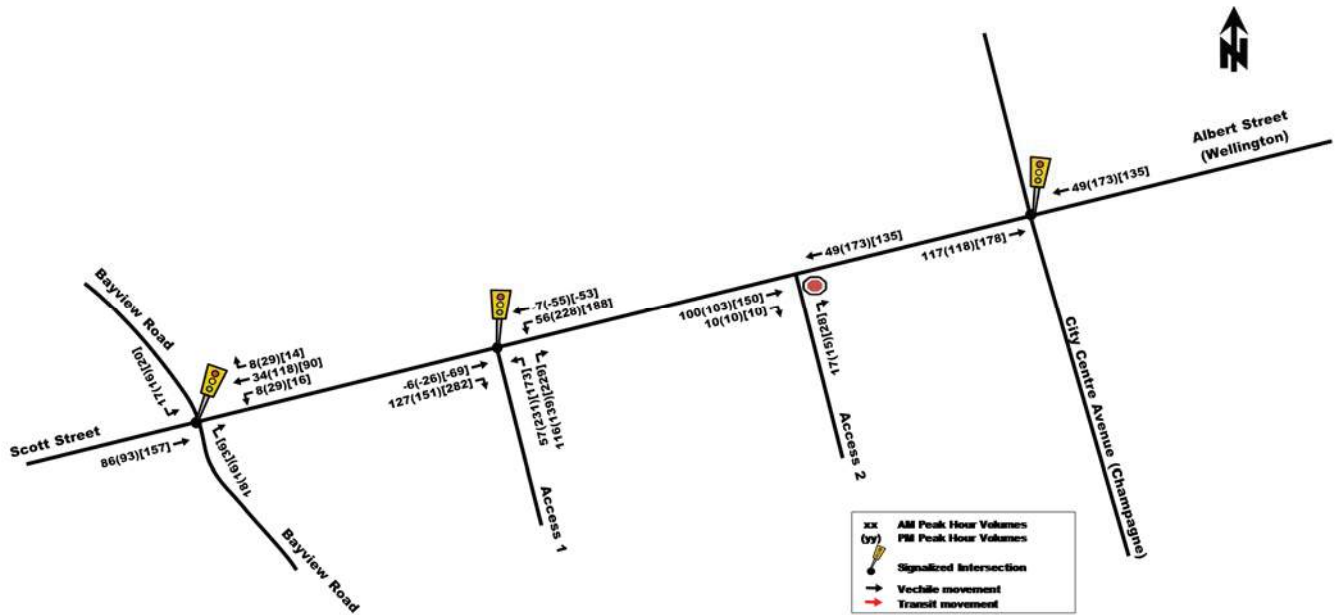


Figure 11: New and Pass-by Site-Generated Traffic Volumes - 2025

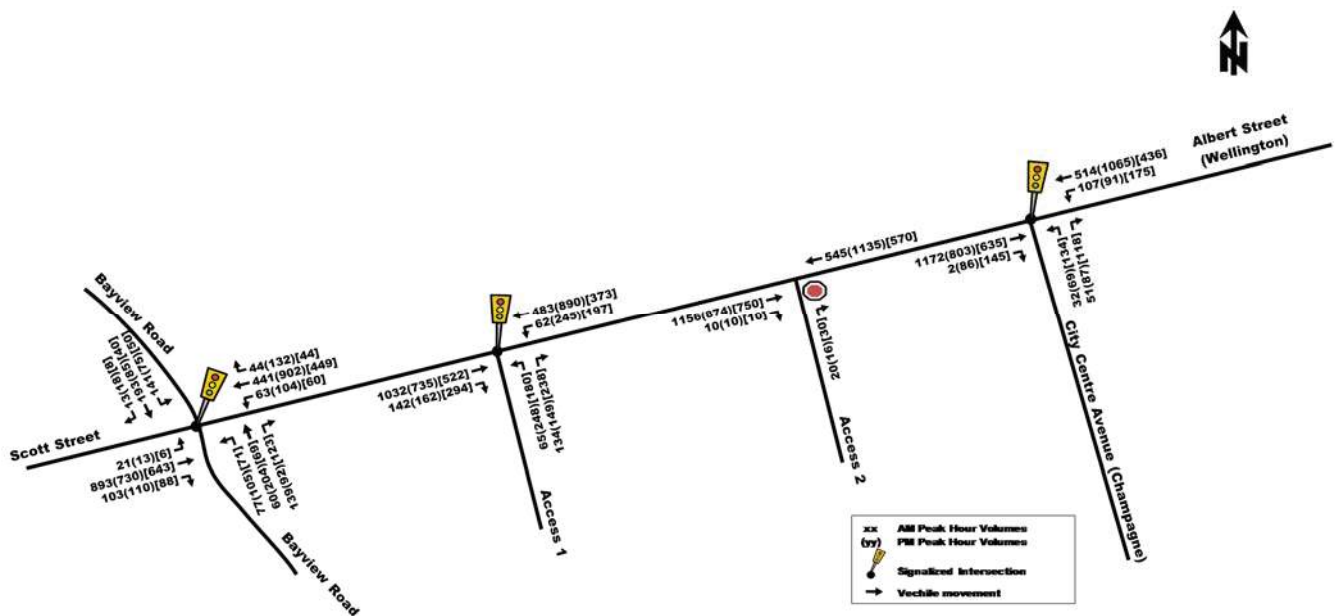


FUTURE TRAFFIC OPERATIONS

PROJECTED CONDITIONS AT FULL SITE DEVELOPMENT

The total projected volumes associated with the proposed development were derived by superimposing new and pass-by site-generated traffic volumes (Figure 10 and 11) onto projected background traffic volumes (Figure 7 and 8). The resulting total projected volumes for the horizon years 2020 and 2025 are illustrated as Figure 12 and 13, respectively.

Figure 12: Total Projected Peak Hour Traffic Volumes - 2020



March 20, 2018

OUR REF: 476655-01000

Trinity Development Group Inc.
3250 Bloor Street West, Suite 1000
Toronto, ON
M8X 2X9

Attention: Mathew Laing
Vice President – Development and Planning

Dear Mr. Laing:

Re: 900 Albert OPA and ZBLA Resubmission – Transportation Impact Assessment Addendum #3

1. INTRODUCTION

1.1. CONTEXT

Trinity Development Group Inc. has put forward an application to develop 900 Albert Street, Ottawa. In support of this development application an Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBLA) have been prepared. Applications for both OPA and ZBLA have been submitted to the City previously. Subsequent to that application, an updated concept plan for the site has been prepared. The changes to the concept plan have triggered the need to update and revise the OPA and ZBLA applications.

In support of the original OPA and ZBLA Parsons prepared a TIA, using the City of Ottawa’s 2006 TIA Guidelines, along with a Multi Modal Level of Service (MMLoS) analysis and report, and a Draft Roadway Modification Approval (RMA). To support the update this addendum has been prepared to examine the changes to the concept plan and review the transportation related conclusions that were previously put forward.

The updated concept plan has been included in Attachment 1.

2. LAND USE COMPARISON

The revised concept plan includes changes to the proposed land uses. This includes adding a hotel and reducing the number of residential units. Table 1 summarizes the updated land use statistics.

Table 1: Land Use Statistics Comparison

	New Concept Plan	Previous Concept Plan	Difference
Gross Building Area (m2)	233,270	197,678	35,592
Residential Units	1,232	1,634	-402
Hotel (Rooms)	150	0	150
Retail (m2)	11,926	15,958	-4,032
Office (m2)	18,331	7,483	10,849
Parking Stalls (Car)	1,198	1,108	90
Parking Stalls (Bike)	1,014	866	148

PARSONS

As shown above the total building area increases with the proposed changes, but the retail space and number of residential units has been decreased. The amount of parking, both for cars and bicycles has been increased to support the hotel and additional office space.

3. TRIP GENERATION COMPARISON

As discussed previously, the land use statistics have changed based on the latest concept plan. The projected trips generated by the site are determined using the land use statistics. Therefore, the trip generation has been updated to reflect the new concept plan. The new trip generation has been compared to the trip generation from the previous TIA and addendums for 900 Albert.

The first step in estimating the trip generation is determining the anticipated mode share assumptions. For this comparison the mode share assumptions from the previous TIA work will be carried forward. These are documented in Table 2 and Table 3. Table 2 includes mode shares for the residential and office space. Additionally, the updated concept plan includes a land use that was not previously considered, a hotel. It is assumed that visitors to the hotel would arrive at the site throughout the day via personal vehicles, but that once on the site, and for the duration of their stay, would utilize active modes and transit for peak hour trips and to get around the city. Therefore, it is assumed that the hotel mode share will be the same as the residential or office uses. As in the previous TIA's and addendums it is assumed that the mode share for the shopping centre land uses would be different from the residential, hotel, and office uses. The shopping centre land use mode shares are documented in Table 3.

Table 2: Residential, Hotel, Office Mode Share

Travel Mode	Mode Share
Auto Driver	25%
Auto Passenger	5%
Transit	55%
Non-motorized	15%
Total Person Trips	100%

Table 3: Shopping Centre Mode Share

Travel Mode	Mode Share
Auto Driver	60%
Auto Passenger	15%
Transit	20%
Non-motorized	5%
Total Person Trips	100%

Using the updated land use statistics and the mode shares summarized above, a trip generation comparison was undertaken. The trip generation comparison has been summarized by mode. Table 4 summarizes the transit trip generation. Table 5 summarizes the non-auto modes trip generation (e.g. walking, cycling). Table 6 summarizes the vehicle trip generation comparison.

Table 4: Transit Trip Generation Comparison

Land Use	New Concept Plan			Previous Concept Plan			Difference		
	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
Residential	274	336	286	344	424	368	-70	-88	-82
Office	217	199	54	114	120	24	122	93	37
Shopping Centre	50	196	284	55	223	323	-8	-39	-56
Hotel	50	61	77	0	0	0	50	61	77
Total	591	792	701	513	767	715	94	27	-24

As shown above the transit trips are expected to increase slightly over the previous concept plan in the AM and PM peak hours, and decrease slightly during the Saturday peak hour. This represents a negligible change and does not impact the overall conclusions and recommendations of the previous TIA and addendums.

Table 5: Non-Auto Trip Generation Comparison

Land Use	New Concept Plan			Previous Concept Plan			Difference		
	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
Residential	74	91	78	93	115	100	-19	-24	-22
Office	59	54	14	30	32	6	33	25	9
Shopping Centre	11	48	70	13	55	79	-2	-10	-13
Hotel	12	16	20	0	0	0	12	16	20
Total	156	209	182	136	202	185	24	7	-6

As shown above the non-auto trips will only vary slightly from the previous concept. This is, again, a negligible change and does not impact the overall conclusions and recommendations of the previous TIA and addendums.

Table 6: Vehicle Trip Generation Comparison

Land Use	New Concept Plan			Previous Concept Plan			Difference		
	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
Residential	126	154	130	158	194	169	-32	-40	-39
Office	90	83	23	48	50	11	48	38	14
Shopping Centre	88	344	500	99	393	567	-16	-69	-98
Hotel	24	29	36	-	-	-	24	29	36
Total	328	610	689	305	637	747	24	-42	-87

As shown in the table above the new concept plan represents a minor decrease in the projected vehicle trip generation during the PM and Saturday peak hours, and a very small increase in traffic during the AM peak hour. Therefore, the results and conclusions of the previous TIA and addendums for 900 Albert Street are valid and a new TIA is not required to support the OPA and ZBLA resubmission.

Additionally, the above changes to the trip generation and land use will not require changes to the intersection configuration that was agreed upon at the meeting on September 21, 2017. This included a westbound left-turn lane, far side transit stops in both directions, and the inclusion of higher order pedestrian and cycling facilities.

4. ACCESS AND PARKING

4.1. ACCESS

As shown on the attached concept plan the access location and configuration are proposed to remain the same. The on-street impacts of the new development concept will be reviewed as part of the ongoing RMA Process.

4.2. PARKING

The revised concept considers an additional 90 parking stalls, beyond what the previous concept included. These parking stalls would be spread across seven underground parking levels. The previous plan had both above ground and underground parking (spread across four underground and four above ground parking levels). The increase and amount of parking required for this site is driven by two factors.

The first is the need for parking to be provided for the residential units and the hotel rooms. While the proposed development is a TOD, there will still be a demand for vehicle storage. This does not translate into peak hour vehicle trips, as shown in the trip generation tables above. The residents and hotel guests may have the need to store their vehicles on site, but on a regular basis are unlikely to use them during the peak hour traffic periods. Given the access to transit, the multi-use nature of the site, and the adjacent road network capacity, the proposed site is not anticipated to produce a single car trip for every vehicle parking space. This does not preclude the need for parking for residents and hotel guests. While a resident of 900 Albert will likely commute using transit, they may wish to store their private vehicle in the parking garage for recreational activities in the evenings or weekends (i.e. during off-peak hours). Similarly, many hotel guests will arrive to 900 Albert by car and then store their car as they use transit and active modes to travel throughout the city.

The second is the need to meet retail and office tenant requirements for parking. Tenant agreements with certain retailers, particularly large format retailers, such as a grocery store, or gym (both uses have been considered for this site) have ideal parking requirements to build and sustain their client base. While it is anticipated that the number of internal site trips (i.e. resident walking to the grocery store, gym, etc.) will be very high, some patrons of the retailers may choose to drive their car, particularly if the goods purchased require private transportation (e.g. groceries).

As the site design continues, the parking will be programmed to optimize its use. As well, TDM initiatives, in particular, car-sharing programs, will be further explored. As a result, the parking requirements for this site, while greater than the minimum parking for a TOD, are required to support the proposed development of 900 Albert Street.

5. SUMMARY

The proposed plan has been updated to refine the development concept. The previous traffic work has been reviewed and it has been determined that there is no need to update the previous TIA's, the conclusions and recommendations of those TIA's remain valid and there is no need to revisit the proposed intersection configuration for the signalized site access based on the proposed changes in land use.

From a transportation perspective, the resubmission of the OPA and ZBLA should be approved.

If you have any questions about the foregoing, please do not hesitate to contact the undersigned.



Mark Crockford, P. Eng.
Transportation Engineer

APPENDIX H

TRANSPORTATION DEMAND MANAGEMENT CHECKLISTS

TDM-Supportive Development Design and Infrastructure Checklist: *Residential Developments (multi-family or condominium)*

Legend	
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input checked="" type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
1.2 Facilities for walking & cycling		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see <i>Official Plan policy 4.3.3</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see <i>Official Plan policy 4.3.12</i>)	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (<i>see Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (<i>see Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (<i>see Official Plan policy 4.3.11</i>)	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
1.3 Amenities for walking & cycling		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
2. WALKING & CYCLING: END-OF-TRIP FACILITIES		
2.1 Bicycle parking		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	<input type="checkbox"/>
2.2 Secure bicycle parking		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
2.3 Bicycle repair station		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
5. CARSHARING & BIKESHARING		
5.1 Carshare parking spaces		
BETTER	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (see <i>Zoning By-law Section 94</i>)	<input type="checkbox"/>
5.2 Bikeshare station location		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>
6. PARKING		
6.1 Number of parking spaces		
REQUIRED	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
BASIC	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 104</i>)	<input type="checkbox"/>
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
6.2 Separate long-term & short-term parking areas		
BETTER	6.2.1 Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	<input type="checkbox"/>

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend	
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC	★ 1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input checked="" type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances (<i>multi-family, condominium</i>)	<input checked="" type="checkbox"/>
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (<i>multi-family, condominium</i>)	<input checked="" type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
3.2 Transit fare incentives		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
3.3 Enhanced public transit service		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels (<i>subdivision</i>)	<input type="checkbox"/>
3.4 Private transit service		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input type="checkbox"/>
4. CARSHARING & BIKESHARING		
4.1 Bikeshare stations & memberships		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station (<i>multi-family</i>)	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	<input type="checkbox"/>
4.2 Carshare vehicles & memberships		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input checked="" type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
5. PARKING		
5.1 Priced parking		
BASIC ★	5.1.1 Unbundle parking cost from purchase price (<i>condominium</i>)	<input checked="" type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	<input checked="" type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS		
6.1 Multimodal travel information		
BASIC ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
6.2 Personalized trip planning		
BETTER ★	6.2.1 Offer personalized trip planning to new residents	<input checked="" type="checkbox"/>

APPENDIX I

DETAILED MMLOS ANALYSIS

Pedestrian Level of Service (PLOS)

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed	Segment PLOS
Lett Street (North-South) – East Side					
2.0m	None	<3,000 vpd	Yes	50 km/hr	A
Lett Street (North-South) – West Side					
None	None	<3,000 vpd	Yes	50 km/hr	F
Lett Street (East-West) – North Side					
None	None	<3,000 vpd	Yes	50 km/hr	F
Lett Street (East-West) – South Side					
None	None	<3,000 vpd	Yes	50 km/hr	F
Fleet Street – North Side					
2.0m	1.5m	<3,000 vpd	Yes	50 km/hr	A
Fleet Street – South Side					
None	None	<3,000 vpd	Yes	50 km/hr	F
Lloyd Street – East Side					
None	None	<3,000 vpd	Yes	50 km/hr	F
Lloyd Street – West Side					
None	None	<3,000 vpd	Yes	50 km/hr	F

Bicycle Level of Service (BLOS)

Road Class	Bike Route	Type of Bikeway	Travel Lanes ¹	Centerline Markings	Operating Speed	Segment BLOS
All Boundary Streets						
Local	N/A	Mixed Traffic	1	No	50 km/hr	B

1. Travel lanes in each direction

Auto LOS

Direction	Directional Capacity ¹	Traffic Volumes		V/C Ratio and LOS				Auto LOS
		AM Peak	PM Peak	AM Peak		PM Peak		
				v/c	LOS	v/c	LOS	
All Boundary Streets								
NB/EB	400vph	<240	<240	<0.60	A	<0.60	A	A
SB/WB	400vph	<240	<240	<0.60	A	<0.60	A	

1. Typical lane capacity based on the City's guidelines for the TRANS long-range transportation model

East LeBreton Flats – Intersection MMLOS Analysis

Pedestrian Level of Service

Criteria	North Approach		South Approach		East Approach		West Approach	
Sir John A MacDonald Parkway/Wellington Street/Booth Street								
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	23	No	39	No	23	No	23
Lanes Crossed (3.5m Lane Width)	8		7		8		8	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	No Left Turn/Prohibited	0	No Left Turn/Prohibited	0	Perm + Prot	-8	No Left Turn/Prohibited	0
Right Turn Conflict	Permissive or Yield	-5	No Right Turn/Prohibited	0	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	> 5m to 10m	-5	No Right Turn	0	> 5m to 10m	-5	> 5m to 10m	-5
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn	0	No Right Turn Channel	-4	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
PETSI SCORE		-3		27		-11		0
LOS		F		F		F		F
DELAY SCORE								
Cycle Length		95		95		95		95
Pedestrian Walk Time		7.1		7.1		14.6		14.6
DELAY SCORE		40.7		40.7		34		34
LOS		E		E		D		D
OVERALL		F		F		F		F

Criteria	South Approach		East Approach		West Approach	
Wellington Street/Lett Street						
PETSI SCORE						
<i>CROSSING DISTANCE CONDITIONS</i>						
Median > 2.4m in Width	No	88	No	23	No	23
Lanes Crossed (3.5m Lane Width)	4		8		8	
<i>SIGNAL PHASING AND TIMING</i>						
Left Turn Conflict	Permissive	-8	No Left Turn/Prohibited	0	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	No Right Turn/Prohibited	0
Right Turn on Red	RTOR Allowed	-3	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>						
Parallel Radius	> 5m to 10m	-5	> 5m to 10m	-5	No Right Turn	0
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>						
Treatment	Standard	-7	Standard	-7	Standard	-7
PETSI SCORE		54		0		6
LOS		D		F		F
DELAY SCORE						
Cycle Length		95		95		95
Pedestrian Walk Time		7.1		46.2		46.2
DELAY SCORE		40.7		12.5		12.5
LOS		E		B		B
OVERALL		E		F		F

East LeBreton Flats – Intersection MMLOS Analysis

Criteria	North Approach		East Approach		West Approach	
Wellington Street/Portage Bridge						
PETSI SCORE						
<i>CROSSING DISTANCE CONDITIONS</i>						
Median > 2.4m in Width	Yes	0	Yes	0	No	-10
Lanes Crossed (3.5m Lane Width)	10 +		10 +		10 +	
<i>SIGNAL PHASING AND TIMING</i>						
Left Turn Conflict	Protected	0	Protected	0	Protected	0
Right Turn Conflict	Protected	0	Protected	0	Permissive or Yield	-5
Right Turn on Red	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>						
Parallel Radius	No Right Turn	0	No Right Turn	0	> 5m to 10m	-5
Parallel Right Turn Channel	No Right Turn	0	No Right Turn	0	Smart Channel	2
Perpendicular Radius	> 5m to 10m	-5	N/A	0	N/A	0
Perpendicular Right Turn Channel	Smart Channel	2	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>						
Treatment	Textured	-4	Textured	-4	Textured	-4
PETSI SCORE		-9		-6		-24
LOS		F		F		F
DELAY SCORE						
Cycle Length		136		136		136
Pedestrian Walk Time		17		38		13
DELAY SCORE		52.3		35.5		55.8
LOS		E		D		E
OVERALL		F		F		F

Criteria	North Approach		South Approach		East Approach		West Approach	
Booth Street/Albert Street								
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	39	No	105	No	23	No	39
Lanes Crossed (3.5m Lane Width)	7		3		8		7	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	Perm + Prot	-8	Permissive	-8	Perm + Prot	-8	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3
Leading Pedestrian Interval	No	-2	No	-2	Yes	0	Yes	0
<i>CORNER RADIUS</i>								
Parallel Radius	> 5m to 10m	-5	> 5m to 10m	-5	> 3m to 5m	-4	> 15m to 25m	-8
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Zebra Stripe	-4	Zebra Stripe	-4	Zebra Stripe	-4	Zebra Stripe	-4
PETSI SCORE		8		74		-5		7
LOS		F		C		F		F
DELAY SCORE								
Cycle Length		120		120		120		120
Pedestrian Walk Time		12.5		41.5		10.5		21.5
DELAY SCORE		48.2		25.7		50		40.4
LOS		E		C		E		E
OVERALL		F		C		F		F

Bicycle Level of Service

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed ¹	BLOS
<i>Sir John A MacDonald Parkway/Wellington Street/Booth Street</i>				
North Approach	Mixed Traffic Approach	Right turn lane characteristics	Right-turn lane 25 to 50m long; Turning speed ≤ 25km/hr	D
		Left turn accommodation	2 or more lanes crossed; ≥ 50km/hr	F
South Approach	Bike Lanes	Right turn lane characteristics	No impact to LTS	A
		Left turn accommodation	Left turns prohibited	-
East Approach	Mixed Traffic Approach	Right turn lane characteristics	No impact to LTS	A
		Left turn accommodation	Left turns prohibited	-
West Approach	Mixed Traffic Approach	Right turn lane characteristics	Right turns prohibited	-
		Left turn accommodation	Left turns prohibited	-
<i>Wellington Street/Lett Street</i>				
South Approach	Mixed Traffic Approach	Right turn lane characteristics	No impact to LTS	A
		Left turn accommodation	No lanes crossed; 50km/hr	B
East Approach	Mixed Traffic Approach	Left turn accommodation	2 or more lanes crossed; ≥ 50km/hr	F
West Approach	Mixed Traffic Approach	Right turn lane characteristics	No impact to LTS	A
<i>Wellington Street/Portage Bridge</i>				
North Approach	Pocket Bike Lane	Right turn lane characteristics	Right-turn lane ≤ 50m long; Turning speed ≤ 25km/hr	B
		Left turn accommodation	No lanes crossed	-
East Approach	Bike Lanes	Right turn lane characteristics	No right turn lane	-
		Left turn accommodation	3 lanes crossed; ≥ 50km/hr	F
West Approach	Bike Lanes	Right turn lane characteristics	No right turn lane	-
		Left turn accommodation	3 lanes crossed; ≥ 50km/hr	F

East LeBreton Flats – Intersection MMLOS Analysis

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed ¹	BLOS
<i>Booth Street/Albert Street</i>				
North Approach	Pocket Bike Lane	Right turn lane characteristics	No impact to LTS	A
		Left turn accommodation	Not Applicable ¹	-
South Approach	Mixed Traffic Approach	Right turn lane characteristics	No Impact to LTS	A
		Left turn accommodation	One lane crossed; 50km/hr	D
East/West Approach	Separated Multi-Use Pathway	Right turn lane characteristics	No impact to LTS	A
		Left turn accommodation	Not Applicable ¹	-

1. Cyclists required to dismount and cross intersection

Transit Level of Service

Approach	AM Peak		PM Peak		TLOS
	Delay ²	Mvmt	Delay ²	Mvmt	
<i>Sir John A Macdonald Parkway/Wellington Street/Booth Street</i>					
East Approach ¹	-	-	-	-	-
West Approach ¹	-	-	-	-	-
North Approach	80 sec	SBT	26 sec	SBT	F
South Approach	33 sec	NBT/R	60 sec	NBT/R	F
<i>Wellington Street/Lett Street</i>					
East Approach ¹	-	-	-	-	-
West Approach ¹	-	-	-	-	-
South Approach ¹	-	-	-	-	-
<i>Wellington Street/Portage Bridge</i>					
East Approach	11 sec	WBR	25 sec	WBR	D
West Approach ¹	-	-	-	-	-
North Approach	38 sec	SBL	45 sec	SBL	F
<i>Booth Street/Albert Street</i>					
East Approach	41 sec	WBT	62 sec	WBT	F
West Approach	42 sec	EBL	86 sec	EBL	F
	85 sec	EBT	20 sec	EBT	
North Approach	83 sec	SBR	20 sec	SBT	F
South Approach ¹	-	-	-	-	-

1. Transit does not serve this approach
2. Delay based on Synchro Analysis

Truck Level of Service

Approach	Effective Corner Radius (m)	Number of Receiving Lanes on Departure from Intersection	LOS
<i>Sir John A MacDonald Parkway/Wellington Street/Booth Street</i>			
North Approach	< 10m	2	D
South Approach	< 10m	2	D
East Approach	< 10m	2	D
West Approach	Not Applicable	Not Applicable	-
<i>Wellington Street/Lett Street</i>			
South Approach	< 10m	2	D
East Approach	Not Applicable	Not Applicable	-
West Approach	< 10m	1	F
<i>Wellington Street/Portage Bridge</i>			
North Approach	10m to 15m	2	B
East Approach	Not Applicable	Not Applicable	-
West Approach	Not Applicable	Not Applicable	-
<i>Booth Street/Albert Street</i>			
North Approach	> 15m	2	A
South Approach	< 10m	2	D
East Approach	10m to 15m	2	B
West Approach	< 10m	1	F

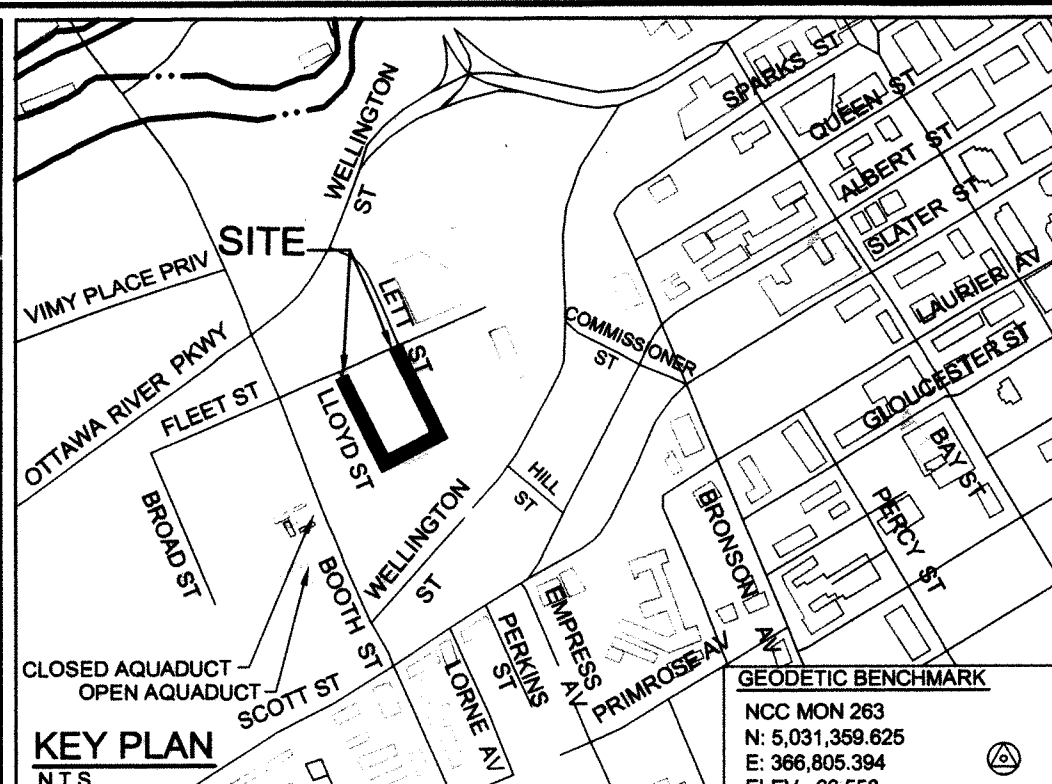
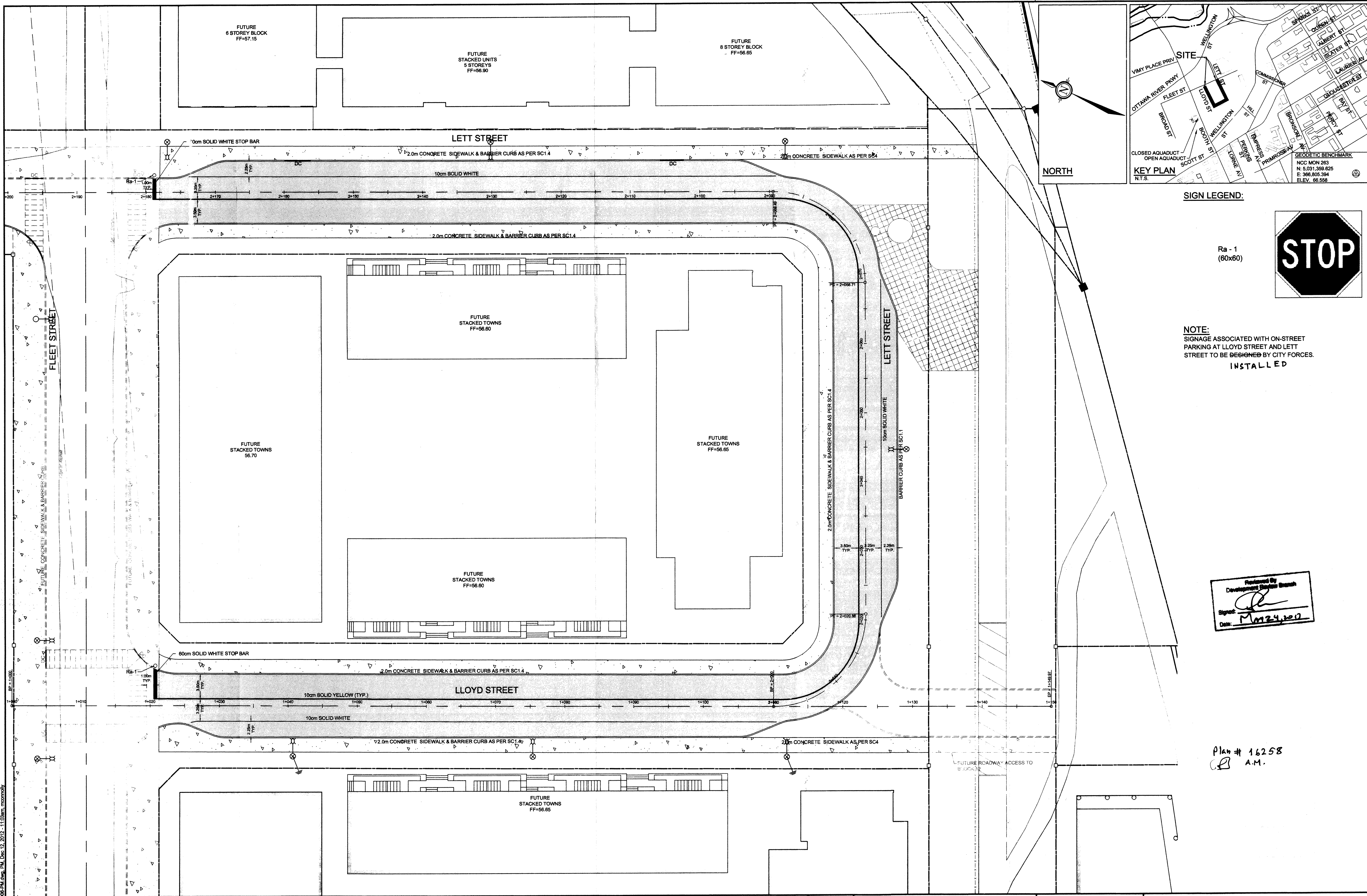
East LeBreton Flats – Intersection MMLOS Analysis

Auto LOS

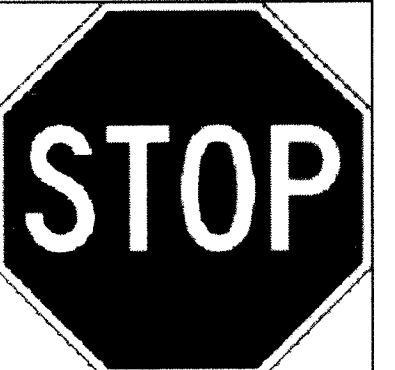
Intersection	Period	Critical Movement			Intersection		
		V/C or Delay	LOS	Mvmt	Delay	LOS	V/C
Sir John A MacDonald Parkway/ Wellington Street/ Booth Street	AM	1.08	F	EBT	49 sec	F	1.05
		1.06	F	NBT/R			
	PM	1.09	F	WBT	53 sec	F	1.06
		1.04	F	NBT/R			
Wellington St/ Lett Street	AM	0.63	B	EBT/R	5 sec	A	0.61
	PM	0.58	A	WBT	7 sec	A	0.57
Wellington St/ Portage Bridge	AM	0.85	D	EBL	28 sec	D	0.77
	PM	0.98	E	SBR	39 sec	E	0.89
Booth St/ Fleet St	AM	10 sec	A	WBR	-	-	-
	PM	11 sec	B	WBR	-	-	-
Booth St/ Albert St	AM	1.10	F	SBL	68 sec	F	0.99
		1.07	F	EBT			
	PM	1.25	F	SBL	58 sec	F	0.97
		1.04	F	EBL			

APPENDIX J

DESIGN OF BOUNDARY ROADWAYS



SIGN LEGEND:



Ra - 1
(60x60)

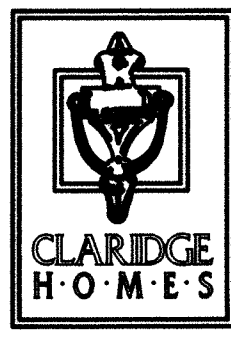
NOTE:
SIGNAGE ASSOCIATED WITH ON-STREET
PARKING AT LLOYD STREET AND LETT
STREET TO BE DESIGNED BY CITY FORCES.
INSTALLED

Prepared By
Development Services Branch
Signed: *[Signature]*
Date: **May 24, 2010**

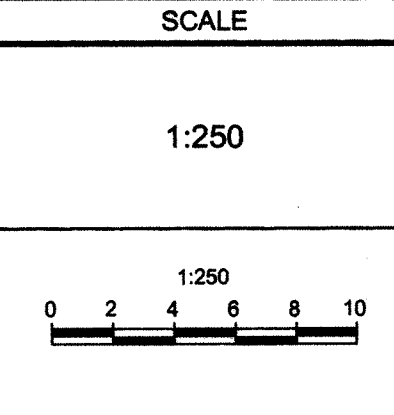
Plan # 16258
A.M.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS,
WATERMANS, SEWERS AND OTHER
UNDERGROUND AND OVERGROUND UTILITIES
AND STRUCTURES IS NOT NECESSARILY
SHOWN ON THE CONTRACT DRAWINGS, AND
WHERE SHOWN, THE ACCURACY OF THE
POSITION OF SUCH UTILITIES AND
STRUCTURES IS NOT GUARANTEED. BEFORE
STARTING WORK, DETERMINE THE EXACT
LOCATION OF ALL SUCH UTILITIES AND
STRUCTURES AND ASSUME ALL LIABILITY FOR
DAMAGE TO THEM.

CLARIDGE HOMES
CLARIDGE HOMES
SUITE 2001,
210 GLADSTONE AVENUE,
OTTAWA, ONTARIO
K2P 0Y6.



No.	REVISION	DATE	BY	No.	REVISION	DATE	BY
8	REVISED PER CITY COMMENTS	SEPT 14/12	GJM				
7	ISSUED FOR MOE APPROVAL	AUG 03/12	GJM				
6	REVISED PER CITY COMMENTS	JUL 26/12	GJM				
5	REVISE & REISSUED FOR CITY REVIEW	MAR 12/12	GJM				
4	ISSUED FOR TENDER	MAR 18/11	GJM				
3	REISSUED TO CITY	FEB 01/11	GJM				
2	REISSUED TO CITY	OCT 27/10	BHB				
1	ISSUED FOR CITY REVIEW	OCT 21/10	BHB				
9	ISSUED FOR CONSTRUCTION	OCT 26/12	GJM				



DESIGN	BHB
CHECKED	GJM
DRAWN	BHB
CHECKED	BHB
APPROVED	GJM



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LOCATION
CITY OF OTTAWA
LEBRETON FLATS - PHASE 2

DRAWING NAME
**PAVEMENT MARKINGS &
SIGNAGE**

PROJECT No.	105006-2
REV	REV # 09
DRAWING No.	105006-2-PM

M:\2010\105006\CAD\Design\Sheet_2010105006-PM.dwg, P.M. Date: 12/20/12 - 11:05am, m2010105006

201-16-02-0019-02-0019 LET AND LLOYD ST.

APPENDIX K

SYNCHRO ANALYSIS REPORTS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	1331	0	0	703	124	0	744	164	113	1086	323
Future Volume (vph)	0	1331	0	0	703	124	0	744	164	113	1086	323
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		35.0	10.0		0.0	135.0		50.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.98		0.98		0.99		0.96
Fr t						0.850		0.973				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3084	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1466	0	3084	0	203	3320	1448
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						115		28				221
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			29			5			31			22
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
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1479	0	0	781	138	0	827	182	126	1207	359
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1479	0	0	781	138	0	1009	0	126	1207	359
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type		NA			NA	Perm		NA		pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	8		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	10.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	37.4		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	45.0		35.0		15.0	35.0	35.0
Total Split (%)		47.4%			47.4%	47.4%		36.8%		15.8%	36.8%	36.8%
Maximum Green (s)		38.6			38.6	38.6		28.1		8.9	28.1	28.1
Yellow Time (s)		3.7			3.7	3.7		3.3		3.3	3.3	3.3

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.1
Total Split (s)	15.0
Total Split (%)	16%
Maximum Green (s)	8.9
Yellow Time (s)	3.3

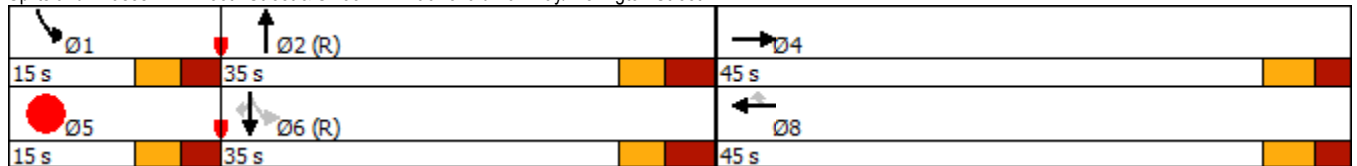


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.7		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.4		6.9		6.1	6.9	6.9
Lead/Lag								Lag		Lead	Lag	Lag
Lead-Lag Optimize?								Yes		Yes	Yes	Yes
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	Max		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0	24.0		21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5	5		5			5	5
Act Effct Green (s)		38.6			38.6	38.6		28.7		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.41		0.30		0.46	0.45	0.45
v/c Ratio		1.08			0.57	0.21		1.06		0.56	0.80	0.46
Control Delay		76.1			19.1	3.6		79.9		25.5	27.3	8.7
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		76.1			19.1	3.6		79.9		25.5	27.3	8.7
LOS		E			B	A		E		C	C	A
Approach Delay		76.1			16.8			79.9			23.2	
Approach LOS		E			B			E			C	
90th %ile Green (s)		38.6			38.6	38.6		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	MaxR		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	38.6		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	MaxR		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	38.6		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	MaxR		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	38.6		28.7		8.3	43.1	43.1
30th %ile Term Code		MaxR			MaxR	MaxR		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	38.6		30.4		6.6	43.1	43.1
10th %ile Term Code		MaxR			MaxR	MaxR		Coord		Gap	Coord	Coord
Queue Length 50th (m)		~168.5			60.8	6.6		~113.8		13.7	101.8	15.6
Queue Length 95th (m)		#211.5			28.1	3.9		#154.9		26.0	130.5	38.2
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						35.0				135.0		50.0
Base Capacity (vph)		1375			1362	663		950		233	1506	777
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		1.08			0.57	0.21		1.06		0.54	0.80	0.46

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 48.6
 Intersection LOS: D
 Intersection Capacity Utilization 89.7%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



Lane Group	Ø5
All-Red Time (s)	2.8
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↓		↔	↑↑	↔	
Traffic Volume (vph)	1403	8	5	763	36	27
Future Volume (vph)	1403	8	5	763	36	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	60.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00				0.99	
Frt	0.999				0.942	
Flt Protected			0.950		0.972	
Satd. Flow (prot)	3382	0	1710	3353	1637	0
Flt Permitted			0.126		0.972	
Satd. Flow (perm)	3382	0	227	3353	1636	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1				27	
Link Speed (k/h)	50			50	50	
Link Distance (m)	144.3			270.2	146.6	
Travel Time (s)	10.4			19.5	10.6	
Confl. Peds. (#/hr)		11	11		1	2
Confl. Bikes (#/hr)		24				3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1559	9	6	848	40	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1568	0	6	848	70	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			7.2	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases			6		8	
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	29.8		15.8	15.8	33.9	
Total Split (s)	61.0		61.0	61.0	34.0	
Total Split (%)	64.2%		64.2%	64.2%	35.8%	
Maximum Green (s)	55.2		55.2	55.2	28.1	
Yellow Time (s)	3.7		3.7	3.7	3.3	

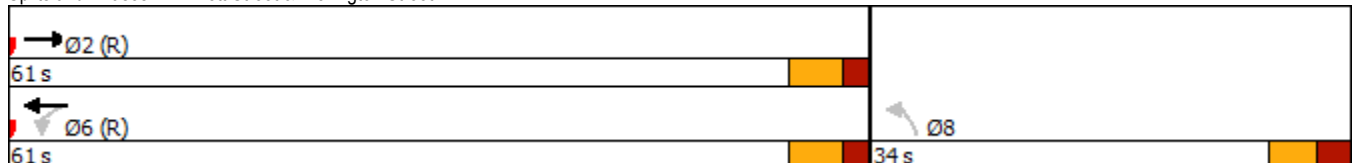


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.1		2.1	2.1	2.6	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.8	5.8	5.9	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	Min	
Walk Time (s)	15.0				7.0	
Flash Dont Walk (s)	9.0				21.0	
Pedestrian Calls (#/hr)	5				5	
Act Effct Green (s)	69.7		69.7	69.7	13.6	
Actuated g/C Ratio	0.73		0.73	0.73	0.14	
v/c Ratio	0.63		0.04	0.34	0.27	
Control Delay	3.1		6.8	5.9	25.0	
Queue Delay	0.2		0.0	0.0	0.0	
Total Delay	3.3		6.8	5.9	25.0	
LOS	A		A	A	C	
Approach Delay	3.3			5.9	25.0	
Approach LOS	A			A	C	
90th %ile Green (s)	55.3		55.3	55.3	28.0	
90th %ile Term Code	Coord		Coord	Coord	Ped	
70th %ile Green (s)	73.3		73.3	73.3	10.0	
70th %ile Term Code	Coord		Coord	Coord	Min	
50th %ile Green (s)	73.3		73.3	73.3	10.0	
50th %ile Term Code	Coord		Coord	Coord	Min	
30th %ile Green (s)	73.3		73.3	73.3	10.0	
30th %ile Term Code	Coord		Coord	Coord	Min	
10th %ile Green (s)	73.3		73.3	73.3	10.0	
10th %ile Term Code	Coord		Coord	Coord	Min	
Queue Length 50th (m)	8.2		0.2	20.8	7.8	
Queue Length 95th (m)	m20.7		2.4	58.5	16.5	
Internal Link Dist (m)	120.3			246.2	122.6	
Turn Bay Length (m)			60.0			
Base Capacity (vph)	2481		166	2460	502	
Starvation Cap Reductn	213		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.69		0.04	0.34	0.14	

Intersection Summary

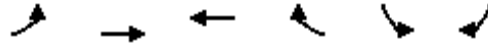
Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 4.8
 Intersection LOS: A
 Intersection Capacity Utilization 60.3%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	641	874	208	949	1190	367
Future Volume (vph)	641	874	208	949	1190	367
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				95		226
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	712	971	231	1054	1322	408
Shared Lane Traffic (%)						
Lane Group Flow (vph)	712	971	231	1054	1322	408
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	29.9	61.8	26.1	75.5	43.2	43.2
Actuated g/C Ratio	0.25	0.53	0.22	0.64	0.37	0.37
v/c Ratio	0.85	0.38	0.31	0.49	0.81	0.63
Control Delay	51.7	17.3	41.4	11.2	38.3	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	17.3	41.4	11.2	38.3	17.7
LOS	D	B	D	B	D	B
Approach Delay		31.9	16.7		33.5	
Approach LOS		C	B		C	
90th %ile Green (s)	35.0	61.8	21.0		45.0	45.0
90th %ile Term Code	Max	MaxR	Max		Max	Max
70th %ile Green (s)	33.3	61.8	22.7		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	30.8	61.8	25.2		45.0	45.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	28.1	61.8	27.9		44.6	44.6
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	22.7	61.8	33.3		36.9	36.9
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	85.8	50.9	25.5	50.0	101.7	35.1
Queue Length 95th (m)	103.9	61.6	39.6	70.0	120.4	70.8
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	987	2556	752	2214	1692	663
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.38	0.31	0.48	0.78	0.62

Intersection Summary

Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 117.7
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 28.3
 Intersection Capacity Utilization 74.8%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 119.4
 30th %ile Actuated Cycle: 119
 10th %ile Actuated Cycle: 111.3

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s		↖ Ø4 51.1 s
↖ Ø5 40.8 s	← Ø6 27.5 s	

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
Existing Traffic

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5		6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag				Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes				Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0	23.0	23.0	23.0	23.0	21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30	30	30	30	30	30	30			30	30
Act Effct Green (s)	61.1	61.1	61.1	31.6	31.6	31.6		25.9		45.9	40.9	40.9
Actuated g/C Ratio	0.51	0.51	0.51	0.26	0.26	0.26		0.22		0.38	0.34	0.34
v/c Ratio	0.88	1.07	0.02	0.04	0.51	0.60		0.83		1.10	0.94	0.98
Control Delay	42.2	84.9	0.0	35.2	41.2	50.2		56.8		124.6	63.7	83.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	42.2	84.9	0.0	35.2	41.2	50.2		56.8		124.6	63.7	83.3
LOS	D	F	A	D	D	D		E		F	E	F
Approach Delay		69.1			44.0			56.8			81.3	
Approach LOS		E			D			E			F	
90th %ile Green (s)	23.5	60.5	60.5	30.5	30.5	30.5	26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5	60.5	30.5	30.5	30.5	26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5	60.5	30.5	30.5	30.5	26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5	60.5	30.5	30.5	30.5	26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Hold	Hold		Max	Max	Max
10th %ile Green (s)	21.2	63.5	63.5	35.8	35.8	35.8	23.5	23.5		8.5	38.5	38.5
10th %ile Term Code	Gap	Coord	Coord	Coord	Coord	Coord	Hold	Hold		Max	Gap	Gap
Queue Length 50th (m)	71.8	~217.0	0.0	0.8	37.0	34.6		68.7		~43.3	135.8	78.7
Queue Length 95th (m)	#129.1	#293.9	0.0	3.9	52.6	59.5		#92.2		#89.0	#206.3	#139.4
Internal Link Dist (m)		143.4			189.1			181.5			310.4	
Turn Bay Length (m)			50.0			50.0				100.0		
Base Capacity (vph)	498	727	514	110	651	263		679		198	616	339
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	0
Reduced v/c Ratio	0.88	1.07	0.02	0.04	0.51	0.60		0.82		1.10	0.93	0.96

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 67.5
 Intersection LOS: E
 Intersection Capacity Utilization 117.4%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	826	10	0	908
Future Volume (Veh/h)	0	9	826	10	0	908
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)	0	10	918	11	0	1009
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.75	0.91			0.91	
vC, conflicting volume	1428	464			929	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	349	212			723	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	464	722			796	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	612	317	504	504	
Volume Left	0	0	0	0	0	
Volume Right	10	0	11	0	0	
cSH	722	1700	1700	1700	1700	
Volume to Capacity	0.01	0.36	0.19	0.30	0.30	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.1	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			34.4%		ICU Level of Service	A
Analysis Period (min)			15			

East LeBreton Flats - Revised TIS
Existing Traffic

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↖	↑↑	↗
Traffic Volume (vph)	0	1091	0	0	1378	245	0	1145	92	54	750	283
Future Volume (vph)	0	1091	0	0	1378	245	0	1145	92	54	750	283
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.92
Frt						0.850		0.989				0.850
Fit Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3266	0	1541	3257	1500
Fit Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1409	0	3266	0	122	3257	1373
Satd. Flow (RTOR)						93		8				31
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			5			11			4			23
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
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1212	0	0	1531	272	0	1272	102	60	833	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1212	0	0	1531	272	0	1374	0	60	833	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		CI+Ex			CI+Ex			CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm		NA		pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	8		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	10.0		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	37.4		34.9		11.0	34.9	34.9
Total Split (s)		56.0			56.0	56.0		53.0		11.0	53.0	53.0
Total Split (%)		46.7%			46.7%	46.7%		44.2%		9.2%	44.2%	44.2%
Maximum Green (s)		49.6			49.6	49.6		46.1		4.9	46.1	46.1
Yellow Time (s)		3.7			3.7	3.7		3.3		3.3	3.3	3.3
All-Red Time (s)		2.7			2.7	2.7		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.4		6.9		6.1	6.9	6.9
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0

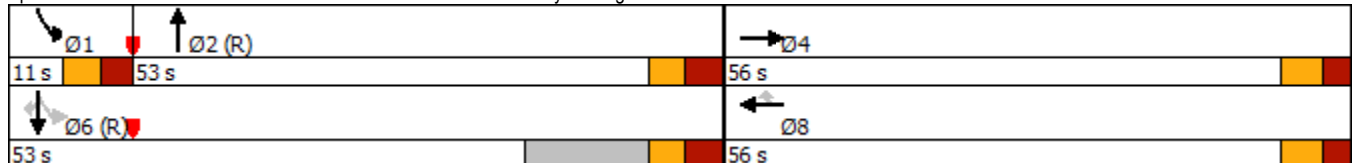


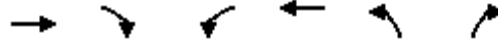
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)		24.0			24.0	24.0		21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5	5		5			5	5
Act Effct Green (s)		49.6			49.6	49.6		48.3		57.9	57.1	57.1
Actuated g/C Ratio		0.41			0.41	0.41		0.40		0.48	0.48	0.48
v/c Ratio		0.87			1.09	0.43		1.04		0.52	0.54	0.47
Control Delay		40.1			83.0	12.4		60.1		32.5	23.8	21.8
Queue Delay		0.0			2.5	0.0		0.0		0.0	0.0	0.0
Total Delay		40.1			85.5	12.4		60.1		32.5	23.8	21.8
LOS		D			F	B		E		C	C	C
Approach Delay		40.1			74.5			60.1			23.7	
Approach LOS		D			E			E			C	
90th %ile Green (s)		49.6			49.6	49.6		46.1		4.9	57.1	57.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		49.6			49.6	49.6		46.1		4.9	57.1	57.1
70th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		49.6			49.6	49.6		46.1		4.9	57.1	57.1
50th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		49.6			49.6	49.6		46.1		4.9	57.1	57.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		49.6			49.6	49.6		57.1		0.0	57.1	57.1
10th %ile Term Code		Hold			Max	Max		Coord		Skip	Coord	Coord
Queue Length 50th (m)		142.2			~226.5	30.2		~202.1		7.8	74.5	45.9
Queue Length 95th (m)		174.1			#271.8	31.7		m#230.1		#15.9	93.8	72.1
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						35.0				135.0		50.0
Base Capacity (vph)		1399			1399	636		1319		116	1549	669
Starvation Cap Reductn		0			51	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.87			1.14	0.43		1.04		0.52	0.54	0.47

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 52.5
 Intersection LOS: D
 Intersection Capacity Utilization 97.3%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↔	↕↕	↔	
Traffic Volume (vph)	1182	24	19	1462	12	25
Future Volume (vph)	1182	24	19	1462	12	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		0.98	
Frt	0.997				0.908	
Flt Protected			0.950		0.984	
Satd. Flow (prot)	3374	0	1710	3386	1545	0
Flt Permitted			0.184		0.984	
Satd. Flow (perm)	3374	0	331	3386	1540	0
Satd. Flow (RTOR)	4				28	
Confl. Peds. (#/hr)		8	8		7	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%
Adj. Flow (vph)	1313	27	21	1624	13	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1340	0	21	1624	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			7.2	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases			6		8	
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	29.8		15.8	15.8	33.9	
Total Split (s)	86.0		86.0	86.0	34.0	
Total Split (%)	71.7%		71.7%	71.7%	28.3%	
Maximum Green (s)	80.2		80.2	80.2	28.1	
Yellow Time (s)	3.7		3.7	3.7	3.3	
All-Red Time (s)	2.1		2.1	2.1	2.6	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.8	5.8	5.9	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	15.0				7.0	
Flash Dont Walk (s)	9.0				21.0	

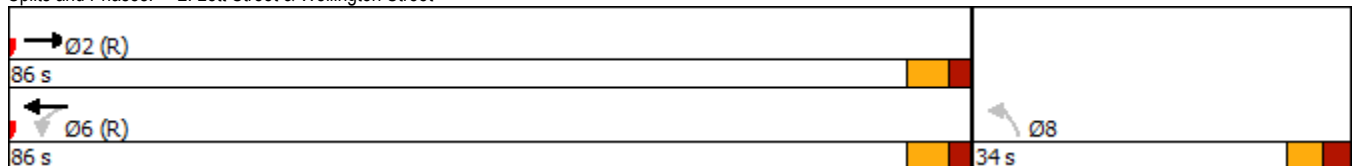


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Pedestrian Calls (#/hr)	5				5	
Act Effct Green (s)	99.0		99.0	99.0	13.6	
Actuated g/C Ratio	0.82		0.82	0.82	0.11	
v/c Ratio	0.48		0.08	0.58	0.21	
Control Delay	3.3		5.3	6.7	23.3	
Queue Delay	0.2		0.0	1.0	0.0	
Total Delay	3.5		5.3	7.7	23.3	
LOS	A		A	A	C	
Approach Delay	3.5			7.7	23.3	
Approach LOS	A			A	C	
90th %ile Green (s)	80.3		80.3	80.3	28.0	
90th %ile Term Code	Coord		Coord	Coord	Ped	
70th %ile Green (s)	98.3		98.3	98.3	10.0	
70th %ile Term Code	Coord		Coord	Coord	Min	
50th %ile Green (s)	98.3		98.3	98.3	10.0	
50th %ile Term Code	Coord		Coord	Coord	Min	
30th %ile Green (s)	98.3		98.3	98.3	10.0	
30th %ile Term Code	Coord		Coord	Coord	Min	
10th %ile Green (s)	114.2		114.2	114.2	0.0	
10th %ile Term Code	Coord		Coord	Coord	Skip	
Queue Length 50th (m)	16.7		0.8	57.6	3.0	
Queue Length 95th (m)	m46.0		5.0	149.4	12.2	
Internal Link Dist (m)	120.3			246.2	122.6	
Turn Bay Length (m)			60.0			
Base Capacity (vph)	2785		273	2794	382	
Starvation Cap Reductn	537		0	405	0	
Spillback Cap Reductn	0		0	831	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.60		0.08	0.83	0.11	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 6.1
 Intersection LOS: A
 Intersection Capacity Utilization 64.3%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	651	300	874	1701	711	650
Future Volume (vph)	651	300	874	1701	711	650
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3269	4865	3420	3230	4620	1342
Satd. Flow (RTOR)				180		507
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	723	333	971	1890	790	722
Shared Lane Traffic (%)						
Lane Group Flow (vph)	723	333	971	1890	790	722
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	36.1	85.8	43.9	88.0	38.0	38.0
Actuated g/C Ratio	0.26	0.63	0.32	0.65	0.28	0.28
v/c Ratio	0.83	0.11	0.88	0.88	0.61	0.98
Control Delay	56.1	10.2	54.7	24.7	45.2	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	10.2	54.7	24.7	45.2	42.8
LOS	E	B	D	C	D	D
Approach Delay		41.6	34.9		44.0	
Approach LOS		D	C		D	
90th %ile Green (s)	43.8	85.8	36.2		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	39.0	85.8	41.0		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	36.0	85.8	44.0		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	33.0	85.8	47.0		38.0	38.0
30th %ile Term Code	Gap	MaxR	Hold		Max	Max
10th %ile Green (s)	28.5	85.8	51.5		38.0	38.0
10th %ile Term Code	Gap	MaxR	Hold		Max	Max
Queue Length 50th (m)	100.2	13.0	137.0	167.5	69.3	81.1
Queue Length 95th (m)	114.6	17.5	#203.6	#259.7	84.1	#175.2
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1204	3060	1101	2148	1291	739
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.11	0.88	0.88	0.61	0.98

Intersection Summary

Cycle Length: 136.4
 Actuated Cycle Length: 136.4
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 38.7
 Intersection LOS: D
 Intersection Capacity Utilization 91.4%
 ICU Level of Service F
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 136.4
 10th %ile Actuated Cycle: 136.4
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2					↖ Ø4
92.3 s					44.1 s
↖ Ø5		← Ø6			
55.8 s		36.5 s			

East LeBreton Flats - Revised TIS
Existing Traffic

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	312	7	44	690	296	7	530	11	136	410	224
Future Volume (vph)	376	312	7	44	690	296	7	530	11	136	410	224
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.96		0.56	0.73		0.77		0.99		0.95		0.72
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1613	1286	1530	1710	2758	1471	0	3389	0	1569	1800	1404
Flt Permitted	0.151			0.553				0.946		0.133		
Satd. Flow (perm)	245	1286	853	731	2758	1130	0	3205	0	208	1800	1006
Satd. Flow (RTOR)			68			168		1				249
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
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
Heavy Vehicles (%)	6%	40%	0%	0%	24%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	418	347	8	49	767	329	8	589	12	151	456	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	418	347	8	49	767	329	0	609	0	151	456	249
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2	0	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0	0.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6	0.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	5	2	2	6	6	6	8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5	36.5	36.5	36.5	36.5	32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0	71.0	42.0	42.0	42.0	33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%	59.2%	35.0%	35.0%	35.0%	27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5	64.5	35.5	35.5	35.5	26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5		6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag	Lag				Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes				Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	5.0	5.0			5.0	5.0

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		

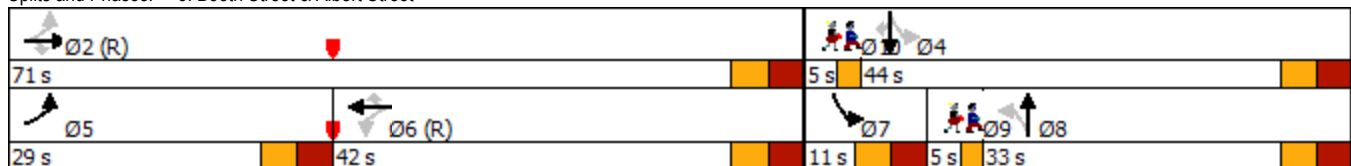


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)		23.0	23.0	23.0	23.0	23.0	21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30	30	30	30	30	30	30			30	30
Act Effct Green (s)	65.5	65.5	65.5	35.5	35.5	35.5		25.5		41.0	36.5	36.5
Actuated g/C Ratio	0.55	0.55	0.55	0.30	0.30	0.30		0.21		0.34	0.30	0.30
v/c Ratio	1.04	0.49	0.02	0.23	0.94	0.73		0.89		1.25	0.83	0.52
Control Delay	86.1	20.3	0.0	35.5	61.7	28.6		62.6		181.9	43.5	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	86.1	20.3	0.0	35.5	61.7	28.6		62.6		181.9	43.5	21.8
LOS	F	C	A	D	E	C		E		F	D	C
Approach Delay		55.7			51.1			62.6				61.6
Approach LOS		E			D			E				E
90th %ile Green (s)	22.5	64.5	64.5	35.5	35.5	35.5	26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5	64.5	35.5	35.5	35.5	26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5	64.5	35.5	35.5	35.5	26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Max	Max		Max	Hold	Hold
30th %ile Green (s)	23.2	65.2	65.2	35.5	35.5	35.5	25.8	25.8		4.5	36.8	36.8
30th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	26.9	68.9	68.9	35.5	35.5	35.5	22.1	22.1		4.5	33.1	33.1
10th %ile Term Code	Max	Coord	Coord	Coord	Coord	Coord	Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	~92.9	52.3	0.0	9.2	97.5	36.5		76.7		~40.0	121.3	40.8
Queue Length 95th (m)	#157.9	80.0	0.0	20.4	#137.6	75.3		#106.9		#88.2	#161.0	73.5
Internal Link Dist (m)		143.4			189.1			181.5			310.4	
Turn Bay Length (m)			30.0			50.0				100.0		
Base Capacity (vph)	402	702	496	216	815	452		708		121	562	485
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	0
Reduced v/c Ratio	1.04	0.49	0.02	0.23	0.94	0.73		0.86		1.25	0.81	0.51

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.25
 Intersection Signal Delay: 56.9
 Intersection LOS: E
 Intersection Capacity Utilization 112.9%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	1229	9	0	750
Future Volume (Veh/h)	0	8	1229	9	0	750
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)	0	9	1366	10	0	833
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.90	0.85			0.85	
vC, conflicting volume	1788	688			1376	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	889	272			1084	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	254	615			542	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	911	465	416	416	
Volume Left	0	0	0	0	0	
Volume Right	9	0	10	0	0	
cSH	615	1700	1700	1700	1700	
Volume to Capacity	0.01	0.54	0.27	0.24	0.24	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1324	0	0	699	136	0	775	163	126	1116	333
Future Volume (vph)	0	1324	0	0	699	136	0	775	163	126	1116	333
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.98		0.98		0.99		0.96
Fr _t						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1467	0	3088	0	203	3320	1457
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								26				105
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			29			5			31			22
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1324	0	0	699	136	0	775	163	126	1116	333
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1324	0	0	699	136	0	938	0	126	1116	333
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

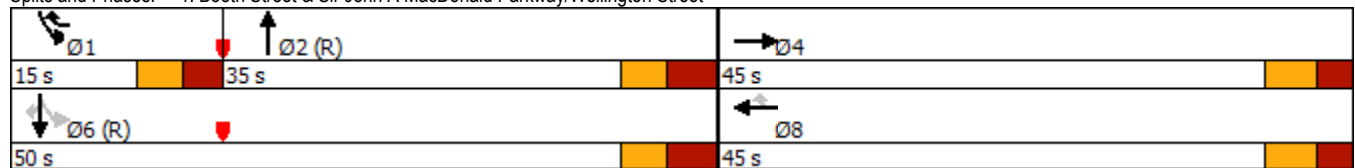


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.2		28.7		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.96			0.51	0.19		0.99		0.56	0.74	0.46
Control Delay		45.3			17.4	6.0		59.8		25.5	25.1	14.4
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		45.3			17.4	6.0		59.8		25.5	25.1	14.4
LOS		D			B	A		E		C	C	B
Approach Delay		45.3			15.6			59.8			22.9	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.3		28.7		8.3	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.6		30.4		6.6	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		128.3			52.8	10.1		-94.1		13.7	90.2	28.4
Queue Length 95th (m)		#177.8			25.5	5.1		#138.8		26.0	116.1	52.2
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	741		950		233	1506	718
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.96			0.51	0.18		0.99		0.54	0.74	0.46

Intersection Summary

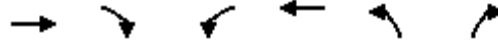
Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization 91.1%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		←	↑↑	←	→	
Traffic Volume (vph)	1409	8	5	771	35	26	
Future Volume (vph)	1409	8	5	771	35	26	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.99		
Frt	0.999				0.942		
Flt Protected			0.950		0.972		
Satd. Flow (prot)	3382	0	1710	3353	1636	0	
Flt Permitted			0.151		0.972		
Satd. Flow (perm)	3382	0	271	3353	1635	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	1				26		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	2	
Confl. Bikes (#/hr)		24				3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1409	8	5	771	35	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1417	0	5	771	61	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	

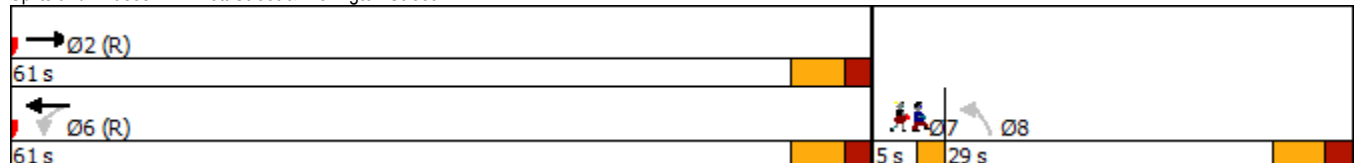


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	5					5	
Act Effct Green (s)	69.0		69.0	69.0	12.6		
Actuated g/C Ratio	0.73		0.73	0.73	0.13		
v/c Ratio	0.58		0.03	0.32	0.26		
Control Delay	2.1		7.0	6.4	25.2		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	2.1		7.0	6.4	25.2		
LOS	A		A	A	C		
Approach Delay	2.1			6.4	25.2		
Approach LOS	A			A	C		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	84.2		84.2	84.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	10.0		0.2	24.1	6.3		
Queue Length 95th (m)	m21.9		2.1	51.8	15.6		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2455		197	2434	418		
Starvation Cap Reductn	144		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.61		0.03	0.32	0.15		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 4.2
 Intersection LOS: A
 Intersection Capacity Utilization 60.1%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	638	884	220	944	1183	365
Future Volume (vph)	638	884	220	944	1183	365
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				135		226
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	638	884	220	944	1183	365
Shared Lane Traffic (%)						
Lane Group Flow (vph)	638	884	220	944	1183	365
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	27.3	61.9	28.8	75.4	40.4	40.4
Actuated g/C Ratio	0.24	0.54	0.25	0.66	0.35	0.35
v/c Ratio	0.81	0.34	0.26	0.42	0.76	0.58
Control Delay	50.1	15.9	38.4	9.1	36.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	15.9	38.4	9.1	36.5	14.7
LOS	D	B	D	A	D	B
Approach Delay		30.2	14.6		31.3	
Approach LOS		C	B		C	
90th %ile Green (s)	34.9	61.8	21.1		45.0	45.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	30.7	61.8	25.3		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	27.9	61.8	28.1		43.5	43.5
50th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
30th %ile Green (s)	24.3	61.8	31.7		38.4	38.4
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	19.7	61.8	36.3		31.2	31.2
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	76.0	44.0	23.0	36.6	87.0	24.7
Queue Length 95th (m)	91.5	55.4	38.0	56.7	104.2	56.1
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1011	2620	847	2351	1734	674
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.34	0.26	0.40	0.68	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 115
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 26.4
 Intersection Capacity Utilization 74.7%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 117.9
 30th %ile Actuated Cycle: 112.8
 10th %ile Actuated Cycle: 105.6
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s		↖ Ø4 51.1 s
↗ Ø5 40.8 s	← Ø6 27.5 s	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	0.99		0.84	0.92		0.90	0.99				0.71
Fr t		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2597	0	1710	1746	0	1569	1782	1391
Flt Permitted	0.357			0.402			0.274			0.105		
Satd. Flow (perm)	532	3206	0	605	2597	0	442	1746	0	173	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						1				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	4	509	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag						Lead		
Lead-Lag Optimize?	Yes			Yes						Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.9	30.9		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.26	0.26		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.32		1.25	0.86	0.91
Control Delay	45.9	19.5		34.5	43.5		38.2	198.4		181.7	51.5	70.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	45.9	19.5		34.5	43.5		38.2	198.4		181.7	51.5	70.1
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		29.8			43.4			197.2			82.8	
Approach LOS		C			D			F			F	
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	21.7	60.5		32.3	32.3		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Gap	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.4		0.8	~163.8		~49.7	120.6	73.1
Queue Length 95th (m)	#117.5	66.5		3.8	63.0		4.1	#233.0		#100.1	#182.0	#130.1
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	471	1616		155	668		97	386		165	616	339
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.32		1.25	0.86	0.91

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.32
 Intersection Signal Delay: 78.1
 Intersection LOS: E
 Intersection Capacity Utilization 112.3%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	929	10	0	1116
Future Volume (Veh/h)	0	9	929	10	0	1116
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	9	929	10	0	1116
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.72					
vC, conflicting volume	1492	470			939	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	916	470			939	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	197	540			726	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	619	320	558	558	
Volume Left	0	0	0	0	0	
Volume Right	9	0	10	0	0	
cSH	540	1700	1700	1700	1700	
Volume to Capacity	0.02	0.36	0.19	0.33	0.33	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.4%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	1085	0	0	1371	262	0	1196	92	64	794	296
Future Volume (vph)	0	1085	0	0	1371	262	0	1196	92	64	794	296
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.92
Frt						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1410	0	3267	0	122	3257	1373
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			5			11			4			23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1085	0	0	1371	262	0	1196	92	64	794	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1085	0	0	1371	262	0	1288	0	64	794	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

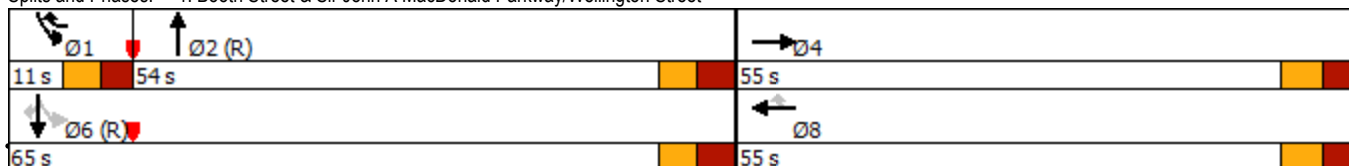


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.79			1.00	0.41		1.00		0.55	0.50	0.44
Control Delay		36.4			54.3	15.1		40.2		34.1	22.5	20.4
Queue Delay		0.0			12.8	0.0		0.0		0.0	0.0	0.0
Total Delay		36.4			67.1	15.1		40.2		34.1	22.5	20.4
LOS		D			E	B		D		C	C	C
Approach Delay		36.4			58.8			40.2			22.6	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		122.1			~176.5	38.2		~167.5		8.2	68.6	41.5
Queue Length 95th (m)		150.5			#231.4	44.8		m127.7		#17.9	86.8	65.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	635		1287		117	1576	680
Starvation Cap Reductn		0			55	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.79			1.04	0.41		1.00		0.55	0.50	0.44

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 41.4
 Intersection LOS: D
 Intersection Capacity Utilization 98.6%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1186	23	19	1472	12	24	
Future Volume (vph)	1186	23	19	1472	12	24	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.98		
Frt	0.997				0.910		
Flt Protected			0.950		0.984		
Satd. Flow (prot)	3374	0	1710	3386	1545	0	
Flt Permitted			0.213		0.984		
Satd. Flow (perm)	3374	0	382	3386	1539	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	3				24		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1186	23	19	1472	12	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1209	0	19	1472	36	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	
All-Red Time (s)	2.1		2.1	2.1	2.6	0.0	

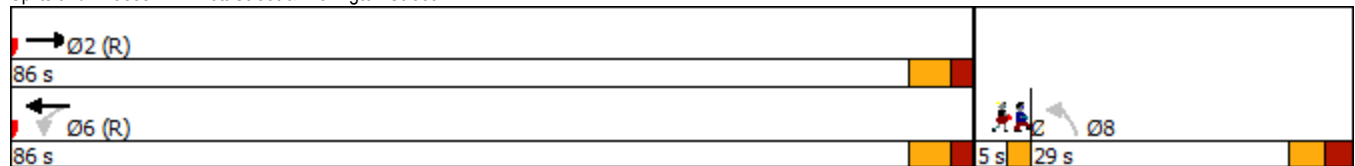


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0				7.0		
Flash Dont Walk (s)	9.0				16.0		
Pedestrian Calls (#/hr)	5				5		
Act Effct Green (s)	97.1		97.1	97.1	12.6		
Actuated g/C Ratio	0.81		0.81	0.81	0.10		
v/c Ratio	0.44		0.06	0.54	0.20		
Control Delay	2.8		5.5	6.5	25.5		
Queue Delay	0.1		0.0	0.4	0.0		
Total Delay	2.9		5.5	6.9	25.5		
LOS	A		A	A	C		
Approach Delay	2.9			6.9	25.5		
Approach LOS	A			A	C		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.0		0.9	63.2	2.8		
Queue Length 95th (m)	m36.4		4.5	124.8	12.0		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2729		309	2738	315		
Starvation Cap Reductn	480		0	389	0		
Spillback Cap Reductn	0		0	691	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.54		0.06	0.72	0.11		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.54
 Intersection Signal Delay: 5.4
 Intersection LOS: A
 Intersection Capacity Utilization 63.6%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	647	308	888	1691	707	646
Future Volume (vph)	647	308	888	1691	707	646
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	0.99				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3267	4865	3420	3230	4620	1342
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				240		506
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	647	308	888	1691	707	646
Shared Lane Traffic (%)						
Lane Group Flow (vph)	647	308	888	1691	707	646
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8

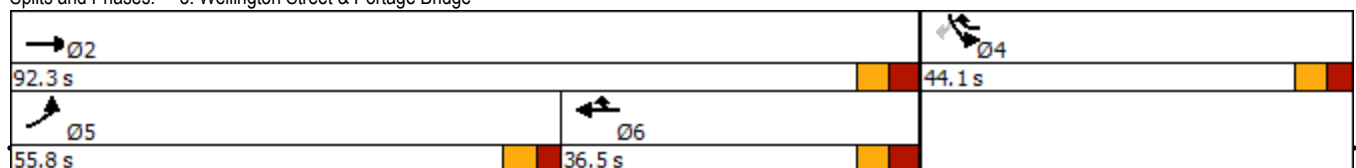


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	32.6	85.9	47.5	88.7	35.1	35.1
Actuated g/C Ratio	0.24	0.64	0.36	0.66	0.26	0.26
v/c Ratio	0.81	0.10	0.73	0.76	0.58	0.89
Control Delay	55.9	9.6	43.3	16.3	44.8	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	9.6	43.3	16.3	44.8	26.2
LOS	E	A	D	B	D	C
Approach Delay		40.9	25.6		35.9	
Approach LOS		D	C		D	
90th %ile Green (s)	40.5	85.8	39.5		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	35.7	85.8	44.3		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	32.8	85.8	47.2		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	29.9	85.8	50.1		34.5	34.5
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	24.7	85.8	55.3		27.5	27.5
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	90.1	11.9	116.6	113.1	60.7	42.5
Queue Length 95th (m)	104.6	16.2	#164.4	165.1	74.6	#128.4
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1230	3127	1215	2290	1319	743
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.10	0.73	0.74	0.54	0.87

Intersection Summary

Area Type: Other
 Cycle Length: 136.4
 Actuated Cycle Length: 133.6
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 31.5
 Intersection Capacity Utilization 91.7%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 132.9
 10th %ile Actuated Cycle: 125.9
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.93		0.87	1.00				0.72
Fr t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3049	0	1710	2869	0	1710	1789	0	1569	1800	1404
Flt Permitted	0.095			0.555			0.359			0.107		
Satd. Flow (perm)	161	3049	0	726	2869	0	564	1789	0	177	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5			334.4	
Travel Time (s)		26.8			15.3			14.8			24.1	
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	7	556	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

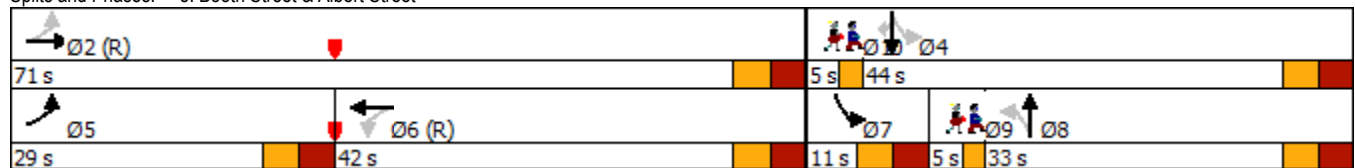


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag						Lead		
Lead-Lag Optimize?	Yes			Yes						Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.15	0.20		0.21	1.15		0.06	1.41		1.36	0.76	0.54
Control Delay	128.6	14.6		35.0	117.5		38.6	233.9		229.7	38.8	21.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	128.6	14.6		35.0	117.5		38.6	233.9		229.7	38.8	21.8
LOS	F	B		C	F		D	F		F	D	C
Approach Delay		78.2			114.1			231.4				68.2
Approach LOS		E			F			F				E
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~105.4	20.8		8.2	~152.1		1.4	~185.9		~36.0	110.9	42.6
Queue Length 95th (m)	#170.5	29.5		18.8	#195.5		5.7	#256.7		#80.9	146.1	76.5
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		214	892		124	395		114	562	500
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.15	0.20		0.21	1.15		0.06	1.41		1.36	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.41
 Intersection Signal Delay: 114.3
 Intersection LOS: F
 Intersection Capacity Utilization 119.7%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



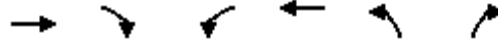
Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	1279	9	0	794
Future Volume (Veh/h)	0	8	1279	9	0	794
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	8	1279	9	0	794
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.84					
vC, conflicting volume	1680	644			1288	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1424	644			1288	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	106	416			534	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	8	853	435	397	397	
Volume Left	0	0	0	0	0	
Volume Right	8	0	9	0	0	
cSH	416	1700	1700	1700	1700	
Volume to Capacity	0.02	0.50	0.26	0.23	0.23	
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	
Control Delay (s)	13.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	13.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			47.6%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↕↕		↔	↕↕	↔		
Traffic Volume (vph)	1409	8	5	771	35	26	
Future Volume (vph)	1409	8	5	771	35	26	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.99		
Frt	0.999				0.942		
Flt Protected			0.950		0.972		
Satd. Flow (prot)	3382	0	1710	3353	1636	0	
Flt Permitted			0.151		0.972		
Satd. Flow (perm)	3382	0	271	3353	1635	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	1						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	2	
Confl. Bikes (#/hr)		24				3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1409	8	5	771	35	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1417	0	5	771	61	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	5					5	
Act Effct Green (s)	68.9		68.9	68.9	12.7		
Actuated g/C Ratio	0.73		0.73	0.73	0.13		
v/c Ratio	0.58		0.03	0.32	0.28		
Control Delay	2.1		7.0	6.4	38.7		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	2.2		7.0	6.4	38.7		
LOS	A		A	A	D		
Approach Delay	2.2			6.4	38.7		
Approach LOS	A			A	D		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	68.1		68.1	68.1	10.3		3.0
70th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	84.2		84.2	84.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	10.0		0.2	24.1	11.1		
Queue Length 95th (m)	m21.9		2.1	51.8	20.0		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2453		196	2431	399		
Starvation Cap Reductn	144		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.61		0.03	0.32	0.15		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 4.6
 Intersection LOS: A
 Intersection Capacity Utilization 60.1%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street

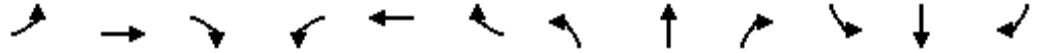


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.80	0.99		0.84	0.92		0.88	0.99				0.71
Frt		0.998			0.944			0.994				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3043	3206	0	1710	2597	0	1710	1746	0	1569	1782	1391
Fit Permitted	0.950			0.950			0.368			0.095		
Satd. Flow (perm)	2425	3206	0	1430	2597	0	585	1746	0	157	1782	983
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	4	509	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	24.0	49.0		12.0	37.0		37.0	37.0		17.0	54.0	54.0
Total Split (%)	20.0%	40.8%		10.0%	30.8%		30.8%	30.8%		14.2%	45.0%	45.0%
Maximum Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

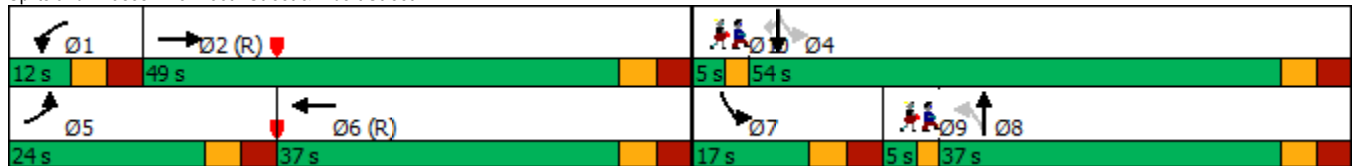


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	52.1		5.5	30.5		30.5	30.5		52.5	47.5	47.5
Actuated g/C Ratio	0.15	0.43		0.05	0.25		0.25	0.25		0.44	0.40	0.40
v/c Ratio	0.95	0.47		0.05	0.60		0.03	1.14		1.08	0.75	0.80
Control Delay	84.0	26.3		56.2	43.8		34.5	129.0		117.1	39.0	49.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	84.0	26.3		56.2	43.8		34.5	129.0		117.1	39.0	49.0
LOS	F	C		E	D		C	F		F	D	D
Approach Delay		48.9			43.9			128.3				57.5
Approach LOS		D			D			F				E
90th %ile Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
70th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
50th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
30th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	54.2	57.4		1.0	45.4		0.8	~147.9		~42.7	110.6	66.9
Queue Length 95th (m)	#86.4	88.8		4.9	63.0		3.8	#217.1		#93.0	155.3	#117.3
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	443	1392		78	660		148	445		192	705	389
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.95	0.47		0.05	0.60		0.03	1.14		1.08	0.75	0.80

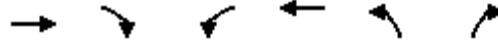
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 64.6
 Intersection LOS: E
 Intersection Capacity Utilization 100.3%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1186	23	19	1472	12	24	
Future Volume (vph)	1186	23	19	1472	12	24	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.98		
Frt	0.997				0.910		
Flt Protected			0.950		0.984		
Satd. Flow (prot)	3374	0	1710	3386	1545	0	
Flt Permitted			0.213		0.984		
Satd. Flow (perm)	3374	0	382	3386	1539	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	3						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1186	23	19	1472	12	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1209	0	19	1472	36	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	
All-Red Time (s)	2.1		2.1	2.1	2.6	0.0	

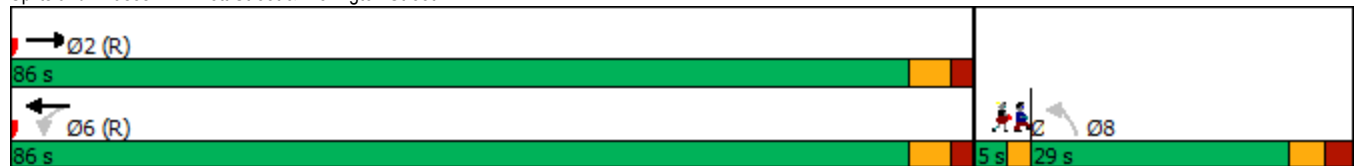


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0				7.0		
Flash Dont Walk (s)	9.0				16.0		
Pedestrian Calls (#/hr)	5				5		
Act Effct Green (s)	97.1		97.1	97.1	12.6		
Actuated g/C Ratio	0.81		0.81	0.81	0.10		
v/c Ratio	0.44		0.06	0.54	0.22		
Control Delay	2.8		5.5	6.5	50.6		
Queue Delay	0.1		0.0	0.4	0.0		
Total Delay	2.9		5.5	6.9	50.6		
LOS	A		A	A	D		
Approach Delay	2.9			6.9	50.6		
Approach LOS	A			A	D		
Queue Length 50th (m)	16.0		0.9	63.2	8.5		
Queue Length 95th (m)	m36.4		4.5	124.8	17.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2729		309	2738	296		
Starvation Cap Reductn	480		0	389	0		
Spillback Cap Reductn	0		0	691	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.54		0.06	0.72	0.12		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.54
 Intersection Signal Delay: 5.7
 Intersection LOS: A
 Intersection Capacity Utilization 63.6%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2023 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91	0.99		0.73	0.93		0.87	1.00				0.72
Fr _t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3130	3049	0	1710	2869	0	1710	1789	0	1569	1800	1404
Flt Permitted	0.950			0.950			0.423			0.095		
Satd. Flow (perm)	2861	3049	0	1242	2869	0	659	1789	0	157	1800	1007
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	7	556	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	24.0	54.0		12.0	42.0		37.0	37.0		12.0	49.0	49.0
Total Split (%)	20.0%	45.0%		10.0%	35.0%		30.8%	30.8%		10.0%	40.8%	40.8%
Maximum Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

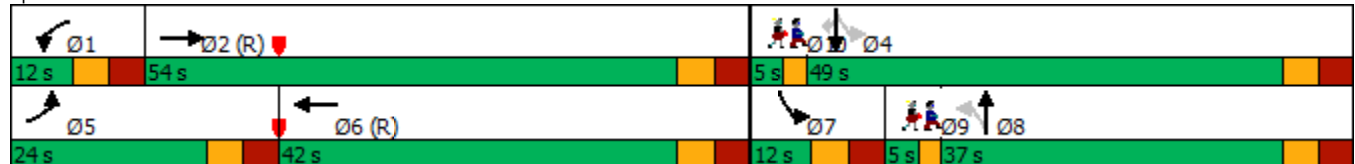


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.4	49.9		5.5	35.6		30.5	30.5		47.5	42.5	42.5
Actuated g/C Ratio	0.14	0.42		0.05	0.30		0.25	0.25		0.40	0.35	0.35
v/c Ratio	0.91	0.26		0.56	1.15		0.04	1.22		1.23	0.67	0.51
Control Delay	75.5	24.2		83.1	116.3		34.9	157.1		172.0	26.9	16.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	75.5	24.2		83.1	116.3		34.9	157.1		172.0	26.9	16.7
LOS	E	C		F	F		C	F		F	C	B
Approach Delay		52.8			115.0			155.6			50.1	
Approach LOS		D			F			F			D	
Queue Length 50th (m)	52.4	28.2		10.9	~152.1		1.3	~170.0		~32.7	100.0	42.6
Queue Length 95th (m)	#81.8	39.7		#28.3	#195.5		5.4	#240.8		#73.1	142.2	78.9
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	456	1269		78	894		167	455		126	637	531
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.26		0.56	1.15		0.04	1.22		1.23	0.67	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 90.7
 Intersection LOS: F
 Intersection Capacity Utilization 108.0%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2023 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.90	0.99		0.84	0.92			0.98		0.90		0.71
Frt		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1569	3206	0	1710	2597	0	0	3318	0	1569	1782	1391
Flt Permitted	0.369			0.402				0.950		0.186		
Satd. Flow (perm)	549	3206	0	605	2597	0	0	3150	0	276	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						3				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	490	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	0	513	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	62.1	62.1		32.8	32.8			24.9		44.9	39.9	39.9
Actuated g/C Ratio	0.52	0.52		0.27	0.27			0.21		0.37	0.33	0.33
v/c Ratio	0.89	0.40		0.02	0.56			0.78		1.07	0.89	0.95
Control Delay	42.6	18.8		34.5	41.8			53.7		113.6	56.2	78.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	42.6	18.8		34.5	41.8			53.7		113.6	56.2	78.4
LOS	D	B		C	D			D		F	E	E
Approach Delay		28.1			41.8			53.7			74.2	
Approach LOS		C			D			D			E	
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
10th %ile Green (s)	20.0	68.4		41.9	41.9		18.6	18.6		8.5	33.6	33.6
10th %ile Term Code	Gap	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.4			62.3		-38.2	120.6	73.1
Queue Length 95th (m)	#113.8	66.5		3.8	63.0			82.6		#82.7	#182.0	#130.1
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	483	1658		165	709			697		194	616	339
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.88	0.40		0.02	0.56			0.74		1.07	0.86	0.91

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 50.1 Intersection LOS: D
 Intersection Capacity Utilization 119.8% ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.93			1.00		0.96		0.72
Frt		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1613	3049	0	1710	2869	0	0	3396	0	1569	1800	1404
Flt Permitted	0.095			0.555				0.947		0.152		
Satd. Flow (perm)	161	3049	0	726	2869	0	0	3214	0	242	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	545	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	0	563	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

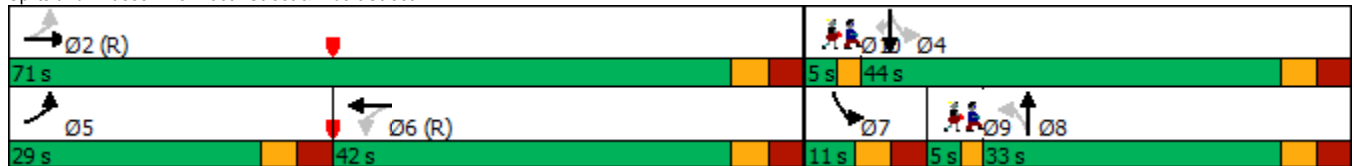


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	66.4	66.4		35.5	35.5			24.6		40.1	35.6	35.6
Actuated g/C Ratio	0.55	0.55		0.30	0.30			0.20		0.33	0.30	0.30
v/c Ratio	1.07	0.19		0.21	1.15			0.85		1.19	0.80	0.55
Control Delay	101.5	14.0		35.0	117.5			59.2		162.6	41.2	22.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	101.5	14.0		35.0	117.5			59.2		162.6	41.2	22.1
LOS	F	B		C	F			E		F	D	C
Approach Delay		62.9			114.1			59.2			57.3	
Approach LOS		E			F			E			E	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.9	64.9		35.5	35.5		26.1	26.1		4.5	37.1	37.1
50th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
30th %ile Green (s)	25.3	67.3		35.5	35.5		23.7	23.7		4.5	34.7	34.7
30th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	28.9	70.9		35.5	35.5		20.1	20.1		4.5	31.1	31.1
10th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	~104.0	20.7		8.2	~152.1			70.0		~38.6	110.9	42.6
Queue Length 95th (m)	#170.5	29.5		18.8	#195.5			91.3		#86.6	146.1	76.5
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	384	1689		214	892			710		130	562	500
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	1.07	0.19		0.21	1.15			0.79		1.19	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 77.8
 Intersection LOS: E
 Intersection Capacity Utilization 124.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	366	19	166	527	310
Future Volume (vph)	423	649	8	4	247	148	4	366	19	166	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	0.99		0.84	0.92		0.90	0.98				0.71
Fr _t		0.998			0.944			0.993				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2597	0	1710	1736	0	1569	1782	1391
Fit Permitted	0.357			0.402			0.274			0.106		
Satd. Flow (perm)	532	3206	0	605	2597	0	442	1736	0	175	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	366	19	166	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	4	385	0	166	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.9	30.9		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.26	0.26		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.00		1.00	0.86	0.91
Control Delay	45.9	19.5		34.5	43.5		38.2	93.4		100.2	51.5	70.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	45.9	19.5		34.5	43.5		38.2	93.4		100.2	51.5	70.1
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		29.8			43.4			92.9				65.3
Approach LOS		C			D			F				E
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	21.7	60.5		32.3	32.3		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Gap	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.4		0.8	-95.7		27.9	120.6	73.1
Queue Length 95th (m)	#117.5	66.5		3.8	63.0		4.1	#162.4		#74.1	#182.0	#130.1
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	471	1616		155	668		97	384		166	616	339
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.00		1.00	0.86	0.91

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 52.7
 Intersection LOS: D
 Intersection Capacity Utilization 109.0%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
 2023 Background (Demand Rationalization)

5: Booth Street & Albert Street
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	359	319	7	44	581	320	7	384	11	114	425	270
Future Volume (vph)	359	319	7	44	581	320	7	384	11	114	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92		0.87	1.00				0.72
Frt		0.997			0.947			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3049	0	1710	2822	0	1710	1785	0	1569	1800	1404
Flt Permitted	0.095			0.555			0.359			0.107		
Satd. Flow (perm)	161	3049	0	726	2822	0	564	1785	0	177	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			89			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	359	319	7	44	581	320	7	384	11	114	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	326	0	44	901	0	7	395	0	114	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7		4
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak

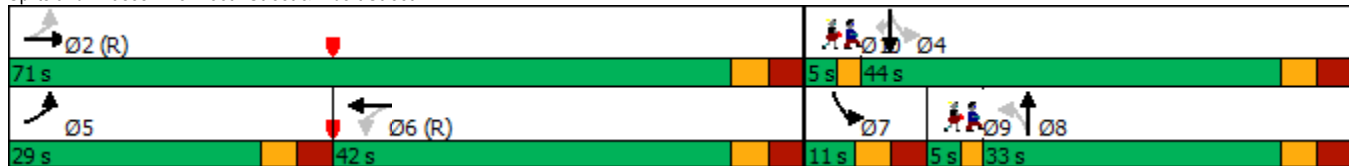


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.76	0.54
Control Delay	83.6	14.6		35.0	69.4		38.6	92.9		107.4	38.3	22.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.6	14.6		35.0	69.4		38.6	92.9		107.4	38.3	22.9
LOS	F	B		C	E		D	F		F	D	C
Approach Delay		50.8			67.8			92.0			42.9	
Approach LOS		D			E			F			D	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~74.7	20.8		8.2	~109.4		1.4	~98.4		23.2	111.7	45.1
Queue Length 95th (m)	#139.5	29.5		18.8	#156.2		5.7	#165.7		#53.9	146.6	78.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		214	897		124	394		114	562	500
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 60.0
 Intersection LOS: E
 Intersection Capacity Utilization 105.0%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1358	0	0	717	140	0	794	168	129	1144	341
Future Volume (vph)	0	1358	0	0	717	140	0	794	168	129	1144	341
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.98		0.98		0.99		0.96
Fr t						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1467	0	3088	0	203	3320	1457
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								27				99
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			29			5			31			22
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1358	0	0	717	140	0	794	168	129	1144	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1358	0	0	717	140	0	962	0	129	1144	341
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

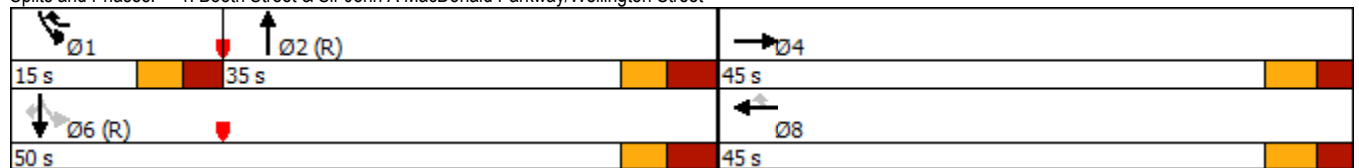


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.3		28.6		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.99			0.53	0.19		1.01		0.58	0.76	0.48
Control Delay		50.5			17.6	6.0		66.0		26.2	25.7	15.1
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		50.5			17.6	6.0		66.0		26.2	25.7	15.1
LOS		D			B	A		E		C	C	B
Approach Delay		50.5			15.7			66.0				23.5
Approach LOS		D			B			E				C
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.4		28.6		8.4	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.7		30.3		6.7	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		133.6			54.6	10.1		~103.6		14.0	93.7	30.5
Queue Length 95th (m)		#185.3			26.0	5.1		#144.1		26.9	120.4	54.9
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	741		949		233	1506	715
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.99			0.53	0.19		1.01		0.55	0.76	0.48

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 38.3
 Intersection LOS: D
 Intersection Capacity Utilization 93.0%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1445	8	5	791	35	26	
Future Volume (vph)	1445	8	5	791	35	26	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.99		
Frt	0.999				0.942		
Flt Protected			0.950		0.972		
Satd. Flow (prot)	3382	0	1710	3353	1636	0	
Flt Permitted			0.144		0.972		
Satd. Flow (perm)	3382	0	259	3353	1635	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	1				26		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	2	
Confl. Bikes (#/hr)		24				3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1445	8	5	791	35	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1453	0	5	791	61	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	

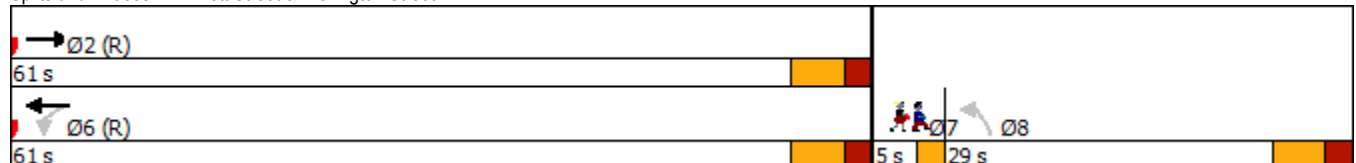


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	5						5
Act Effct Green (s)	69.0		69.0	69.0	12.6		
Actuated g/C Ratio	0.73		0.73	0.73	0.13		
v/c Ratio	0.59		0.03	0.32	0.26		
Control Delay	2.4		7.2	6.4	25.2		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	2.4		7.2	6.4	25.2		
LOS	A		A	A	C		
Approach Delay	2.4			6.4	25.2		
Approach LOS	A			A	C		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	84.2		84.2	84.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	10.3		0.2	25.0	6.3		
Queue Length 95th (m)	m22.0		2.1	53.4	15.6		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2455		188	2434	418		
Starvation Cap Reductn	145		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.63		0.03	0.32	0.15		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 4.4
 Intersection LOS: A
 Intersection Capacity Utilization 61.1%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	654	906	226	969	1214	375
Future Volume (vph)	654	906	226	969	1214	375
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				125		227
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	654	906	226	969	1214	375
Shared Lane Traffic (%)						
Lane Group Flow (vph)	654	906	226	969	1214	375
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	27.9	61.9	28.2	75.4	41.0	41.0
Actuated g/C Ratio	0.24	0.54	0.24	0.65	0.35	0.35
v/c Ratio	0.82	0.35	0.27	0.44	0.77	0.59
Control Delay	50.3	16.3	39.1	9.6	36.9	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	16.3	39.1	9.6	36.9	15.3
LOS	D	B	D	A	D	B
Approach Delay		30.5	15.2		31.8	
Approach LOS		C	B		C	
90th %ile Green (s)	35.0	61.8	21.0		45.0	45.0
90th %ile Term Code	Max	MaxR	Max		Max	Max
70th %ile Green (s)	31.3	61.8	24.7		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	28.7	61.8	27.3		44.5	44.5
50th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
30th %ile Green (s)	25.0	61.8	31.0		39.3	39.3
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	20.3	61.8	35.7		32.0	32.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	78.5	46.3	24.2	39.7	90.1	26.9
Queue Length 95th (m)	94.1	56.9	39.0	59.8	107.6	59.1
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1006	2607	826	2322	1726	673
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.35	0.27	0.42	0.70	0.56

Intersection Summary

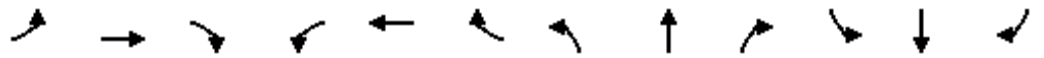
Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 115.6
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 26.8
 Intersection Capacity Utilization 75.2%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 118.9
 30th %ile Actuated Cycle: 113.7
 10th %ile Actuated Cycle: 106.4
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s		↖ Ø4 51.1 s
↗ Ø5 40.8 s	← Ø6 27.5 s	

East LeBreton Flats - Revised TIS
2028 Background

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.92		0.90	0.98				0.71
Fr t		0.998			0.944			0.994				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2599	0	1710	1745	0	1569	1782	1391
Fit Permitted	0.346			0.395			0.249			0.105		
Satd. Flow (perm)	517	3206	0	597	2599	0	404	1745	0	173	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	522	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	60.5	60.5		30.5	30.5		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.25	0.25		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.35		1.28	0.88	0.94
Control Delay	50.2	19.6		34.5	44.3		38.8	211.8		193.1	53.9	74.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.2	19.6		34.5	44.3		38.8	211.8		193.1	53.9	74.0
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		31.6			44.2			210.4				87.5
Approach LOS		C			D			F				F
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	71.1	53.4		0.8	47.0		0.8	~170.2		~52.4	125.2	75.4
Queue Length 95th (m)	#125.8	68.6		3.8	64.8		4.1	#240.0		#103.2	#189.7	#133.7
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	466	1616		151	660		89	386		165	616	339
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.35		1.28	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.35
 Intersection Signal Delay: 82.7
 Intersection LOS: F
 Intersection Capacity Utilization 113.9%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	952	10	0	1144
Future Volume (Veh/h)	0	9	952	10	0	1144
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	9	952	10	0	1144
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.71					
vC, conflicting volume	1529	481			962	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	936	481			962	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	188	531			711	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	635	327	572	572	
Volume Left	0	0	0	0	0	
Volume Right	9	0	10	0	0	
cSH	531	1700	1700	1700	1700	
Volume to Capacity	0.02	0.37	0.19	0.34	0.34	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			38.1%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1113	0	0	1406	268	0	1226	94	65	813	303
Future Volume (vph)	0	1113	0	0	1406	268	0	1226	94	65	813	303
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.92
Fr _t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1410	0	3267	0	122	3257	1373
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			5			11			4			23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1113	0	0	1406	268	0	1226	94	65	813	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1113	0	0	1406	268	0	1320	0	65	813	303
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

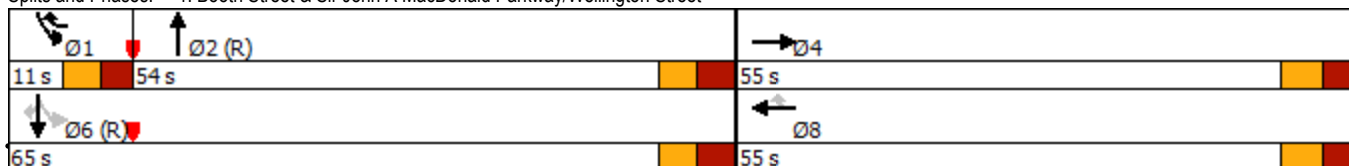


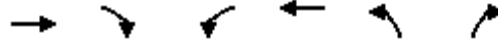
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.81			1.03	0.42		1.03		0.56	0.52	0.45
Control Delay		37.4			60.6	15.1		47.6		34.9	22.7	20.6
Queue Delay		0.0			15.8	0.0		0.0		0.0	0.0	0.0
Total Delay		37.4			76.5	15.1		47.6		34.9	22.7	20.6
LOS		D			E	B		D		C	C	C
Approach Delay		37.4			66.6			47.6			22.9	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		126.8			~195.9	39.2		~184.0		8.3	70.7	42.9
Queue Length 95th (m)		156.1			#241.1	44.8		m128.2		#19.0	89.3	67.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	635		1287		117	1576	680
Starvation Cap Reductn		0			55	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.81			1.07	0.42		1.03		0.56	0.52	0.45

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 135
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 46.0 Intersection LOS: D
 Intersection Capacity Utilization 100.5% ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↕↕		↔	↕↕	↔		
Traffic Volume (vph)	1216	23	19	1510	12	24	
Future Volume (vph)	1216	23	19	1510	12	24	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.98		
Frt	0.997				0.910		
Flt Protected			0.950		0.984		
Satd. Flow (prot)	3374	0	1710	3386	1545	0	
Flt Permitted			0.205		0.984		
Satd. Flow (perm)	3374	0	368	3386	1539	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	3				24		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1216	23	19	1510	12	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1239	0	19	1510	36	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	
All-Red Time (s)	2.1		2.1	2.1	2.6	0.0	

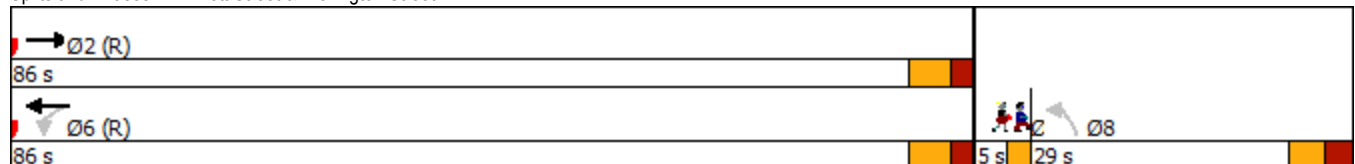


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0				7.0		
Flash Dont Walk (s)	9.0				16.0		
Pedestrian Calls (#/hr)	5				5		
Act Effct Green (s)	97.1		97.1	97.1	12.6		
Actuated g/C Ratio	0.81		0.81	0.81	0.10		
v/c Ratio	0.45		0.06	0.55	0.20		
Control Delay	3.0		5.5	6.7	25.5		
Queue Delay	0.1		0.0	0.6	0.0		
Total Delay	3.1		5.5	7.2	25.5		
LOS	A		A	A	C		
Approach Delay	3.1			7.2	25.5		
Approach LOS	A			A	C		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.3		0.9	65.9	2.8		
Queue Length 95th (m)	m40.9		4.5	130.6	12.0		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2729		297	2738	315		
Starvation Cap Reductn	481		0	380	0		
Spillback Cap Reductn	0		0	730	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.55		0.06	0.75	0.11		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 5.6
 Intersection LOS: A
 Intersection Capacity Utilization 64.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	664	316	910	1735	726	663
Future Volume (vph)	664	316	910	1735	726	663
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	0.99				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3267	4865	3420	3230	4620	1342
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				225		507
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	664	316	910	1735	726	663
Shared Lane Traffic (%)						
Lane Group Flow (vph)	664	316	910	1735	726	663
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8

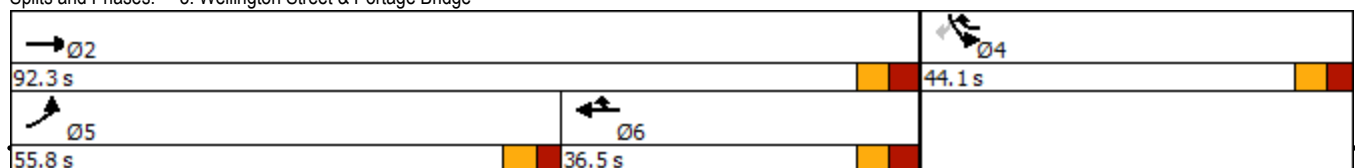


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	33.5	85.9	46.5	88.5	35.8	35.8
Actuated g/C Ratio	0.25	0.64	0.35	0.66	0.27	0.27
v/c Ratio	0.81	0.10	0.77	0.79	0.59	0.91
Control Delay	55.6	9.7	45.5	17.9	44.9	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	9.7	45.5	17.9	44.9	28.9
LOS	E	A	D	B	D	C
Approach Delay		40.8	27.4		37.2	
Approach LOS		D	C		D	
90th %ile Green (s)	41.2	85.8	38.8		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	36.5	85.8	43.5		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	33.5	85.8	46.5		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	30.6	85.8	49.4		36.5	36.5
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	26.3	85.8	53.7		29.0	29.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	92.3	12.2	121.6	123.8	62.6	50.1
Queue Length 95th (m)	107.0	16.6	#174.3	180.0	76.8	#138.7
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1224	3110	1184	2253	1312	743
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.10	0.77	0.77	0.55	0.89

Intersection Summary

Area Type: Other
 Cycle Length: 136.4
 Actuated Cycle Length: 134.3
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 32.8
 Intersection Capacity Utilization 92.9%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 134.9
 10th %ile Actuated Cycle: 127.4
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.93		0.88	1.00				0.72
Fr t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3050	0	1710	2869	0	1710	1789	0	1569	1800	1404
Flt Permitted	0.095			0.550			0.339			0.107		
Satd. Flow (perm)	161	3050	0	722	2869	0	535	1789	0	177	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	7	570	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background

5: Booth Street & Albert Street
Timing Plan: PM Peak

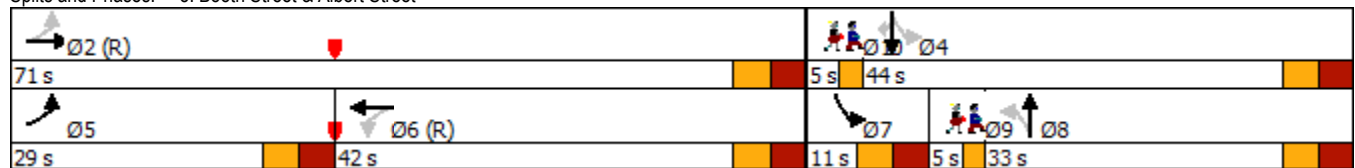


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.44		1.39	0.78	0.55
Control Delay	137.6	14.7		35.1	128.8		38.7	248.4		239.6	39.8	21.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	137.6	14.7		35.1	128.8		38.7	248.4		239.6	39.8	21.8
LOS	F	B		D	F		D	F		F	D	C
Approach Delay		83.2			124.9			245.8			70.4	
Approach LOS		F			F			F			E	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~110.1	21.5		8.4	~159.3		1.4	~193.2		~37.6	114.5	43.8
Queue Length 95th (m)	#175.2	30.3		19.1	#202.9		5.8	#265.1		#83.1	149.3	77.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		213	892		118	395		114	562	503
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.44		1.39	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.44
 Intersection Signal Delay: 122.2
 Intersection LOS: F
 Intersection Capacity Utilization 122.0%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	1310	9	0	813
Future Volume (Veh/h)	0	8	1310	9	0	813
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	8	1310	9	0	813
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			334			75
pX, platoon unblocked	0.83					
vC, conflicting volume	1721	660			1319	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1463	660			1319	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	99	406			520	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	8	873	446	406	406	
Volume Left	0	0	0	0	0	
Volume Right	8	0	9	0	0	
cSH	406	1700	1700	1700	1700	
Volume to Capacity	0.02	0.51	0.26	0.24	0.24	
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	
Control Delay (s)	14.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			48.5%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↙	↑↑	↘		
Traffic Volume (vph)	1445	8	5	791	35	26	
Future Volume (vph)	1445	8	5	791	35	26	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.99		
Frt	0.999				0.942		
Flt Protected			0.950		0.972		
Satd. Flow (prot)	3382	0	1710	3353	1636	0	
Flt Permitted			0.143		0.972		
Satd. Flow (perm)	3382	0	257	3353	1635	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	1						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	2	
Confl. Bikes (#/hr)		24				3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1445	8	5	791	35	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1453	0	5	791	61	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	5					5	
Act Effct Green (s)	68.9		68.9	68.9	12.7		
Actuated g/C Ratio	0.73		0.73	0.73	0.13		
v/c Ratio	0.59		0.03	0.33	0.28		
Control Delay	2.4		7.2	6.4	38.7		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	2.4		7.2	6.4	38.7		
LOS	A		A	A	D		
Approach Delay	2.4			6.5	38.7		
Approach LOS	A			A	D		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	68.1		68.1	68.1	10.3		3.0
70th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	84.2		84.2	84.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	10.3		0.2	25.0	11.1		
Queue Length 95th (m)	m22.0		2.1	53.4	20.0		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2453		186	2431	399		
Starvation Cap Reductn	145		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.63		0.03	0.33	0.15		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 4.8
 Intersection LOS: A
 Intersection Capacity Utilization 61.1%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.80	1.00		0.84	0.92		0.89	0.98				0.71
Frt		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3043	3206	0	1710	2599	0	1710	1745	0	1569	1782	1391
Flt Permitted	0.950			0.950			0.346			0.095		
Satd. Flow (perm)	2434	3206	0	1437	2599	0	554	1745	0	157	1782	983
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	522	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	24.0	49.0		12.0	37.0		37.0	37.0		17.0	54.0	54.0
Total Split (%)	20.0%	40.8%		10.0%	30.8%		30.8%	30.8%		14.2%	45.0%	45.0%
Maximum Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

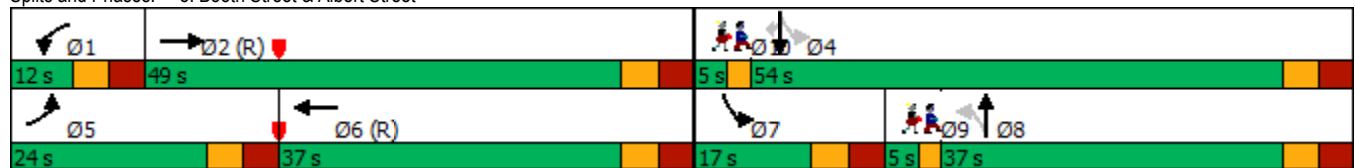


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	52.1		5.5	30.5		30.5	30.5		52.5	47.5	47.5
Actuated g/C Ratio	0.15	0.43		0.05	0.25		0.25	0.25		0.44	0.40	0.40
v/c Ratio	0.98	0.48		0.05	0.62		0.03	1.17		1.10	0.77	0.81
Control Delay	88.8	26.5		56.2	44.3		34.5	139.3		125.2	40.1	50.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	88.8	26.5		56.2	44.3		34.5	139.3		125.2	40.1	50.7
LOS	F	C		E	D		C	F		F	D	D
Approach Delay		50.9			44.4			138.6			60.1	
Approach LOS		D			D			F			E	
90th %ile Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
70th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
50th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
30th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	55.8	59.4		1.0	47.0		0.8	~154.8		~45.3	114.9	69.2
Queue Length 95th (m)	#89.3	91.7		4.9	64.8		3.9	#224.5		#96.2	161.1	#120.9
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	443	1392		78	660		140	445		192	705	389
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.98	0.48		0.05	0.62		0.03	1.17		1.10	0.77	0.81

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.17
 Intersection Signal Delay: 68.0
 Intersection LOS: E
 Intersection Capacity Utilization 101.6%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

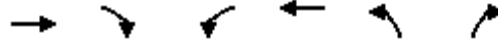
Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↕↕		↔	↕↕	↔		
Traffic Volume (vph)	1216	23	19	1510	12	24	
Future Volume (vph)	1216	23	19	1510	12	24	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.98		
Frt	0.997				0.910		
Flt Protected			0.950		0.984		
Satd. Flow (prot)	3374	0	1710	3386	1545	0	
Flt Permitted			0.205		0.984		
Satd. Flow (perm)	3374	0	368	3386	1539	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	3						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1216	23	19	1510	12	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1239	0	19	1510	36	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	
All-Red Time (s)	2.1		2.1	2.1	2.6	0.0	

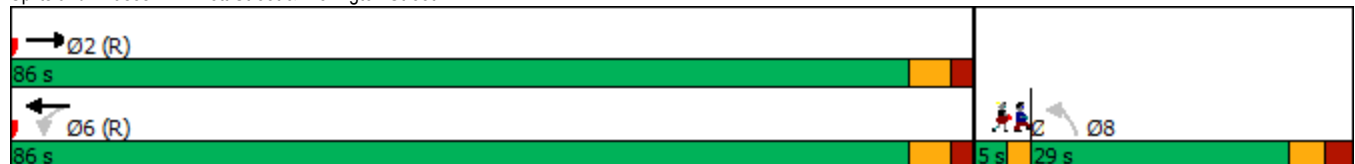


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0				7.0		
Flash Dont Walk (s)	9.0				16.0		
Pedestrian Calls (#/hr)	5				5		
Act Effct Green (s)	97.1		97.1	97.1	12.6		
Actuated g/C Ratio	0.81		0.81	0.81	0.10		
v/c Ratio	0.45		0.06	0.55	0.22		
Control Delay	3.0		5.5	6.7	50.6		
Queue Delay	0.1		0.0	0.6	0.0		
Total Delay	3.1		5.5	7.2	50.6		
LOS	A		A	A	D		
Approach Delay	3.1			7.2	50.6		
Approach LOS	A			A	D		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.3		0.9	65.9	8.5		
Queue Length 95th (m)	m40.9		4.5	130.6	17.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2729		297	2738	296		
Starvation Cap Reductn	481		0	380	0		
Spillback Cap Reductn	0		0	730	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.55		0.06	0.75	0.12		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 6.0
 Intersection LOS: A
 Intersection Capacity Utilization 64.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

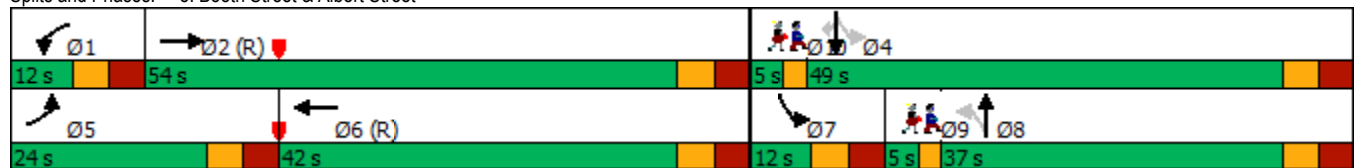


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	49.9		5.5	35.5		30.5	30.5		47.5	42.5	42.5
Actuated g/C Ratio	0.15	0.42		0.05	0.30		0.25	0.25		0.40	0.35	0.35
v/c Ratio	0.92	0.26		0.58	1.18		0.04	1.25		1.25	0.68	0.51
Control Delay	77.7	24.3		84.3	128.8		35.0	168.9		180.5	27.4	16.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	77.7	24.3		84.3	128.8		35.0	168.9		180.5	27.4	16.8
LOS	E	C		F	F		C	F		F	C	B
Approach Delay		54.1			126.9			167.3			51.9	
Approach LOS		D			F			F			D	
90th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
70th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
50th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
50th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
30th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	59.5		0.0	35.5		30.5	30.5		5.5	42.5	42.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	53.8	29.0		11.1	~159.3		1.3	~177.3		~34.3	103.3	43.7
Queue Length 95th (m)	#84.2	40.7		#28.8	#202.9		5.4	#249.2		#75.3	146.6	80.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	456	1269		78	892		161	455		126	637	534
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.92	0.26		0.58	1.18		0.04	1.25		1.25	0.68	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.25
 Intersection Signal Delay: 97.5
 Intersection LOS: F
 Intersection Capacity Utilization 110.0%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.92			0.98		0.90		0.71
Fr t		0.998			0.944			0.994				0.850
Fit Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1569	3206	0	1710	2599	0	0	3317	0	1569	1782	1391
Fit Permitted	0.355			0.395				0.950		0.181		
Satd. Flow (perm)	530	3206	0	597	2599	0	0	3149	0	270	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						3				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	502	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	0	526	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	61.7	61.7		31.9	31.9			25.3		45.3	40.3	40.3
Actuated g/C Ratio	0.51	0.51		0.27	0.27			0.21		0.38	0.34	0.34
v/c Ratio	0.91	0.41		0.03	0.59			0.79		1.10	0.90	0.96
Control Delay	47.1	19.1		34.5	42.9			54.0		123.5	58.1	80.9
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	47.1	19.1		34.5	42.9			54.0		123.5	58.1	80.9
LOS	D	B		C	D			D		F	E	F
Approach Delay		30.1			42.8			54.0			77.8	
Approach LOS		C			D			D			E	
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
10th %ile Green (s)	22.4	66.6		37.7	37.7		20.4	20.4		8.5	35.4	35.4
10th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold		Max	Gap	Gap
Queue Length 50th (m)	71.1	53.4		0.8	47.0			64.2		-41.2	125.2	75.4
Queue Length 95th (m)	#123.6	68.6		3.8	64.8			85.0		#86.8	#189.7	#133.7
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	475	1649		158	691			697		193	616	339
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.91	0.41		0.03	0.59			0.75		1.10	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 52.2
 Intersection LOS: D
 Intersection Capacity Utilization 121.2%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.93			1.00		0.97		0.72
Fr _t		0.997		0.953				0.997				0.850
Fit Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1613	3050	0	1710	2869	0	0	3396	0	1569	1800	1404
Fit Permitted	0.095			0.550				0.947		0.147		
Satd. Flow (perm)	161	3050	0	722	2869	0	0	3214	0	235	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			2				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	558	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	0	577	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	66.1	66.1		35.5	35.5			24.9		40.4	35.9	35.9
Actuated g/C Ratio	0.55	0.55		0.30	0.30			0.21		0.34	0.30	0.30
v/c Ratio	1.11	0.20		0.21	1.18			0.86		1.22	0.81	0.56
Control Delay	113.2	14.1		35.1	128.8			59.7		175.6	42.1	22.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	113.2	14.1		35.1	128.8			59.7		175.6	42.1	22.1
LOS	F	B		D	F			E		F	D	C
Approach Delay		69.4			124.9			59.7			60.0	
Approach LOS		E			F			E			E	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	24.7	66.7		35.5	35.5		24.3	24.3		4.5	35.3	35.3
30th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	28.3	70.3		35.5	35.5		20.7	20.7		4.5	31.7	31.7
10th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	~110.1	21.5		8.4	~159.3			71.6		~40.5	114.5	43.8
Queue Length 95th (m)	#175.2	30.3		19.1	#202.9			#94.2		#89.8	149.3	77.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	380	1681		213	892			711		129	562	503
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	1.11	0.20		0.21	1.18			0.81		1.22	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.22
 Intersection Signal Delay: 83.7
 Intersection LOS: F
 Intersection Capacity Utilization 126.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1358	0	0	717	140	0	785	168	129	1144	341
Future Volume (vph)	0	1358	0	0	717	140	0	785	168	129	1144	341
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.98		0.98		0.99		0.96
Fr _t						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1467	0	3088	0	203	3320	1457
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								27				99
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			29			5			31			22
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1358	0	0	717	140	0	785	168	129	1144	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1358	0	0	717	140	0	953	0	129	1144	341
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: AM Peak

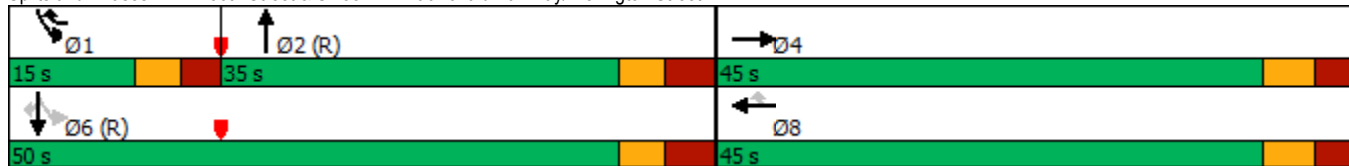


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.3		28.6		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.99			0.53	0.19		1.00		0.58	0.76	0.48
Control Delay		50.5			17.6	6.0		63.7		26.2	25.7	15.1
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		50.5			17.6	6.0		63.7		26.2	25.7	15.1
LOS		D			B	A		E		C	C	B
Approach Delay		50.5			15.7			63.7			23.5	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.4		28.6		8.4	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.7		30.3		6.7	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		133.6			54.6	10.1		~101.6		14.0	93.7	30.5
Queue Length 95th (m)		#185.3			26.0	5.1		#142.1		26.9	120.4	54.9
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	741		949		233	1506	715
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.99			0.53	0.19		1.00		0.55	0.76	0.48

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 37.8
 Intersection LOS: D
 Intersection Capacity Utilization 92.8%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Future Volume (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.92		0.90	0.98				0.71
Fr _t		0.998			0.944			0.992				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2599	0	1710	1733	0	1569	1782	1391
Fit Permitted	0.346			0.395			0.249			0.106		
Satd. Flow (perm)	517	3206	0	597	2599	0	404	1733	0	175	1782	982
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	176		204	204		176	180		458	458		180
Confl. Bikes (#/hr)						5			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	385	0	166	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.5	30.5		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.25	0.25		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.00		1.00	0.88	0.94
Control Delay	50.2	19.6		34.5	44.3		38.8	93.4		100.2	53.9	74.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.2	19.6		34.5	44.3		38.8	93.4		100.2	53.9	74.0
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		31.6			44.2			92.9				67.7
Approach LOS		C			D			F				E
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	71.1	53.4		0.8	47.0		0.8	-96.0		27.9	125.2	75.4
Queue Length 95th (m)	#125.8	68.6		3.8	64.8		4.1	#162.6		#74.1	#189.7	#133.7
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	466	1616		151	660		89	384		166	616	339
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.00		1.00	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 54.1
 Intersection LOS: D
 Intersection Capacity Utilization 110.4%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

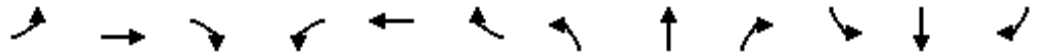
Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	1113	0	0	1377	268	0	1198	94	65	813	303
Future Volume (vph)	0	1113	0	0	1377	268	0	1198	94	65	813	303
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.92
Fr _t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3266	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1410	0	3266	0	122	3257	1373
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			5			11			4			23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1113	0	0	1377	268	0	1198	94	65	813	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1113	0	0	1377	268	0	1292	0	65	813	303
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak

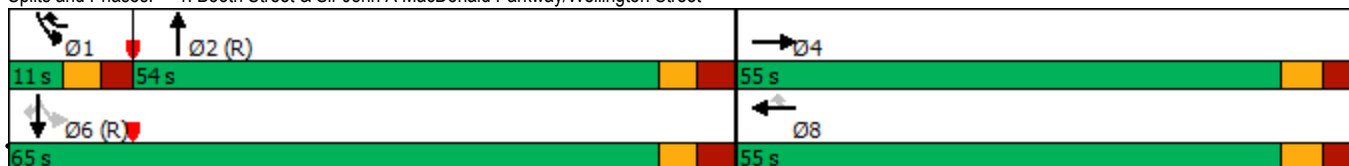


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.81			1.00	0.42		1.00		0.56	0.52	0.45
Control Delay		37.4			54.9	15.0		53.5		34.9	22.7	20.6
Queue Delay		0.0			14.6	0.0		0.0		0.0	0.0	0.0
Total Delay		37.4			69.6	15.0		53.5		34.9	22.7	20.6
LOS		D			E	B		D		C	C	C
Approach Delay		37.4			60.7			53.5			22.9	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		126.8			~179.3	39.2		~165.8		8.3	70.7	42.9
Queue Length 95th (m)		156.1			#232.5	44.2		m#183.4		#19.0	89.3	67.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	635		1286		117	1576	680
Starvation Cap Reductn		0			59	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.81			1.05	0.42		1.00		0.56	0.52	0.45

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 45.4
 Intersection LOS: D
 Intersection Capacity Utilization 98.9%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	359	327	7	45	575	328	7	383	12	114	436	275
Future Volume (vph)	359	327	7	45	575	328	7	383	12	114	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92		0.88	1.00				0.72
Fr t		0.997			0.946			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3050	0	1710	2814	0	1710	1783	0	1569	1800	1404
Flt Permitted	0.095			0.550			0.339			0.107		
Satd. Flow (perm)	161	3050	0	722	2814	0	535	1783	0	177	1800	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			95			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	179		215	215		179	196		99	99		196
Confl. Bikes (#/hr)			2			20			6			14
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	359	327	7	45	575	328	7	383	12	114	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	334	0	45	903	0	7	395	0	114	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Background (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak

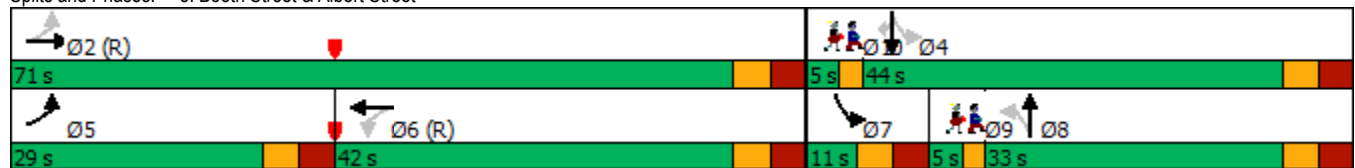


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.78	0.55
Control Delay	83.6	14.7		35.1	69.1		38.7	92.9		106.9	39.2	23.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.6	14.7		35.1	69.1		38.7	92.9		106.9	39.2	23.0
LOS	F	B		D	E		D	F		F	D	C
Approach Delay		50.4			67.5			92.0				43.2
Approach LOS		D			E			F				D
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~74.7	21.5		8.4	~109.1		1.4	~98.6		~23.4	115.3	46.3
Queue Length 95th (m)	#139.5	30.3		19.1	#156.2		5.8	#165.8		#54.0	149.8	80.2
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		213	899		118	394		114	562	503
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.78	0.55




















Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 59.8
 Intersection LOS: E
 Intersection Capacity Utilization 105.8%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1327	0	0	710	136	0	778	163	126	1116	333
Future Volume (vph)	0	1327	0	0	710	136	0	778	163	126	1116	333
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.97		0.98		0.99		0.96
Fr _t						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1459	0	3088	0	203	3320	1450
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								26				101
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			31			17			31			31
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1327	0	0	710	136	0	778	163	126	1116	333
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1327	0	0	710	136	0	941	0	126	1116	333
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

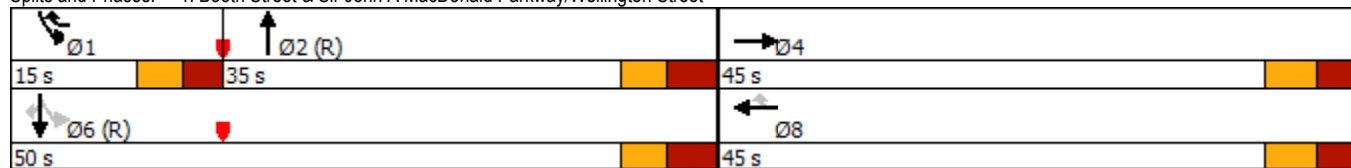


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.2		28.7		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.97			0.52	0.19		0.99		0.56	0.74	0.47
Control Delay		45.8			15.9	5.1		60.6		25.5	25.1	14.7
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		45.8			15.9	5.1		60.6		25.5	25.1	14.7
LOS		D			B	A		E		C	C	B
Approach Delay		45.8			14.2			60.6			22.9	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.3		28.7		8.3	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.6		30.4		6.6	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		128.7			53.8	10.1		-95.0		13.7	90.2	29.0
Queue Length 95th (m)		#178.5			26.4	5.3		#139.6		26.0	116.1	52.9
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	737		950		233	1506	713
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.97			0.52	0.18		0.99		0.54	0.74	0.47

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization 91.3%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1409	11	24	771	46	70	
Future Volume (vph)	1409	11	24	771	46	70	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.97		
Frt	0.999				0.919		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	3382	0	1710	3353	1572	0	
Flt Permitted			0.138		0.981		
Satd. Flow (perm)	3382	0	248	3353	1572	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	1				70		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	9	
Confl. Bikes (#/hr)		24				32	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1409	11	24	771	46	70	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1420	0	24	771	116	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	

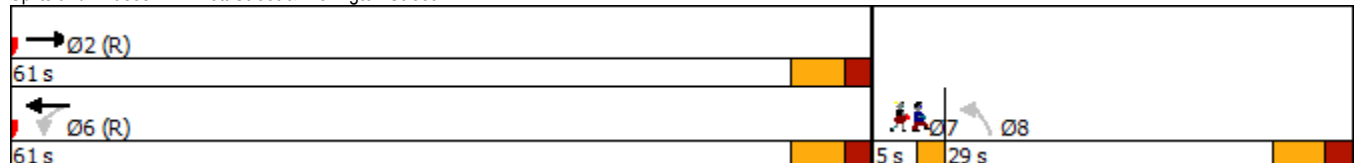


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	15						15
Act Effct Green (s)	63.2		63.2	63.2	15.2		
Actuated g/C Ratio	0.67		0.67	0.67	0.16		
v/c Ratio	0.63		0.15	0.35	0.37		
Control Delay	2.8		10.9	8.3	18.0		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	2.9		10.9	8.3	18.0		
LOS	A		B	A	B		
Approach Delay	2.9			8.4	18.0		
Approach LOS	A			A	B		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	10.0		1.2	24.1	8.3		
Queue Length 95th (m)	m21.9		6.9	51.8	21.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2250		164	2230	436		
Starvation Cap Reductn	144		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.67		0.15	0.35	0.27		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 5.5
 Intersection LOS: A
 Intersection Capacity Utilization 62.3%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	642	926	237	944	1183	366
Future Volume (vph)	642	926	237	944	1183	366
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				133		227
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	642	926	237	944	1183	366
Shared Lane Traffic (%)						
Lane Group Flow (vph)	642	926	237	944	1183	366
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	27.5	61.9	28.6	75.2	40.4	40.4
Actuated g/C Ratio	0.24	0.54	0.25	0.65	0.35	0.35
v/c Ratio	0.81	0.35	0.28	0.43	0.76	0.58
Control Delay	50.0	16.1	38.7	9.2	36.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	16.1	38.7	9.2	36.5	14.7
LOS	D	B	D	A	D	B
Approach Delay		30.0	15.1		31.3	
Approach LOS		C	B		C	
90th %ile Green (s)	35.0	61.8	21.0		45.0	45.0
90th %ile Term Code	Max	MaxR	Max		Max	Max
70th %ile Green (s)	30.9	61.8	25.1		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	28.0	61.8	28.0		43.5	43.5
50th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
30th %ile Green (s)	24.5	61.8	31.5		38.4	38.4
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	19.8	61.8	36.2		31.2	31.2
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	76.5	46.6	25.0	36.8	87.0	24.7
Queue Length 95th (m)	92.2	58.3	40.5	57.0	104.2	56.1
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1011	2620	843	2347	1734	675
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.35	0.28	0.40	0.68	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 115
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 26.4
 Intersection Capacity Utilization 74.8%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 117.9
 30th %ile Actuated Cycle: 112.8
 10th %ile Actuated Cycle: 105.6
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s		↖ Ø4 51.1 s
↗ Ø5 40.8 s	← Ø6 27.5 s	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	0.99		0.84	0.91		0.90	0.99				0.70
Fr _t		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2588	0	1710	1746	0	1569	1782	1391
Flt Permitted	0.357			0.402			0.274			0.105		
Satd. Flow (perm)	529	3206	0	605	2588	0	442	1746	0	173	1782	978
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						1				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	4	516	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

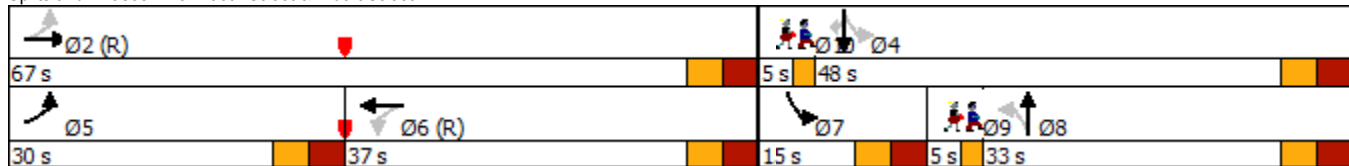


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	60.5	60.5		30.8	30.8		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.26	0.26		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.91	0.41		0.03	0.59		0.04	1.34		1.25	0.86	0.92
Control Delay	46.2	19.5		34.5	43.6		38.2	205.6		181.7	51.5	70.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	46.2	19.5		34.5	43.6		38.2	205.6		181.7	51.5	70.7
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		29.9			43.5			204.3				83.0
Approach LOS		C			D			F				F
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	21.8	60.5		32.2	32.2		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Gap	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.5		0.8	~167.5		~49.7	120.6	73.1
Queue Length 95th (m)	#118.0	66.5		3.8	63.1		4.1	#237.2		#100.1	#182.0	#130.5
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	470	1616		155	664		97	386		165	616	338
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.34		1.25	0.86	0.92

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.34
 Intersection Signal Delay: 79.7
 Intersection LOS: E
 Intersection Capacity Utilization 112.7%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	12	929	17	0	1116
Future Volume (Veh/h)	0	12	929	17	0	1116
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	12	929	17	0	1116
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.72					
vC, conflicting volume	1496	473			946	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	921	473			946	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	195	538			721	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	619	327	558	558	
Volume Left	0	0	0	0	0	
Volume Right	12	0	17	0	0	
cSH	538	1700	1700	1700	1700	
Volume to Capacity	0.02	0.36	0.19	0.33	0.33	
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.7%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	1091	0	0	1381	262	0	1197	92	64	794	296
Future Volume (vph)	0	1091	0	0	1381	262	0	1197	92	64	794	296
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.91
Fr t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1404	0	3267	0	122	3257	1370
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			9			19			4			29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1091	0	0	1381	262	0	1197	92	64	794	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1091	0	0	1381	262	0	1289	0	64	794	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

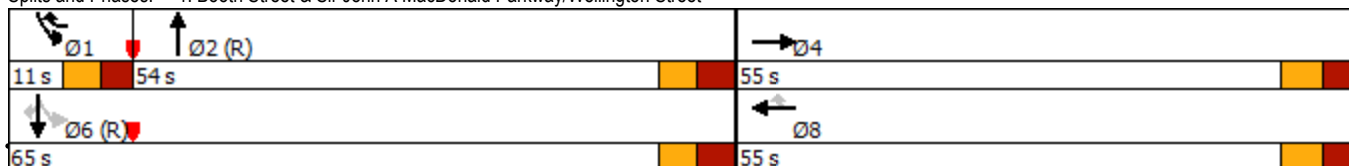


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.80			1.01	0.41		1.00		0.55	0.50	0.44
Control Delay		36.6			55.4	14.7		40.4		34.1	22.5	20.4
Queue Delay		0.0			13.5	0.0		0.0		0.0	0.0	0.0
Total Delay		36.6			68.9	14.7		40.4		34.1	22.5	20.4
LOS		D			E	B		D		C	C	C
Approach Delay		36.6			60.2			40.4			22.6	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		123.2			~181.0	38.4		~168.1		8.2	68.6	41.5
Queue Length 95th (m)		151.5			#233.9	45.5		m126.2		#17.9	86.8	65.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	633		1287		117	1576	679
Starvation Cap Reductn		0			54	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.80			1.05	0.41		1.00		0.55	0.50	0.44

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 41.9
 Intersection LOS: D
 Intersection Capacity Utilization 98.9%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↕↕		↔	↕↕	↔		
Traffic Volume (vph)	1184	31	56	1471	23	59	
Future Volume (vph)	1184	31	56	1471	23	59	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.95		
Frt	0.996				0.903		
Flt Protected			0.950		0.986		
Satd. Flow (prot)	3370	0	1710	3386	1497	0	
Flt Permitted			0.208		0.986		
Satd. Flow (perm)	3370	0	373	3386	1492	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	5				59		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	18	
Confl. Bikes (#/hr)		4				21	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1184	31	56	1471	23	59	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1215	0	56	1471	82	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	

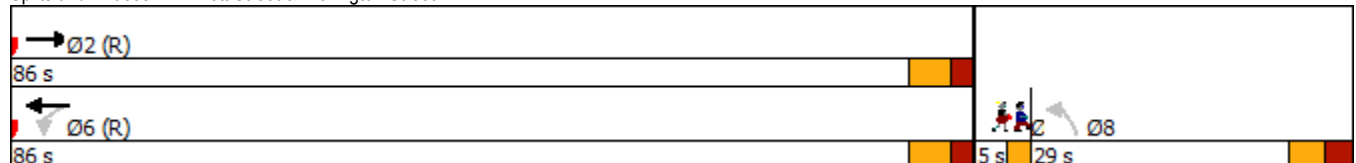


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.6		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	10						10
Act Effct Green (s)	93.9		93.9	93.9	12.6		
Actuated g/C Ratio	0.78		0.78	0.78	0.10		
v/c Ratio	0.46		0.19	0.56	0.39		
Control Delay	3.1		7.2	7.3	23.4		
Queue Delay	0.1		0.0	0.6	0.0		
Total Delay	3.3		7.2	7.9	23.5		
LOS	A		A	A	C		
Approach Delay	3.3			7.9	23.5		
Approach LOS	A			A	C		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.0		3.1	63.2	5.4		
Queue Length 95th (m)	m37.3		11.9	124.7	19.2		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2637		292	2648	334		
Starvation Cap Reductn	478		0	389	0		
Spillback Cap Reductn	0		0	709	12		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.56		0.19	0.76	0.25		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 6.4
 Intersection LOS: A
 Intersection Capacity Utilization 71.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	648	339	920	1691	707	648
Future Volume (vph)	648	339	920	1691	707	648
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	0.99				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3268	4865	3420	3230	4620	1342
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				239		508
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	648	339	920	1691	707	648
Shared Lane Traffic (%)						
Lane Group Flow (vph)	648	339	920	1691	707	648
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8

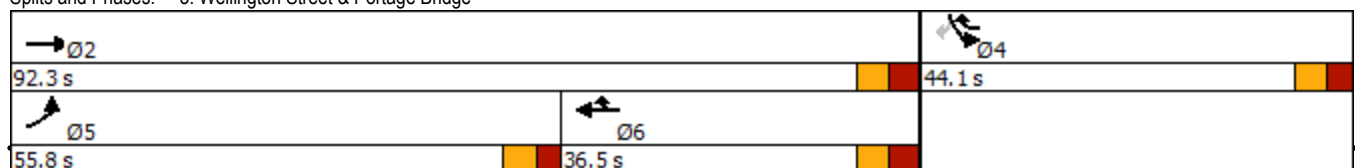


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	32.7	85.9	47.4	88.6	35.1	35.1
Actuated g/C Ratio	0.24	0.64	0.35	0.66	0.26	0.26
v/c Ratio	0.81	0.11	0.76	0.76	0.58	0.89
Control Delay	55.8	9.6	44.3	16.4	44.8	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	9.6	44.3	16.4	44.8	26.2
LOS	E	A	D	B	D	C
Approach Delay		39.9	26.2		35.9	
Approach LOS		D	C		D	
90th %ile Green (s)	40.5	85.8	39.5		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	35.8	85.8	44.2		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	32.9	85.8	47.1		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	29.9	85.8	50.1		34.5	34.5
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	24.8	85.8	55.2		27.5	27.5
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	90.1	13.2	122.6	113.5	60.7	42.7
Queue Length 95th (m)	104.8	17.8	#174.3	165.3	74.6	#128.7
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1230	3127	1213	2288	1319	745
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.11	0.76	0.74	0.54	0.87

Intersection Summary

Area Type: Other
 Cycle Length: 136.4
 Actuated Cycle Length: 133.6
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 31.6
 Intersection Capacity Utilization 92.7%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 132.9
 10th %ile Actuated Cycle: 125.9
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge



East LeBreton Flats - Revised TIS
2023 Total Traffic

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92		0.87	1.00				0.71
Fr _t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3049	0	1710	2858	0	1710	1788	0	1569	1800	1404
Flt Permitted	0.095			0.555			0.359			0.107		
Satd. Flow (perm)	161	3049	0	726	2858	0	564	1788	0	177	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	7	570	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic

5: Booth Street & Albert Street
Timing Plan: PM Peak

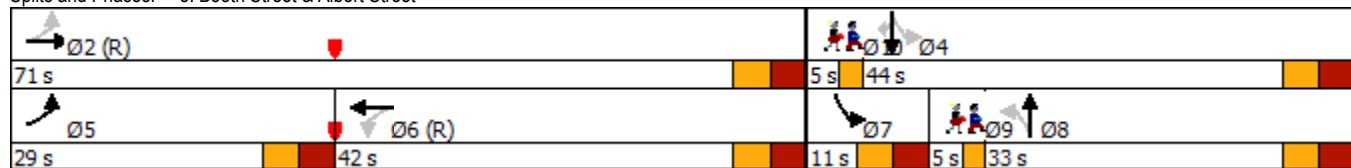


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.15	0.20		0.21	1.16		0.06	1.44		1.36	0.76	0.54
Control Delay	128.6	14.6		35.0	119.0		38.6	248.4		229.7	38.8	21.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	128.6	14.6		35.0	119.0		38.6	248.4		229.7	38.8	21.8
LOS	F	B		C	F		D	F		F	D	C
Approach Delay		78.2			115.6			245.8			68.2	
Approach LOS		E			F			F			E	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~105.4	20.8		8.2	~152.6		1.4	~193.3		~36.0	110.9	42.7
Queue Length 95th (m)	#170.5	29.5		18.8	#195.9		5.7	#265.2		#80.9	146.1	76.5
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		214	889		124	395		114	562	499
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.15	0.20		0.21	1.16		0.06	1.44		1.36	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.44
 Intersection Signal Delay: 117.8
 Intersection LOS: F
 Intersection Capacity Utilization 120.5%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



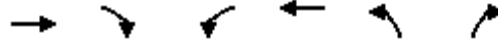
Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	1278	24	0	794
Future Volume (Veh/h)	0	10	1278	24	0	794
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	10	1278	24	0	794
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.84					
vC, conflicting volume	1687	651			1302	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1432	651			1302	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	105	411			528	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	852	450	397	397	
Volume Left	0	0	0	0	0	
Volume Right	10	0	24	0	0	
cSH	411	1700	1700	1700	1700	
Volume to Capacity	0.02	0.50	0.26	0.23	0.23	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	
Control Delay (s)	14.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			48.1%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1409	11	24	771	46	70	
Future Volume (vph)	1409	11	24	771	46	70	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.97		
Frt	0.999				0.919		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	3382	0	1710	3353	1572	0	
Flt Permitted			0.137		0.981		
Satd. Flow (perm)	3382	0	246	3353	1572	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	1						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	9	
Confl. Bikes (#/hr)		24				32	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1409	11	24	771	46	70	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1420	0	24	771	116	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	15						15
Act Effct Green (s)	62.7		62.7	62.7	15.7		
Actuated g/C Ratio	0.66		0.66	0.66	0.17		
v/c Ratio	0.64		0.15	0.35	0.45		
Control Delay	2.8		11.1	8.5	39.6		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	3.0		11.1	8.5	39.6		
LOS	A		B	A	D		
Approach Delay	3.0			8.6	39.6		
Approach LOS	A			A	D		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
50th %ile Green (s)	66.1		66.1	66.1	12.3		3.0
50th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
30th %ile Green (s)	68.2		68.2	68.2	10.2		3.0
30th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
10th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	11.9		1.4	26.8	21.3		
Queue Length 95th (m)	m21.9		6.9	51.8	34.2		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2232		162	2213	383		
Starvation Cap Reductn	137		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.68		0.15	0.35	0.30		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 6.7
 Intersection LOS: A
 Intersection Capacity Utilization 62.3%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.79	0.99		0.84	0.91		0.88	0.99				0.70
Fr _t		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3043	3206	0	1710	2588	0	1710	1746	0	1569	1782	1391
Flt Permitted	0.950			0.950			0.368			0.095		
Satd. Flow (perm)	2400	3206	0	1430	2588	0	585	1746	0	157	1782	979
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	4	516	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	24.0	49.0		12.0	37.0		37.0	37.0		17.0	54.0	54.0
Total Split (%)	20.0%	40.8%		10.0%	30.8%		30.8%	30.8%		14.2%	45.0%	45.0%
Maximum Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

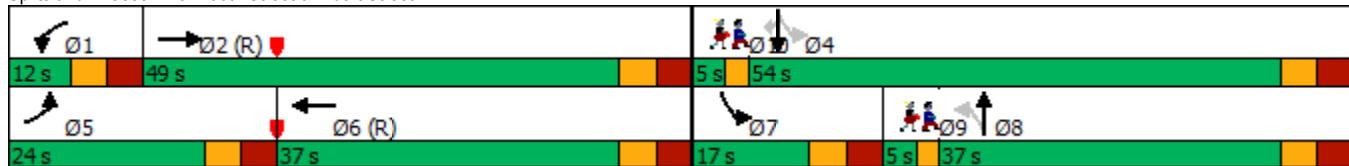


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	52.1		5.5	30.5		30.5	30.5		52.5	47.5	47.5
Actuated g/C Ratio	0.15	0.43		0.05	0.25		0.25	0.25		0.44	0.40	0.40
v/c Ratio	0.95	0.47		0.05	0.60		0.03	1.16		1.08	0.75	0.80
Control Delay	84.0	26.3		56.2	43.9		34.5	134.5		117.1	39.0	49.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	84.0	26.3		56.2	43.9		34.5	134.5		117.1	39.0	49.5
LOS	F	C		E	D		C	F		F	D	D
Approach Delay		48.9			44.0			133.8				57.6
Approach LOS		D			D			F				E
90th %ile Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
70th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
50th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
30th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	54.2	57.4		1.0	45.5		0.8	~151.6		~42.7	110.6	67.0
Queue Length 95th (m)	#86.4	88.8		4.9	63.1		3.8	#221.3		#93.0	155.3	#117.7
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	443	1392		78	657		148	445		192	705	387
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.95	0.47		0.05	0.60		0.03	1.16		1.08	0.75	0.80

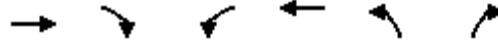
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.16
 Intersection Signal Delay: 65.7
 Intersection LOS: E
 Intersection Capacity Utilization 100.7%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1184	31	56	1471	23	59	
Future Volume (vph)	1184	31	56	1471	23	59	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.95		
Frt	0.996				0.903		
Flt Protected			0.950		0.986		
Satd. Flow (prot)	3370	0	1710	3386	1497	0	
Flt Permitted			0.206		0.986		
Satd. Flow (perm)	3370	0	370	3386	1492	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	5						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	18	
Confl. Bikes (#/hr)		4				21	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1184	31	56	1471	23	59	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1215	0	56	1471	82	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.6		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	10						10
Act Effct Green (s)	92.7		92.7	92.7	13.8		
Actuated g/C Ratio	0.77		0.77	0.77	0.12		
v/c Ratio	0.47		0.20	0.56	0.48		
Control Delay	3.3		7.8	7.9	57.8		
Queue Delay	0.1		0.0	0.7	0.0		
Total Delay	3.4		7.8	8.6	57.8		
LOS	A		A	A	E		
Approach Delay	3.4			8.6	57.8		
Approach LOS	A			A	E		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	89.3		89.3	89.3	14.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
50th %ile Green (s)	91.4		91.4	91.4	11.9		3.0
50th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
30th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.2		3.3	68.8	19.7		
Queue Length 95th (m)	m37.3		11.9	124.7	33.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2604		285	2615	287		
Starvation Cap Reductn	447		0	368	0		
Spillback Cap Reductn	0		0	719	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.56		0.20	0.78	0.29		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 7.8
 Intersection LOS: A
 Intersection Capacity Utilization 71.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91	0.99		0.73	0.92		0.87	1.00				0.72
Fr _t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3130	3049	0	1710	2858	0	1710	1788	0	1569	1800	1404
Flt Permitted	0.950			0.950			0.423			0.095		
Satd. Flow (perm)	2845	3049	0	1242	2858	0	659	1788	0	157	1800	1004
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5			334.4	
Travel Time (s)		26.8			15.3			14.8			24.1	
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	7	570	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	24.0	54.0		12.0	42.0		37.0	37.0		12.0	49.0	49.0
Total Split (%)	20.0%	45.0%		10.0%	35.0%		30.8%	30.8%		10.0%	40.8%	40.8%
Maximum Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

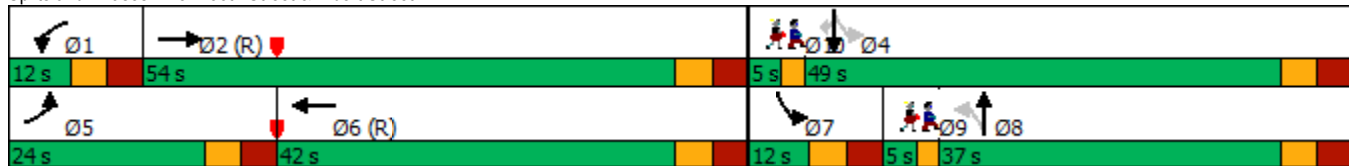


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.4	49.9		5.5	35.6		30.5	30.5		47.5	42.5	42.5
Actuated g/C Ratio	0.14	0.42		0.05	0.30		0.25	0.25		0.40	0.35	0.35
v/c Ratio	0.91	0.26		0.56	1.15		0.04	1.25		1.23	0.67	0.51
Control Delay	75.5	24.2		83.1	117.9		34.9	168.9		172.0	26.9	16.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	75.5	24.2		83.1	117.9		34.9	168.9		172.0	26.9	16.8
LOS	E	C		F	F		C	F		F	C	B
Approach Delay		52.8			116.5			167.3			50.1	
Approach LOS		D			F			F			D	
90th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
70th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
50th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
50th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
30th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.0	59.5		0.0	36.0		30.5	30.5		5.5	42.5	42.5
10th %ile Term Code	Gap	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	52.4	28.2		10.9	~152.6		1.3	~177.4		~32.7	100.0	42.7
Queue Length 95th (m)	#81.8	39.7		#28.3	#195.9		5.4	#249.3		#73.1	142.2	79.1
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	456	1269		78	891		167	455		126	637	529
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.26		0.56	1.15		0.04	1.25		1.23	0.67	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.25
 Intersection Signal Delay: 93.6
 Intersection LOS: F
 Intersection Capacity Utilization 108.8%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Future Volume (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.90	0.99		0.84	0.91			0.98		0.90		0.70
Fr _t		0.998			0.944			0.995				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1569	3206	0	1710	2588	0	0	3322	0	1569	1782	1391
Flt Permitted	0.368			0.402				0.950		0.182		
Satd. Flow (perm)	546	3206	0	605	2588	0	0	3153	0	271	1782	978
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						3				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	423	649	8	4	247	148	4	497	19	207	527	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	423	657	0	4	395	0	0	520	0	207	527	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	62.0	62.0		32.7	32.7			25.0		45.0	40.0	40.0
Actuated g/C Ratio	0.52	0.52		0.27	0.27			0.21		0.38	0.33	0.33
v/c Ratio	0.89	0.40		0.02	0.56			0.79		1.07	0.89	0.95
Control Delay	42.9	18.8		34.5	42.0			54.1		116.8	56.1	78.8
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	42.9	18.8		34.5	42.0			54.1		116.8	56.1	78.8
LOS	D	B		C	D			D		F	E	E
Approach Delay		28.3			41.9			54.1			74.9	
Approach LOS		C			D			D			E	
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
10th %ile Green (s)	20.1	68.2		41.6	41.6		18.8	18.8		8.5	33.8	33.8
10th %ile Term Code	Gap	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.5			63.3		-38.6	120.6	73.1
Queue Length 95th (m)	#115.2	66.5		3.8	63.1			83.8		#83.5	#182.0	#130.5
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	482	1657		164	705			698		193	616	338
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.88	0.40		0.02	0.56			0.74		1.07	0.86	0.92

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 50.5
 Intersection LOS: D
 Intersection Capacity Utilization 119.8%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Future Volume (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92			0.99		0.96		0.71
Fr t		0.997			0.953			0.997				0.850
Fit Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1613	3049	0	1710	2858	0	0	3395	0	1569	1800	1404
Fit Permitted	0.095			0.555				0.948		0.147		
Satd. Flow (perm)	161	3049	0	726	2858	0	0	3216	0	233	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5			334.4	
Travel Time (s)		26.8			15.3			14.8			24.1	
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	412	319	7	44	707	320	7	559	11	155	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	326	0	44	1027	0	0	577	0	155	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	66.1	66.1		35.5	35.5			24.9		40.4	35.9	35.9
Actuated g/C Ratio	0.55	0.55		0.30	0.30			0.21		0.34	0.30	0.30
v/c Ratio	1.08	0.19		0.21	1.16			0.87		1.21	0.79	0.55
Control Delay	105.6	14.1		35.0	119.0			59.9		169.8	40.8	22.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	105.6	14.1		35.0	119.0			59.9		169.8	40.8	22.1
LOS	F	B		C	F			E		F	D	C
Approach Delay		65.2			115.6			59.9				58.4
Approach LOS		E			F			E				E
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	24.7	66.7		35.5	35.5		24.3	24.3		4.5	35.3	35.3
30th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	28.3	70.3		35.5	35.5		20.7	20.7		4.5	31.7	31.7
10th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	~105.4	20.8		8.2	~152.6			71.8		~39.1	110.9	42.7
Queue Length 95th (m)	#170.5	29.5		18.8	#195.9			#94.4		#87.5	146.1	76.5
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	380	1681		214	889			710		128	562	499
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	1.08	0.19		0.21	1.16			0.81		1.21	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.21
 Intersection Signal Delay: 79.1
 Intersection LOS: E
 Intersection Capacity Utilization 124.8%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.8	30.8		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.26	0.26		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.91	0.41		0.03	0.59		0.04	1.00		1.00	0.86	0.92
Control Delay	46.2	19.5		34.5	43.6		38.2	93.4		100.2	51.5	70.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	46.2	19.5		34.5	43.6		38.2	93.4		100.2	51.5	70.7
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		29.9			43.5			92.9				65.5
Approach LOS		C			D			F				E
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	21.8	60.5		32.2	32.2		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Gap	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	68.9	51.6		0.8	45.5		0.8	-95.7		27.9	120.6	73.1
Queue Length 95th (m)	#118.0	66.5		3.8	63.1		4.1	#162.4		#74.1	#182.0	#130.5
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	470	1616		155	664		97	384		166	616	338
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.90	0.41		0.03	0.59		0.04	1.00		1.00	0.86	0.92

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 52.8 Intersection LOS: D
 Intersection Capacity Utilization 109.0% ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1091	0	0	1377	262	0	1197	92	64	794	296
Future Volume (vph)	0	1091	0	0	1377	262	0	1197	92	64	794	296
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.91
Frt						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1404	0	3267	0	122	3257	1370
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			9			19			4			29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1091	0	0	1377	262	0	1197	92	64	794	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1091	0	0	1377	262	0	1289	0	64	794	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

East LeBreton Flats - Revised TIS
2023 Total Traffic (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak

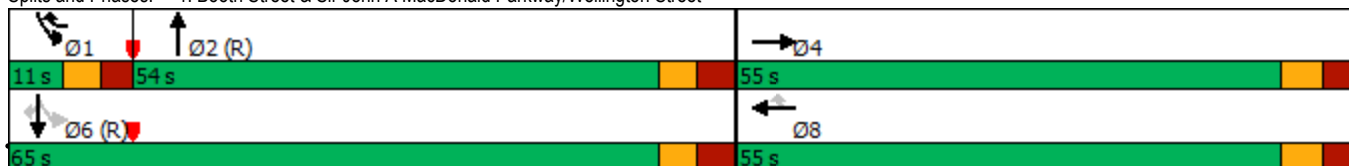


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.80			1.00	0.41		1.00		0.55	0.50	0.44
Control Delay		36.6			54.6	14.7		52.6		34.1	22.5	20.4
Queue Delay		0.0			13.4	0.0		0.0		0.0	0.0	0.0
Total Delay		36.6			68.1	14.7		52.6		34.1	22.5	20.4
LOS		D			E	B		D		C	C	C
Approach Delay		36.6			59.5			52.6			22.6	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		123.2			~179.8	38.4		~165.1		8.2	68.6	41.5
Queue Length 95th (m)		151.5			#232.7	45.5		m#182.8		#17.9	86.8	65.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	633		1287		117	1576	679
Starvation Cap Reductn		0			55	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.80			1.05	0.41		1.00		0.55	0.50	0.44

Intersection Summary

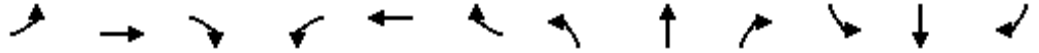
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 44.7
 Intersection LOS: D
 Intersection Capacity Utilization 98.8%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



East LeBreton Flats - Revised TIS
 2023 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	359	319	7	44	577	320	7	384	11	114	425	270
Future Volume (vph)	359	319	7	44	577	320	7	384	11	114	425	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.91		0.87	0.99				0.71
Fr t		0.997			0.946			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3049	0	1710	2806	0	1710	1784	0	1569	1800	1404
Flt Permitted	0.095			0.555			0.359			0.107		
Satd. Flow (perm)	161	3049	0	726	2806	0	564	1784	0	177	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			90			1				270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5			334.4	
Travel Time (s)		26.8			15.3			14.8			24.1	
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	359	319	7	44	577	320	7	384	11	114	425	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	326	0	44	897	0	7	395	0	114	425	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2023 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.76	0.54
Control Delay	83.6	14.6		35.0	69.4		38.6	92.9		107.4	38.3	22.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.6	14.6		35.0	69.4		38.6	92.9		107.4	38.3	22.9
LOS	F	B		C	E		D	F		F	D	C
Approach Delay		50.8			67.8			92.0				42.9
Approach LOS		D			E			F				D
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~74.7	20.8		8.2	~108.7		1.4	~98.6		23.2	111.7	45.1
Queue Length 95th (m)	#139.5	29.5		18.8	#155.5		5.7	#165.7		#53.9	146.6	78.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		214	893		124	394		114	562	499
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.76	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 60.0
 Intersection LOS: E
 Intersection Capacity Utilization 105.0%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1361	0	0	728	140	0	797	168	129	1144	341
Future Volume (vph)	0	1361	0	0	728	140	0	797	168	129	1144	341
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.97		0.98		0.99		0.96
Fr _t						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1459	0	3088	0	203	3320	1450
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								27				95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			31			17			31			31
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1361	0	0	728	140	0	797	168	129	1144	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1361	0	0	728	140	0	965	0	129	1144	341
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

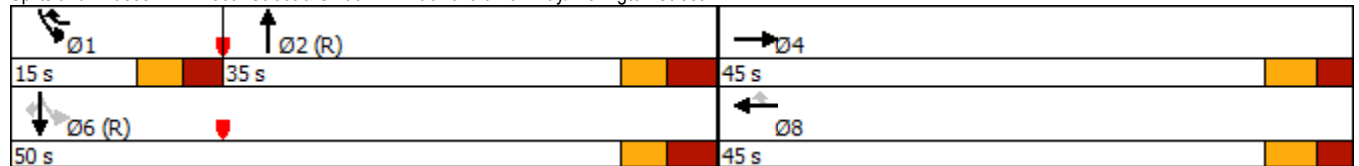


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.3		28.6		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.99			0.53	0.19		1.02		0.58	0.76	0.48
Control Delay		51.0			16.1	5.1		66.8		26.2	25.7	15.4
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		51.0			16.1	5.1		66.8		26.2	25.7	15.4
LOS		D			B	A		E		C	C	B
Approach Delay		51.0			14.3			66.8			23.6	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.4		28.6		8.4	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.7		30.3		6.7	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		134.2			55.5	10.1		~104.2		14.0	93.7	31.2
Queue Length 95th (m)		#186.1			26.9	5.3		#144.9		26.9	120.4	55.8
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	737		949		233	1506	709
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.99			0.53	0.19		1.02		0.55	0.76	0.48

Intersection Summary

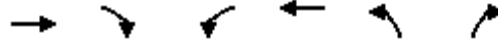
Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 38.3
 Intersection LOS: D
 Intersection Capacity Utilization 93.2%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↘	↑↑	↘		
Traffic Volume (vph)	1445	11	24	791	46	70	
Future Volume (vph)	1445	11	24	791	46	70	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.97		
Frt	0.999				0.919		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	3382	0	1710	3353	1572	0	
Flt Permitted			0.130		0.981		
Satd. Flow (perm)	3382	0	234	3353	1572	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	1				70		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	9	
Confl. Bikes (#/hr)		24				32	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1445	11	24	791	46	70	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1456	0	24	791	116	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	

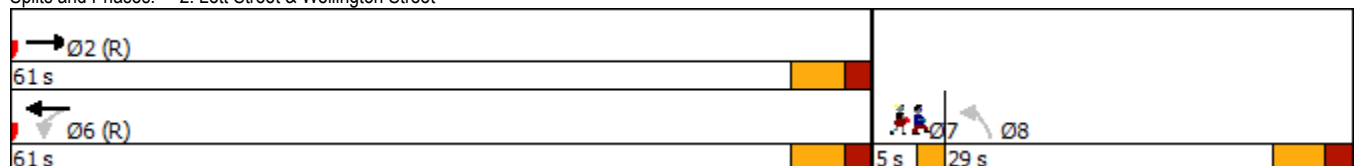


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	15						15
Act Effct Green (s)	63.2		63.2	63.2	15.2		
Actuated g/C Ratio	0.67		0.67	0.67	0.16		
v/c Ratio	0.65		0.15	0.35	0.37		
Control Delay	3.1		11.3	8.4	18.0		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	3.2		11.3	8.4	18.0		
LOS	A		B	A	B		
Approach Delay	3.2			8.5	18.0		
Approach LOS	A			A	B		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
50th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	10.3		1.2	25.0	8.3		
Queue Length 95th (m)	m22.0		7.0	53.4	21.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2250		155	2230	436		
Starvation Cap Reductn	144		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.69		0.15	0.35	0.27		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 5.7
 Intersection LOS: A
 Intersection Capacity Utilization 63.3%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	658	948	243	969	1214	376
Future Volume (vph)	658	948	243	969	1214	376
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				123		227
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	658	948	243	969	1214	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	658	948	243	969	1214	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	28.0	61.9	28.1	75.3	41.0	41.0
Actuated g/C Ratio	0.24	0.54	0.24	0.65	0.35	0.35
v/c Ratio	0.82	0.36	0.30	0.44	0.77	0.59
Control Delay	50.3	16.5	39.4	9.7	36.9	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	16.5	39.4	9.7	36.9	15.4
LOS	D	B	D	A	D	B
Approach Delay		30.3	15.6		31.8	
Approach LOS		C	B		C	
90th %ile Green (s)	35.0	61.8	21.0		45.0	45.0
90th %ile Term Code	Max	MaxR	Max		Max	Max
70th %ile Green (s)	31.4	61.8	24.6		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	28.8	61.8	27.2		44.5	44.5
50th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
30th %ile Green (s)	25.2	61.8	30.8		39.3	39.3
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	20.4	61.8	35.6		32.0	32.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	79.0	49.0	26.2	39.8	90.1	27.0
Queue Length 95th (m)	94.8	59.9	41.6	59.9	107.6	59.4
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1006	2607	823	2318	1726	673
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.36	0.30	0.42	0.70	0.56

Intersection Summary

Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 115.6
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 26.8
 Intersection Capacity Utilization 75.3%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 118.9
 30th %ile Actuated Cycle: 113.7
 10th %ile Actuated Cycle: 106.4
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s	↖ Ø4 51.1 s
↗ Ø5 40.8 s	← Ø6 27.5 s

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.5	30.5		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.25	0.25		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.37		1.28	0.88	0.94
Control Delay	50.6	19.6		34.5	44.4		38.8	219.0		193.1	53.9	74.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.6	19.6		34.5	44.4		38.8	219.0		193.1	53.9	74.6
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		31.8			44.3			217.7				87.6
Approach LOS		C			D			F				F
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	71.1	53.4		0.8	47.0		0.8	~173.9		~52.4	125.2	75.6
Queue Length 95th (m)	#126.2	68.6		3.8	64.9		4.1	#243.7		#103.2	#189.7	#134.0
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	465	1616		151	658		89	386		165	616	338
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.37		1.28	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.37
 Intersection Signal Delay: 84.3
 Intersection LOS: F
 Intersection Capacity Utilization 114.3%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



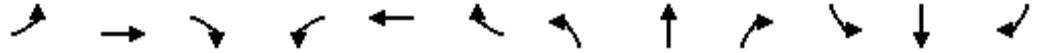
Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	12	952	17	0	1144
Future Volume (Veh/h)	0	12	952	17	0	1144
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	12	952	17	0	1144
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.71					
vC, conflicting volume	1532	484			969	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	941	484			969	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	187	528			707	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	635	334	572	572	
Volume Left	0	0	0	0	0	
Volume Right	12	0	17	0	0	
cSH	528	1700	1700	1700	1700	
Volume to Capacity	0.02	0.37	0.20	0.34	0.34	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	
Control Delay (s)	12.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	12.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			38.3%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1118	0	0	1416	268	0	1227	94	65	813	303
Future Volume (vph)	0	1118	0	0	1416	268	0	1227	94	65	813	303
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.91
Fr _t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.077		
Satd. Flow (perm)	0	3386	0	0	3386	1404	0	3267	0	125	3257	1369
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			9			19			4			29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1118	0	0	1416	268	0	1227	94	65	813	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1118	0	0	1416	268	0	1321	0	65	813	303
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		56.0			56.0	11.0		53.0		11.0	64.0	64.0
Total Split (%)		46.7%			46.7%	9.2%		44.2%		9.2%	53.3%	53.3%
Maximum Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

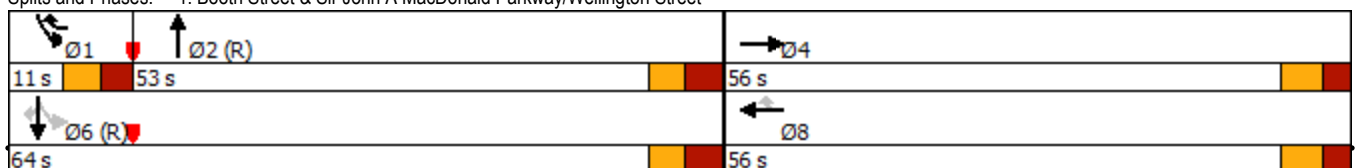


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		49.6			49.6	54.8		46.1		57.9	57.1	57.1
Actuated g/C Ratio		0.41			0.41	0.46		0.38		0.48	0.48	0.48
v/c Ratio		0.80			1.01	0.42		1.05		0.55	0.52	0.45
Control Delay		36.2			55.6	14.0		57.1		35.0	23.5	21.4
Queue Delay		0.0			14.7	0.0		0.0		0.0	0.0	0.0
Total Delay		36.2			70.3	14.0		57.1		35.0	23.5	21.4
LOS		D			E	B		E		D	C	C
Approach Delay		36.2			61.4			57.1			23.6	
Approach LOS		D			E			E			C	
90th %ile Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
70th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		49.6			49.6	4.9		46.1		4.9	57.1	57.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		125.7			~187.7	38.7		~188.2		8.5	72.1	43.7
Queue Length 95th (m)		154.5			#240.4	42.9		m128.5		#18.8	91.0	68.9
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1399			1399	645		1259		118	1549	667
Starvation Cap Reductn		0			57	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.80			1.06	0.42		1.05		0.55	0.52	0.45

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 135
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 46.6
 Intersection LOS: D
 Intersection Capacity Utilization 100.9%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↕↕		↔	↕↕	↔		
Traffic Volume (vph)	1214	31	56	1509	23	59	
Future Volume (vph)	1214	31	56	1509	23	59	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.95		
Frt	0.996				0.903		
Flt Protected			0.950		0.986		
Satd. Flow (prot)	3370	0	1710	3386	1497	0	
Flt Permitted			0.201		0.986		
Satd. Flow (perm)	3370	0	361	3386	1492	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	4				59		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	18	
Confl. Bikes (#/hr)		4				21	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1214	31	56	1509	23	59	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1245	0	56	1509	82	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	

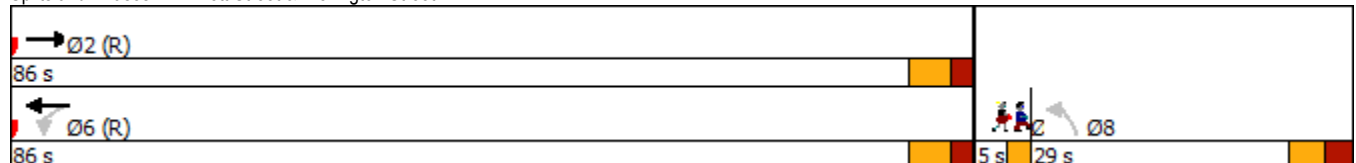


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.6		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	10						10
Act Effct Green (s)	93.9		93.9	93.9	12.6		
Actuated g/C Ratio	0.78		0.78	0.78	0.10		
v/c Ratio	0.47		0.20	0.57	0.39		
Control Delay	3.2		7.4	7.5	23.4		
Queue Delay	0.1		0.0	0.7	0.0		
Total Delay	3.3		7.4	8.3	23.5		
LOS	A		A	A	C		
Approach Delay	3.3			8.2	23.5		
Approach LOS	A			A	C		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Min		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.4		3.1	65.8	5.4		
Queue Length 95th (m)	m38.0		12.0	130.4	19.2		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2637		282	2648	334		
Starvation Cap Reductn	453		0	381	0		
Spillback Cap Reductn	0		0	720	11		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.57		0.20	0.78	0.25		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 6.5
 Intersection LOS: A
 Intersection Capacity Utilization 72.1%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	665	347	942	1735	726	665
Future Volume (vph)	665	347	942	1735	726	665
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3268	4865	3420	3230	4620	1342
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				224		509
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	665	347	942	1735	726	665
Shared Lane Traffic (%)						
Lane Group Flow (vph)	665	347	942	1735	726	665
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8

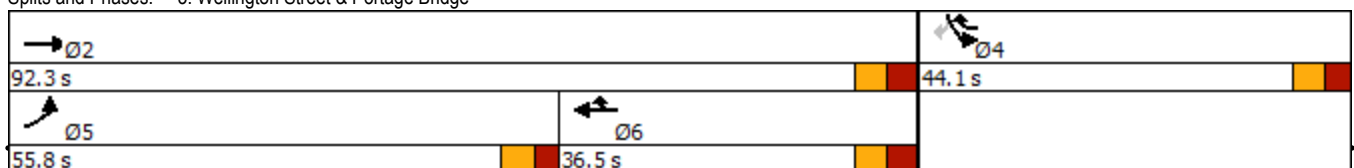


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	33.6	85.9	46.5	88.4	35.8	35.8
Actuated g/C Ratio	0.25	0.64	0.35	0.66	0.27	0.27
v/c Ratio	0.81	0.11	0.80	0.79	0.59	0.91
Control Delay	55.6	9.8	46.8	18.0	44.9	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	9.8	46.8	18.0	44.9	29.0
LOS	E	A	D	B	D	C
Approach Delay		39.9	28.1		37.3	
Approach LOS		D	C		D	
90th %ile Green (s)	41.3	85.8	38.7		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	36.5	85.8	43.5		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	33.6	85.8	46.4		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	30.6	85.8	49.4		36.4	36.4
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	26.3	85.8	53.7		29.0	29.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	92.4	13.5	127.7	124.1	62.6	50.2
Queue Length 95th (m)	107.0	18.2	#184.6	180.3	76.8	#139.0
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1224	3110	1183	2252	1313	745
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.11	0.80	0.77	0.55	0.89

Intersection Summary

Area Type: Other
 Cycle Length: 136.4
 Actuated Cycle Length: 134.3
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 33.0
 Intersection Capacity Utilization 93.8%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 134.8
 10th %ile Actuated Cycle: 127.4
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge



East LeBreton Flats - Revised TIS
2028 Total Traffic

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92		0.88	1.00				0.71
Frt		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3050	0	1710	2858	0	1710	1788	0	1569	1800	1404
Flt Permitted	0.095			0.550			0.339			0.107		
Satd. Flow (perm)	161	3050	0	722	2858	0	535	1788	0	177	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	7	584	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

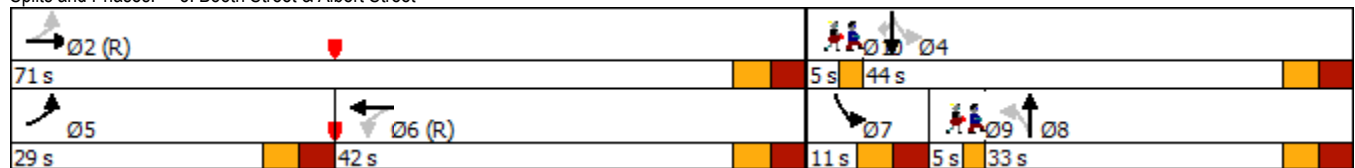


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.48		1.39	0.78	0.55
Control Delay	137.6	14.7		35.1	130.3		38.7	263.0		239.5	40.0	22.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	137.6	14.7		35.1	130.3		38.7	263.0		239.5	40.0	22.1
LOS	F	B		D	F		D	F		F	D	C
Approach Delay		83.2			126.4			260.4				70.6
Approach LOS		F			F			F				E
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~110.1	21.5		8.4	~159.7		1.4	~200.6		~37.7	115.4	44.7
Queue Length 95th (m)	#175.2	30.3		19.1	#203.4		5.8	#273.0		#83.0	149.4	77.7
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		213	889		118	395		114	562	502
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.48		1.39	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.48
 Intersection Signal Delay: 125.8
 Intersection LOS: F
 Intersection Capacity Utilization 122.8%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	1309	24	0	813
Future Volume (Veh/h)	0	10	1309	24	0	813
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	10	1309	24	0	813
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.83					
vC, conflicting volume	1728	666			1333	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1465	666			1333	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	99	402			513	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	873	460	406	406	
Volume Left	0	0	0	0	0	
Volume Right	10	0	24	0	0	
cSH	402	1700	1700	1700	1700	
Volume to Capacity	0.02	0.51	0.27	0.24	0.24	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	
Control Delay (s)	14.2	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			49.0%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1445	11	24	791	46	70	
Future Volume (vph)	1445	11	24	791	46	70	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.97		
Frt	0.999				0.919		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	3382	0	1710	3353	1572	0	
Flt Permitted			0.129		0.981		
Satd. Flow (perm)	3382	0	232	3353	1572	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	1						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	9	
Confl. Bikes (#/hr)		24				32	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1445	11	24	791	46	70	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1456	0	24	791	116	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	

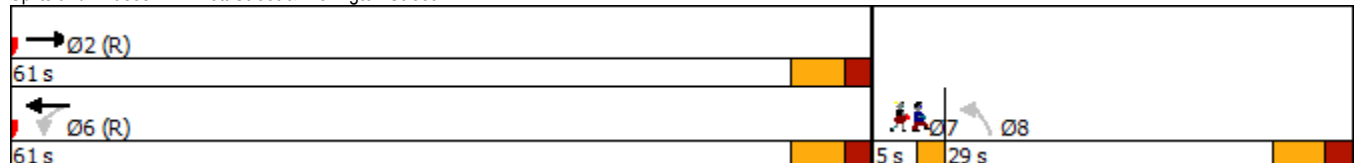


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	15						15
Act Effct Green (s)	62.7		62.7	62.7	15.7		
Actuated g/C Ratio	0.66		0.66	0.66	0.17		
v/c Ratio	0.65		0.16	0.36	0.45		
Control Delay	3.1		11.5	8.6	39.6		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	3.3		11.5	8.6	39.6		
LOS	A		B	A	D		
Approach Delay	3.3			8.7	39.6		
Approach LOS	A			A	D		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
50th %ile Green (s)	66.1		66.1	66.1	12.3		3.0
50th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
30th %ile Green (s)	68.2		68.2	68.2	10.2		3.0
30th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
10th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	12.3		1.4	27.7	21.3		
Queue Length 95th (m)	m22.0		7.1	53.4	34.2		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2232		153	2213	383		
Starvation Cap Reductn	137		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.69		0.16	0.36	0.30		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 6.9
 Intersection LOS: A
 Intersection Capacity Utilization 63.3%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.79	1.00		0.84	0.91		0.89	0.98				0.70
Frt		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3043	3206	0	1710	2590	0	1710	1745	0	1569	1782	1391
Flt Permitted	0.950			0.950			0.346			0.095		
Satd. Flow (perm)	2410	3206	0	1437	2590	0	554	1745	0	157	1782	979
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	529	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	24.0	49.0		12.0	37.0		37.0	37.0		17.0	54.0	54.0
Total Split (%)	20.0%	40.8%		10.0%	30.8%		30.8%	30.8%		14.2%	45.0%	45.0%
Maximum Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

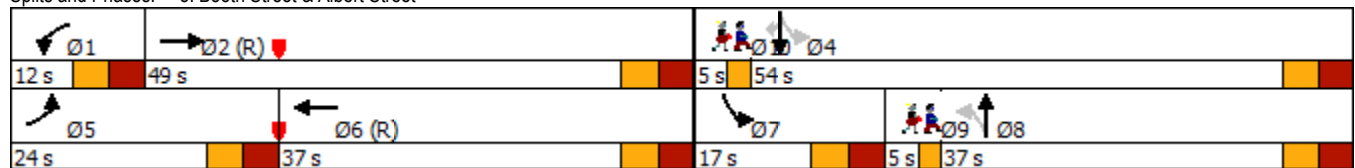


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		2.0	2.0			2.0	2.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	52.1		5.5	30.5		30.5	30.5		52.5	47.5	47.5
Actuated g/C Ratio	0.15	0.43		0.05	0.25		0.25	0.25		0.44	0.40	0.40
v/c Ratio	0.98	0.48		0.05	0.62		0.03	1.19		1.10	0.77	0.82
Control Delay	88.8	26.5		56.2	44.4		34.5	145.1		125.2	40.1	51.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	88.8	26.5		56.2	44.4		34.5	145.1		125.2	40.1	51.2
LOS	F	C		E	D		C	F		F	D	D
Approach Delay		50.9			44.5			144.2				60.3
Approach LOS		D			D			F				E
90th %ile Green (s)	17.5	42.5		5.5	30.5		30.5	30.5		10.5	47.5	47.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
70th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
50th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
30th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	54.5		0.0	30.5		30.5	30.5		10.5	47.5	47.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	55.8	59.4		1.0	47.0		0.8	~158.4		~45.3	114.9	69.3
Queue Length 95th (m)	#89.3	91.7		4.9	64.9		3.9	#228.2		#96.2	161.1	#121.3
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	443	1392		78	658		140	445		192	705	387
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.98	0.48		0.05	0.62		0.03	1.19		1.10	0.77	0.82

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 69.2
 Intersection LOS: E
 Intersection Capacity Utilization 102.0%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1214	31	56	1509	23	59	
Future Volume (vph)	1214	31	56	1509	23	59	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.95		
Frt	0.996				0.903		
Flt Protected			0.950		0.986		
Satd. Flow (prot)	3370	0	1710	3386	1497	0	
Flt Permitted			0.199		0.986		
Satd. Flow (perm)	3370	0	357	3386	1492	0	
Right Turn on Red		Yes				No	
Satd. Flow (RTOR)	4						
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	18	
Confl. Bikes (#/hr)		4				21	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1214	31	56	1509	23	59	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1245	0	56	1509	82	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	CI+Ex			CI+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	

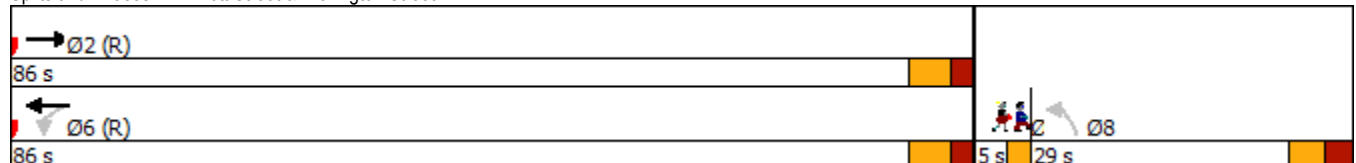


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.6		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	10						10
Act Effct Green (s)	92.7		92.7	92.7	13.8		
Actuated g/C Ratio	0.77		0.77	0.77	0.12		
v/c Ratio	0.48		0.20	0.58	0.48		
Control Delay	3.5		7.9	8.1	57.8		
Queue Delay	0.2		0.0	1.0	0.0		
Total Delay	3.6		7.9	9.1	57.8		
LOS	A		A	A	E		
Approach Delay	3.6			9.0	57.8		
Approach LOS	A			A	E		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	89.3		89.3	89.3	14.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
50th %ile Green (s)	91.4		91.4	91.4	11.9		3.0
50th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
30th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	109.2		109.2	109.2	0.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Skip		MaxR
Queue Length 50th (m)	16.7		3.3	71.9	19.7		
Queue Length 95th (m)	m41.8		12.1	130.4	33.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2604		275	2615	287		
Starvation Cap Reductn	446		0	360	0		
Spillback Cap Reductn	0		0	756	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.58		0.20	0.81	0.29		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 8.1
 Intersection LOS: A
 Intersection Capacity Utilization 72.1%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street



East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91	0.99		0.73	0.92		0.87	1.00				0.72
Fr _t		0.997			0.953			0.997				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3130	3050	0	1710	2858	0	1710	1788	0	1569	1800	1404
Fit Permitted	0.950			0.950			0.405			0.095		
Satd. Flow (perm)	2856	3050	0	1248	2858	0	634	1788	0	157	1800	1004
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			62			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	7	584	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		11.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	24.0	54.0		12.0	42.0		37.0	37.0		12.0	49.0	49.0
Total Split (%)	20.0%	45.0%		10.0%	35.0%		30.8%	30.8%		10.0%	40.8%	40.8%
Maximum Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak

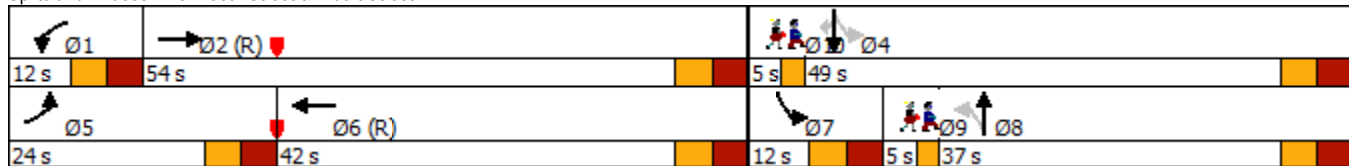


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag					Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0			23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30			30		30	30			30	30
Act Effct Green (s)	17.5	49.9		5.5	35.5		30.5	30.5		47.5	42.5	42.5
Actuated g/C Ratio	0.15	0.42		0.05	0.30		0.25	0.25		0.40	0.35	0.35
v/c Ratio	0.92	0.26		0.58	1.18		0.04	1.28		1.25	0.68	0.52
Control Delay	77.7	24.3		84.3	130.3		35.0	180.9		180.5	27.4	16.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	77.7	24.3		84.3	130.3		35.0	180.9		180.5	27.4	16.8
LOS	E	C		F	F		C	F		F	C	B
Approach Delay		54.1			128.5			179.2			51.9	
Approach LOS		D			F			F			D	
90th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
90th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
70th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
50th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
50th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	17.5	47.5		5.5	35.5		30.5	30.5		5.5	42.5	42.5
30th %ile Term Code	Max	Coord		Max	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	17.5	59.5		0.0	35.5		30.5	30.5		5.5	42.5	42.5
10th %ile Term Code	Max	Coord		Skip	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	53.8	29.0		11.1	~159.7		1.3	~184.8		~34.3	103.3	43.8
Queue Length 95th (m)	#84.2	40.7		#28.8	#203.4		5.4	#257.1		#75.3	146.6	81.1
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	456	1269		78	889		161	455		126	637	533
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.92	0.26		0.58	1.18		0.04	1.28		1.25	0.68	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 100.5
 Intersection LOS: F
 Intersection Capacity Utilization 110.9%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.





















Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.91			0.98		0.90		0.70
Frt		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1569	3206	0	1710	2590	0	0	3317	0	1569	1782	1391
Flt Permitted	0.355			0.395				0.950		0.177		
Satd. Flow (perm)	528	3206	0	597	2590	0	0	3149	0	264	1782	978
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						3				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	509	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	0	533	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	61.7	61.7		31.8	31.8			25.3		45.3	40.3	40.3
Actuated g/C Ratio	0.51	0.51		0.26	0.26			0.21		0.38	0.34	0.34
v/c Ratio	0.92	0.41		0.03	0.59			0.80		1.11	0.90	0.97
Control Delay	47.2	19.1		34.5	43.1			54.5		126.9	57.8	81.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	47.2	19.1		34.5	43.1			54.5		126.9	57.8	81.4
LOS	D	B		C	D			D		F	E	F
Approach Delay		30.1			43.0			54.5				78.5
Approach LOS		C			D			D				E
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Hold	Hold		Max	Max	Max
10th %ile Green (s)	22.6	66.3		37.2	37.2		20.7	20.7		8.5	35.7	35.7
10th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold		Max	Gap	Gap
Queue Length 50th (m)	71.1	53.4		0.8	47.0			65.2		-37.0	125.2	75.6
Queue Length 95th (m)	#123.9	68.6		3.8	64.9			86.2		#87.9	#189.7	#134.0
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	475	1647		158	687			697		191	616	338
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.91	0.41		0.03	0.59			0.76		1.11	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 52.5
 Intersection LOS: D
 Intersection Capacity Utilization 121.2%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92			0.99		0.96		0.71
Fr _t		0.997			0.953			0.997				0.850
Fit Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1613	3050	0	1710	2858	0	0	3394	0	1569	1800	1404
Fit Permitted	0.095			0.550				0.948		0.140		
Satd. Flow (perm)	161	3050	0	722	2858	0	0	3216	0	222	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			2				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	572	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	0	591	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic, Mitigated

5: Booth Street & Albert Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0			5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30			30	30
Act Effct Green (s)	65.9	65.9		35.5	35.5			25.1		40.6	36.1	36.1
Actuated g/C Ratio	0.55	0.55		0.30	0.30			0.21		0.34	0.30	0.30
v/c Ratio	1.12	0.20		0.21	1.18			0.88		1.26	0.80	0.56
Control Delay	116.5	14.2		35.1	130.3			60.7		188.0	41.7	22.1
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	116.5	14.2		35.1	130.3			60.7		188.0	41.7	22.1
LOS	F	B		D	F			E		F	D	C
Approach Delay		71.3			126.4			60.7			62.1	
Approach LOS		E			F			E			E	
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	24.1	66.1		35.5	35.5		24.9	24.9		4.5	35.9	35.9
30th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	27.7	69.7		35.5	35.5		21.3	21.3		4.5	32.3	32.3
10th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
Queue Length 50th (m)	~110.1	21.5		8.4	~159.7			73.8		~41.7	114.5	43.8
Queue Length 95th (m)	#175.2	30.3		19.1	#203.4			#101.1		#91.1	149.3	77.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	376	1675		213	889			711		125	562	502
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	1.12	0.20		0.21	1.18			0.83		1.26	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.26
 Intersection Signal Delay: 85.3
 Intersection LOS: F
 Intersection Capacity Utilization 126.7%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

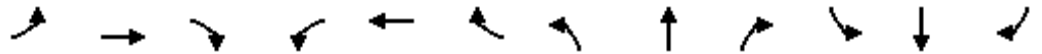
Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1361	0	0	728	140	0	785	168	129	1144	341
Future Volume (vph)	0	1361	0	0	728	140	0	785	168	129	1144	341
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.97		0.98		0.99		0.96
Frt						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1459	0	3088	0	203	3320	1450
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								27				95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			31			17			31			31
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1361	0	0	728	140	0	785	168	129	1144	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1361	0	0	728	140	0	953	0	129	1144	341
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: AM Peak

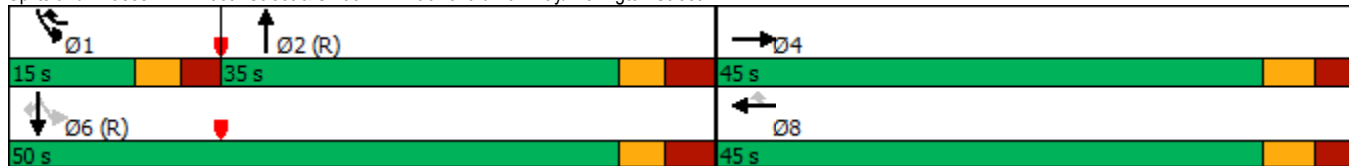


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.3		28.6		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.99			0.53	0.19		1.00		0.58	0.76	0.48
Control Delay		51.0			16.1	5.1		63.7		26.2	25.7	15.4
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		51.0			16.1	5.1		63.7		26.2	25.7	15.4
LOS		D			B	A		E		C	C	B
Approach Delay		51.0			14.3			63.7			23.6	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.4		28.6		8.4	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.7		30.3		6.7	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		134.2			55.5	10.1		~101.6		14.0	93.7	31.2
Queue Length 95th (m)		#186.1			27.0	5.3		#142.1		26.9	120.4	55.8
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	737		949		233	1506	709
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.99			0.53	0.19		1.00		0.55	0.76	0.48

Intersection Summary

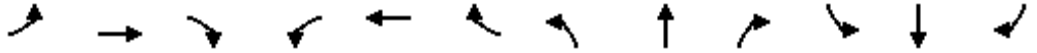
Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 37.6
 Intersection LOS: D
 Intersection Capacity Utilization 92.8%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Future Volume (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.91		0.90	0.98				0.70
Fr t		0.998			0.944			0.992				0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2590	0	1710	1732	0	1569	1782	1391
Fit Permitted	0.346			0.395			0.249			0.106		
Satd. Flow (perm)	514	3206	0	597	2590	0	404	1732	0	175	1782	978
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	365	20	166	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	385	0	166	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.5	30.5		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.25	0.25		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.00		1.00	0.88	0.94
Control Delay	50.6	19.6		34.5	44.4		38.8	93.4		100.2	53.9	74.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.6	19.6		34.5	44.4		38.8	93.4		100.2	53.9	74.6
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		31.8			44.3			92.9				67.9
Approach LOS		C			D			F				E
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	71.1	53.4		0.8	47.0		0.8	-96.1		27.9	125.2	75.6
Queue Length 95th (m)	#126.2	68.6		3.8	64.9		4.1	#162.6		#74.1	#189.7	#134.0
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	465	1616		151	658		89	384		166	616	338
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.00		1.00	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 54.2
 Intersection LOS: D
 Intersection Capacity Utilization 110.4%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	1118	0	0	1377	268	0	1198	94	65	813	303
Future Volume (vph)	0	1118	0	0	1377	268	0	1198	94	65	813	303
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.91
Fr _t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3266	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1404	0	3266	0	122	3257	1370
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			9			19			4			29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1118	0	0	1377	268	0	1198	94	65	813	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1118	0	0	1377	268	0	1292	0	65	813	303
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak

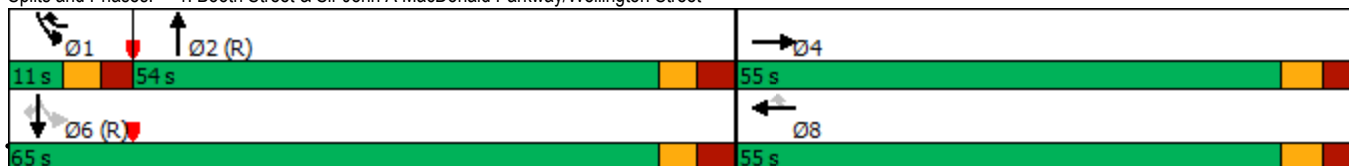


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.82			1.00	0.42		1.00		0.56	0.52	0.45
Control Delay		37.6			54.2	14.6		53.7		34.9	22.7	20.6
Queue Delay		0.0			14.9	0.0		0.0		0.0	0.0	0.0
Total Delay		37.6			69.1	14.6		53.7		34.9	22.7	20.6
LOS		D			E	B		D		C	C	C
Approach Delay		37.6			60.2			53.7			22.9	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		127.6			~179.4	39.5		~166.1		8.3	70.7	42.9
Queue Length 95th (m)		156.8			#233.2	45.0		m#183.7		#19.0	89.3	67.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	633		1286		117	1576	679
Starvation Cap Reductn		0			60	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.82			1.05	0.42		1.00		0.56	0.52	0.45

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 45.4
 Intersection LOS: D
 Intersection Capacity Utilization 98.9%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street



East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	359	327	7	45	571	328	7	383	12	114	436	275
Future Volume (vph)	359	327	7	45	571	328	7	383	12	114	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.91		0.88	0.99				0.71
Fr't		0.997			0.945			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3050	0	1710	2797	0	1710	1781	0	1569	1800	1404
Flt Permitted	0.095			0.550			0.339			0.107		
Satd. Flow (perm)	161	3050	0	722	2797	0	535	1781	0	177	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			96			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	359	327	7	45	571	328	7	383	12	114	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	334	0	45	899	0	7	395	0	114	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		4			4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic (Demand Rationalization)

5: Booth Street & Albert Street
Timing Plan: PM Peak

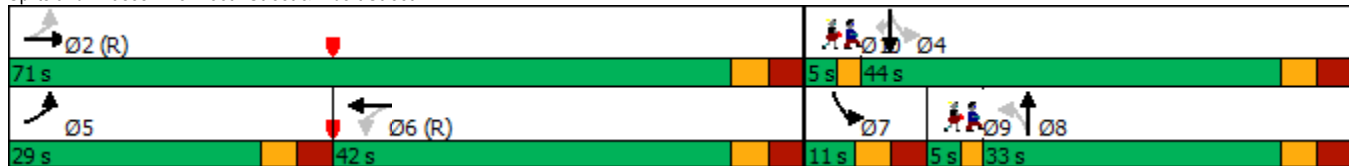


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.78	0.55
Control Delay	83.6	14.7		35.1	69.1		38.7	92.9		106.9	39.2	23.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.6	14.7		35.1	69.1		38.7	92.9		106.9	39.2	23.0
LOS	F	B		D	E		D	F		F	D	C
Approach Delay		50.4			67.5			92.0				43.2
Approach LOS		D			E			F				D
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~74.7	21.5		8.4	~108.5		1.4	~98.8		~23.4	115.3	46.4
Queue Length 95th (m)	#139.5	30.3		19.1	#155.3		5.8	#165.9		#54.0	149.8	80.2
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		213	895		118	394		114	562	502
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.00	0.20		0.21	1.00		0.06	1.00		1.00	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 59.8
 Intersection LOS: E
 Intersection Capacity Utilization 105.8%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

East LeBreton Flats - Revised TIS
 2028 Total Traffic (OIA Mode Shares)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1363	0	0	742	140	0	800	168	129	1144	341
Future Volume (vph)	0	1363	0	0	742	140	0	800	168	129	1144	341
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.97		0.98		0.99		0.96
Frt						0.850		0.974				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3353	1500	0	3088	0	1693	3320	1515
Flt Permitted										0.115		
Satd. Flow (perm)	0	3386	0	0	3353	1459	0	3088	0	203	3320	1450
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								27				91
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	9		10	10		9	16		69	69		16
Confl. Bikes (#/hr)			31			17			31			31
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	7%	1%	1%	3%	1%
Adj. Flow (vph)	0	1363	0	0	742	140	0	800	168	129	1144	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1363	0	0	742	140	0	968	0	129	1144	341
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4		9.4		
Detector 2 Size(m)		0.6			0.6			0.6		0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	5.0		10.0		5.0	10.0	10.0
Minimum Split (s)		37.4			37.4	11.1		34.9		11.1	34.9	34.9
Total Split (s)		45.0			45.0	15.0		35.0		15.0	50.0	50.0
Total Split (%)		47.4%			47.4%	15.8%		36.8%		15.8%	52.6%	52.6%
Maximum Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		Max			Max	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		38.6			38.6	47.3		28.6		43.9	43.1	43.1
Actuated g/C Ratio		0.41			0.41	0.50		0.30		0.46	0.45	0.45
v/c Ratio		0.99			0.54	0.19		1.02		0.58	0.76	0.48
Control Delay		51.3			16.4	5.2		67.6		26.2	25.7	15.6
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		51.3			16.4	5.2		67.6		26.2	25.7	15.6
LOS		D			B	A		E		C	C	B
Approach Delay		51.3			14.6			67.6			23.6	
Approach LOS		D			B			E			C	
90th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
90th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
70th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		38.6			38.6	8.9		28.1		8.9	43.1	43.1
50th %ile Term Code		MaxR			MaxR	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		38.6			38.6	8.4		28.6		8.4	43.1	43.1
30th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
10th %ile Green (s)		38.6			38.6	6.7		30.3		6.7	43.1	43.1
10th %ile Term Code		MaxR			MaxR	Gap		Coord		Gap	Coord	Coord
Queue Length 50th (m)		134.4			57.3	8.4		~104.9		14.0	93.7	31.8
Queue Length 95th (m)		#186.3			28.4	6.0		#145.6		26.9	120.4	56.5
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1375			1362	737		949		233	1506	707
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.99			0.54	0.19		1.02		0.55	0.76	0.48

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 31 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 38.6 Intersection LOS: D

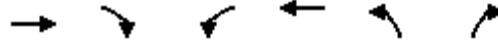
Intersection Capacity Utilization 93.3% ICU Level of Service F

Analysis Period (min) 15

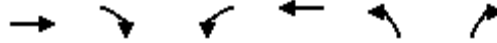
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1445	13	40	791	60	121	
Future Volume (vph)	1445	13	40	791	60	121	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.97		
Frt	0.999				0.910		
Flt Protected			0.950		0.984		
Satd. Flow (prot)	3381	0	1710	3353	1556	0	
Flt Permitted			0.129		0.984		
Satd. Flow (perm)	3381	0	232	3353	1556	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	2				91		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		11	11		1	9	
Confl. Bikes (#/hr)		24				32	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%	
Adj. Flow (vph)	1445	13	40	791	60	121	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1458	0	40	791	181	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.8	5.0	
Total Split (s)	61.0		61.0	61.0	29.0	5.0	
Total Split (%)	64.2%		64.2%	64.2%	30.5%	5%	
Maximum Green (s)	55.2		55.2	55.2	23.2	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.7	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.1		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.8		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	15						15
Act Effct Green (s)	63.0		63.0	63.0	15.4		
Actuated g/C Ratio	0.66		0.66	0.66	0.16		
v/c Ratio	0.65		0.26	0.36	0.55		
Control Delay	3.1		14.3	8.5	23.7		
Queue Delay	0.1		0.0	0.0	0.0		
Total Delay	3.2		14.3	8.5	23.7		
LOS	A		B	A	C		
Approach Delay	3.2			8.8	23.7		
Approach LOS	A			A	C		
90th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	55.4		55.4	55.4	23.0		3.0
70th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
50th %ile Green (s)	67.2		67.2	67.2	11.2		3.0
50th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
30th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	68.4		68.4	68.4	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	11.2		2.4	26.4	16.5		
Queue Length 95th (m)	m21.9		11.8	53.4	33.4		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2241		154	2222	448		
Starvation Cap Reductn	140		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.69		0.26	0.36	0.40		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 60 (63%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 6.6
 Intersection LOS: A
 Intersection Capacity Utilization 66.1%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	661	995	258	969	1214	377
Future Volume (vph)	661	995	258	969	1214	377
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00					0.90
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3317	4865	3386	3322	4424	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3309	4865	3386	3322	4424	1371
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				121		228
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	2			2		90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	5%	9%	1%
Adj. Flow (vph)	661	995	258	969	1214	377
Shared Lane Traffic (%)						
Lane Group Flow (vph)	661	995	258	969	1214	377
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	10.8	43.5	26.5		44.1	44.1
Total Split (s)	40.8	68.3	27.5		51.1	51.1
Total Split (%)	34.2%	57.2%	23.0%		42.8%	42.8%
Maximum Green (s)	35.0	61.8	21.0		45.0	45.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)		25.0	7.0		26.0	26.0
Flash Dont Walk (s)		12.0	13.0		12.0	12.0
Pedestrian Calls (#/hr)		5	5		5	5
Act Effct Green (s)	28.1	61.9	28.0	75.2	41.0	41.0
Actuated g/C Ratio	0.24	0.54	0.24	0.65	0.35	0.35
v/c Ratio	0.82	0.38	0.31	0.44	0.77	0.60
Control Delay	50.3	16.7	39.7	9.7	36.9	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	16.7	39.7	9.7	36.9	15.4
LOS	D	B	D	A	D	B
Approach Delay		30.1	16.0		31.8	
Approach LOS		C	B		C	
90th %ile Green (s)	35.0	61.8	21.0		45.0	45.0
90th %ile Term Code	Max	MaxR	Max		Max	Max
70th %ile Green (s)	31.6	61.8	24.4		45.0	45.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	28.9	61.8	27.1		44.5	44.5
50th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
30th %ile Green (s)	25.3	61.8	30.7		39.3	39.3
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	20.5	61.8	35.5		32.0	32.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	79.3	52.0	28.0	40.1	90.1	27.0
Queue Length 95th (m)	95.3	63.4	43.9	60.1	107.6	59.5
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1006	2607	820	2315	1726	673
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.38	0.31	0.42	0.70	0.56

Intersection Summary

Area Type: Other
 Cycle Length: 119.4
 Actuated Cycle Length: 115.6
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 26.8
 Intersection Capacity Utilization 75.4%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 119.4
 70th %ile Actuated Cycle: 119.4
 50th %ile Actuated Cycle: 118.9
 30th %ile Actuated Cycle: 113.7
 10th %ile Actuated Cycle: 106.4
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Wellington Street & Portage Bridge

→ Ø2 68.3 s	↖ Ø4 51.1 s
↗ Ø5 40.8 s	← Ø6 27.5 s

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	667	8	4	255	151	4	515	20	212	541	317
Future Volume (vph)	433	667	8	4	255	151	4	515	20	212	541	317
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	1.00		0.84	0.91		0.90	0.99				0.70
Fr _t		0.998			0.944			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1569	3206	0	1710	2590	0	1710	1746	0	1569	1782	1391
Flt Permitted	0.346			0.395			0.249			0.105		
Satd. Flow (perm)	514	3206	0	597	2590	0	404	1746	0	173	1782	978
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		1						1				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		331.6			213.1			205.5			334.4	
Travel Time (s)		23.9			15.3			14.8			24.1	
Confl. Peds. (#/hr)	183		204	204		183	180		471	471		180
Confl. Bikes (#/hr)						5			21			26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	0%	0%	11%	19%	0%	1%	0%	9%	1%	10%
Adj. Flow (vph)	433	667	8	4	255	151	4	515	20	212	541	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	433	675	0	4	406	0	4	535	0	212	541	317
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.5	32.5	32.5
Total Split (s)	30.0	67.0		37.0	37.0		33.0	33.0		15.0	48.0	48.0
Total Split (%)	25.0%	55.8%		30.8%	30.8%		27.5%	27.5%		12.5%	40.0%	40.0%
Maximum Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag	Lag					Lead		
Lead-Lag Optimize?	Yes			Yes	Yes					Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		2.0	2.0		2.0	2.0	2.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	60.5	60.5		30.5	30.5		26.5	26.5		46.5	41.5	41.5
Actuated g/C Ratio	0.50	0.50		0.25	0.25		0.22	0.22		0.39	0.35	0.35
v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.39		1.28	0.88	0.94
Control Delay	50.6	19.6		34.5	44.4		38.8	225.4		193.1	53.9	74.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.6	19.6		34.5	44.4		38.8	225.4		193.1	53.9	74.6
LOS	D	B		C	D		D	F		F	D	E
Approach Delay		31.8			44.3			224.0				87.6
Approach LOS		C			D			F				F
90th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
30th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
10th %ile Green (s)	23.5	60.5		30.5	30.5		26.5	26.5		8.5	41.5	41.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	71.1	53.4		0.8	47.0		0.8	~177.4		~52.4	125.2	75.6
Queue Length 95th (m)	#126.2	68.6		3.8	64.9		4.1	#247.7		#103.2	#189.7	#134.0
Internal Link Dist (m)		307.6			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	465	1616		151	658		89	386		165	616	338
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.93	0.42		0.03	0.62		0.04	1.39		1.28	0.88	0.94

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 104 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.39
 Intersection Signal Delay: 85.7
 Intersection LOS: F
 Intersection Capacity Utilization 114.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	15	952	23	0	1144
Future Volume (Veh/h)	0	15	952	23	0	1144
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	15	952	23	0	1144
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.71					
vC, conflicting volume	1536	488			975	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	945	488			975	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	185	526			703	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	15	635	340	572	572	
Volume Left	0	0	0	0	0	
Volume Right	15	0	23	0	0	
cSH	526	1700	1700	1700	1700	
Volume to Capacity	0.03	0.37	0.20	0.34	0.34	
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	
Control Delay (s)	12.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	12.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			38.5%		ICU Level of Service	A
Analysis Period (min)			15			

East LeBreton Flats - Revised TIS
2028 Total Traffic (OIA Modal Shares)

1: Booth Street & Sir John A MacDonald Parkway/Wellington Street
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗		↑↓		↘	↑↑	↗
Traffic Volume (vph)	0	1125	0	0	1423	268	0	1229	94	65	813	303
Future Volume (vph)	0	1125	0	0	1423	268	0	1229	94	65	813	303
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		40.0	10.0		0.0	100.0		65.0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (m)	30.0			30.0			30.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor						0.94		0.99				0.91
Fr _t						0.850		0.989				0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	3386	0	0	3386	1500	0	3267	0	1541	3257	1500
Flt Permitted										0.075		
Satd. Flow (perm)	0	3386	0	0	3386	1404	0	3267	0	122	3257	1370
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)								8				31
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		115.0			144.3			74.7			217.9	
Travel Time (s)		8.3			10.4			5.4			15.7	
Confl. Peds. (#/hr)	38		25	25		38	50		62	62		50
Confl. Bikes (#/hr)			9			19			4			29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	3%	1%	11%	5%	2%
Adj. Flow (vph)	0	1125	0	0	1423	268	0	1229	94	65	813	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1125	0	0	1423	268	0	1323	0	65	813	303
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	0		2		1	2	1
Detector Template		Thru			Thru			Thru		Left	Thru	Right
Leading Detector (m)		10.0			10.0	0.0		10.0		2.0	10.0	2.0
Trailing Detector (m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Position(m)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Size(m)		0.6			0.6	0.0		0.6		2.0	0.6	2.0
Detector 1 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	pm+ov		NA		pm+pt	NA	Perm
Protected Phases		4			8	1		2		1	6	
Permitted Phases						8				6		6
Detector Phase		4			8	1		2		1	6	6
Switch Phase												
Minimum Initial (s)		10.0			10.0	4.9		10.0		4.9	10.0	10.0
Minimum Split (s)		37.4			37.4	11.0		34.9		11.0	34.9	34.9
Total Split (s)		55.0			55.0	11.0		54.0		11.0	65.0	65.0
Total Split (%)		45.8%			45.8%	9.2%		45.0%		9.2%	54.2%	54.2%
Maximum Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
Yellow Time (s)		3.7			3.7	3.3		3.3		3.3	3.3	3.3

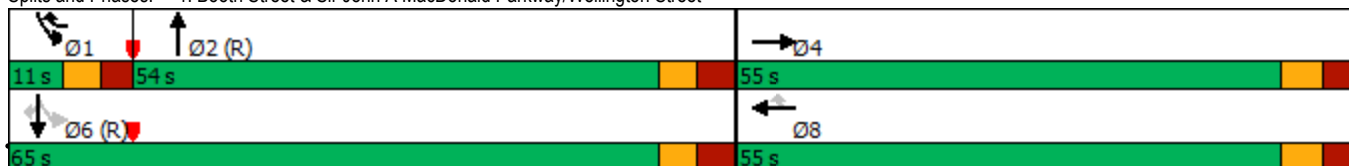


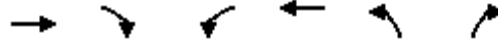
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.7			2.7	2.8		3.6		2.8	3.6	3.6
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.4			6.4	6.1		6.9		6.1	6.9	6.9
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode		None			None	None		C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0			24.0			21.0			21.0	21.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)		48.6			48.6	53.8		47.1		58.9	58.1	58.1
Actuated g/C Ratio		0.40			0.40	0.45		0.39		0.49	0.48	0.48
v/c Ratio		0.82			1.04	0.42		1.03		0.56	0.52	0.45
Control Delay		37.9			62.9	14.3		48.5		34.9	22.7	20.6
Queue Delay		0.0			16.2	0.0		0.0		0.0	0.0	0.0
Total Delay		37.9			79.1	14.3		48.5		34.9	22.7	20.6
LOS		D			E	B		D		C	C	C
Approach Delay		37.9			68.8			48.5			22.9	
Approach LOS		D			E			D			C	
90th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
90th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
70th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
70th %ile Term Code		Max			Max	Max		Coord		Max	Coord	Coord
50th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
50th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
30th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
30th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
10th %ile Green (s)		48.6			48.6	4.9		47.1		4.9	58.1	58.1
10th %ile Term Code		Hold			Max	Max		Coord		Max	Coord	Coord
Queue Length 50th (m)		128.8			~200.8	39.4		~184.8		8.3	70.7	42.9
Queue Length 95th (m)		158.3			#246.2	46.0		m124.8		#19.0	89.3	67.6
Internal Link Dist (m)		91.0			120.3			50.7			193.9	
Turn Bay Length (m)						40.0				100.0		65.0
Base Capacity (vph)		1371			1371	633		1287		117	1576	679
Starvation Cap Reductn		0			53	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.82			1.08	0.42		1.03		0.56	0.52	0.45

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 135
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 47.0
 Intersection LOS: D
 Intersection Capacity Utilization 101.1%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 1: Booth Street & Sir John A MacDonald Parkway/Wellington Street





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations	↑↓		↔	↑↑	↔		
Traffic Volume (vph)	1214	37	92	1509	30	86	
Future Volume (vph)	1214	37	92	1509	30	86	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	60.0		0.0	0.0	
Storage Lanes		0	1		1	0	
Taper Length (m)			30.0		30.0		
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.95		
Frt	0.996				0.900		
Flt Protected			0.950		0.987		
Satd. Flow (prot)	3369	0	1710	3386	1494	0	
Flt Permitted			0.196		0.987		
Satd. Flow (perm)	3369	0	352	3386	1489	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	5				86		
Link Speed (k/h)	50			50	50		
Link Distance (m)	144.3			270.2	146.6		
Travel Time (s)	10.4			19.5	10.6		
Confl. Peds. (#/hr)		8	8		7	18	
Confl. Bikes (#/hr)		4				21	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	0%	0%	1%	8%	0%	
Adj. Flow (vph)	1214	37	92	1509	30	86	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1251	0	92	1509	116	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
Trailing Detector (m)	0.0		0.0	0.0	0.0		
Detector 1 Position(m)	0.0		0.0	0.0	0.0		
Detector 1 Size(m)	0.6		2.0	0.6	2.0		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6		7	
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0	3.0	
Minimum Split (s)	29.8		15.8	15.8	28.9	5.0	
Total Split (s)	86.0		86.0	86.0	29.0	5.0	
Total Split (%)	71.7%		71.7%	71.7%	24.2%	4%	
Maximum Green (s)	80.2		80.2	80.2	23.1	3.0	
Yellow Time (s)	3.7		3.7	3.7	3.3	2.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
All-Red Time (s)	2.1		2.1	2.1	2.6		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.8		5.8	5.8	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	C-Max		C-Max	C-Max	None		Max
Walk Time (s)	15.0						7.0
Flash Dont Walk (s)	9.0						16.0
Pedestrian Calls (#/hr)	10						10
Act Effct Green (s)	90.6		90.6	90.6	12.7		
Actuated g/C Ratio	0.76		0.76	0.76	0.11		
v/c Ratio	0.49		0.35	0.59	0.50		
Control Delay	3.7		10.4	8.3	23.2		
Queue Delay	0.2		0.0	1.2	0.1		
Total Delay	3.9		10.4	9.6	23.3		
LOS	A		B	A	C		
Approach Delay	3.9			9.6	23.3		
Approach LOS	A			A	C		
90th %ile Green (s)	80.3		80.3	80.3	23.0		3.0
90th %ile Term Code	Coord		Coord	Coord	Ped		MaxR
70th %ile Green (s)	92.7		92.7	92.7	10.6		3.0
70th %ile Term Code	Coord		Coord	Coord	Gap		MaxR
50th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
50th %ile Term Code	Coord		Coord	Coord	Min		MaxR
30th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
30th %ile Term Code	Coord		Coord	Coord	Min		MaxR
10th %ile Green (s)	93.3		93.3	93.3	10.0		3.0
10th %ile Term Code	Coord		Coord	Coord	Min		MaxR
Queue Length 50th (m)	16.4		5.7	65.8	7.1		
Queue Length 95th (m)	m42.7		22.0	130.4	23.3		
Internal Link Dist (m)	120.3			246.2	122.6		
Turn Bay Length (m)			60.0				
Base Capacity (vph)	2544		265	2555	356		
Starvation Cap Reductn	476		0	381	0		
Spillback Cap Reductn	0		0	757	18		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.60		0.35	0.84	0.34		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 27 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 7.7
 Intersection LOS: A
 Intersection Capacity Utilization 73.0%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lett Street & Wellington Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	667	372	976	1735	726	668
Future Volume (vph)	667	372	976	1735	726	668
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	135.0			115.0	0.0	35.0
Storage Lanes	2			3	3	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	0.97	0.91	0.95	0.76	0.94	1.00
Ped Bike Factor	1.00				1.00	0.89
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3285	4865	3420	3230	4637	1515
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3269	4865	3420	3230	4620	1342
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				223		511
Link Speed (k/h)		50	50		50	
Link Distance (m)		270.2	257.1		139.6	
Travel Time (s)		19.5	18.5		10.1	
Confl. Peds. (#/hr)	9			9	2	97
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	8%	4%	1%
Adj. Flow (vph)	667	372	976	1735	726	668
Shared Lane Traffic (%)						
Lane Group Flow (vph)	667	372	976	1735	726	668
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		10.8	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	0
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	0.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	pt+ov	Prot	Perm
Protected Phases	5	2	6	6 4	4	
Permitted Phases		2				4
Detector Phase	5	2	6	6 4	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	42.8	16.5	26.5		44.1	44.1
Total Split (s)	55.8	92.3	36.5		44.1	44.1
Total Split (%)	40.9%	67.7%	26.8%		32.3%	32.3%
Maximum Green (s)	50.0	85.8	30.0		38.0	38.0
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.5	3.2	3.2		2.8	2.8

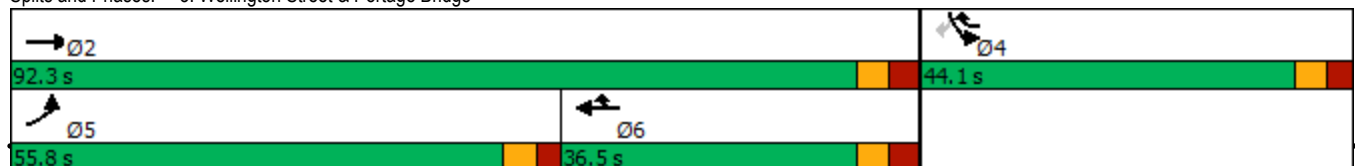


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.8	6.5	6.5		6.1	6.1
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	None		None	None
Walk Time (s)	25.0		7.0		26.0	26.0
Flash Dont Walk (s)	12.0		13.0		12.0	12.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	33.7	85.9	46.4	88.4	35.9	35.9
Actuated g/C Ratio	0.25	0.64	0.35	0.66	0.27	0.27
v/c Ratio	0.81	0.12	0.83	0.79	0.59	0.91
Control Delay	55.6	9.9	48.5	18.1	44.8	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	9.9	48.5	18.1	44.8	29.2
LOS	E	A	D	B	D	C
Approach Delay		39.2	29.0		37.3	
Approach LOS		D	C		D	
90th %ile Green (s)	41.4	85.8	38.6		38.0	38.0
90th %ile Term Code	Gap	MaxR	Hold		Max	Max
70th %ile Green (s)	36.6	85.8	43.4		38.0	38.0
70th %ile Term Code	Gap	MaxR	Hold		Max	Max
50th %ile Green (s)	33.7	85.8	46.3		38.0	38.0
50th %ile Term Code	Gap	MaxR	Hold		Max	Max
30th %ile Green (s)	30.7	85.8	49.3		36.9	36.9
30th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
10th %ile Green (s)	26.4	85.8	53.6		29.0	29.0
10th %ile Term Code	Gap	MaxR	Hold		Gap	Gap
Queue Length 50th (m)	92.7	14.6	134.3	124.6	62.6	50.9
Queue Length 95th (m)	107.3	19.4	#195.8	180.9	76.8	#139.4
Internal Link Dist (m)		246.2	233.1		115.6	
Turn Bay Length (m)	135.0			115.0		35.0
Base Capacity (vph)	1223	3108	1180	2248	1312	746
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.12	0.83	0.77	0.55	0.90

Intersection Summary

Area Type: Other
 Cycle Length: 136.4
 Actuated Cycle Length: 134.4
 Natural Cycle: 125
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 33.3
 Intersection Capacity Utilization 94.9%
 Analysis Period (min) 15
 90th %ile Actuated Cycle: 136.4
 70th %ile Actuated Cycle: 136.4
 50th %ile Actuated Cycle: 136.4
 30th %ile Actuated Cycle: 135.3
 10th %ile Actuated Cycle: 127.4
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Wellington Street & Portage Bridge



East LeBreton Flats - Revised TIS
2028 Total Traffic (OIA Modal Shares)

5: Booth Street & Albert Street
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	421	327	7	45	725	328	7	586	12	158	436	275
Future Volume (vph)	421	327	7	45	725	328	7	586	12	158	436	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	125.0		0.0	25.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	40.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		0.73	0.92		0.88	1.00				0.71
Fr t		0.997			0.953			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1613	3050	0	1710	2858	0	1710	1788	0	1569	1800	1404
Flt Permitted	0.095			0.550			0.339			0.107		
Satd. Flow (perm)	161	3050	0	722	2858	0	535	1788	0	177	1800	1003
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			62			1				275
Link Speed (k/h)		50			50			50				50
Link Distance (m)		372.3			213.1			205.5				334.4
Travel Time (s)		26.8			15.3			14.8				24.1
Confl. Peds. (#/hr)	189		215	215		189	196		118	118		196
Confl. Bikes (#/hr)			2			20			13			19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	11%	0%	0%	6%	4%	0%	0%	0%	9%	0%	9%
Adj. Flow (vph)	421	327	7	45	725	328	7	586	12	158	436	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	334	0	45	1053	0	7	598	0	158	436	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		4.5	10.0	10.0
Minimum Split (s)	11.5	36.5		36.5	36.5		32.5	32.5		11.0	32.5	32.5
Total Split (s)	29.0	71.0		42.0	42.0		33.0	33.0		11.0	44.0	44.0
Total Split (%)	24.2%	59.2%		35.0%	35.0%		27.5%	27.5%		9.2%	36.7%	36.7%
Maximum Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	3.3

Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0

East LeBreton Flats - Revised TIS
2028 Total Traffic (OIA Modal Shares)

5: Booth Street & Albert Street
Timing Plan: PM Peak

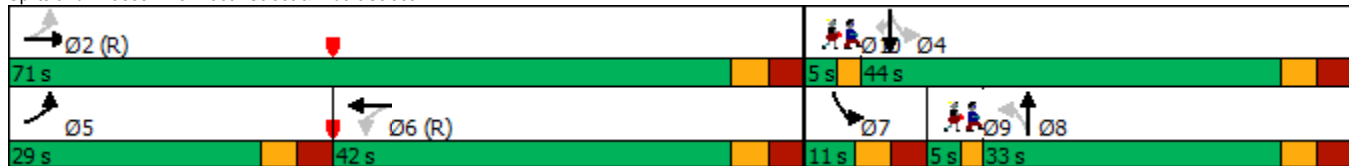


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)		23.0		23.0	23.0		21.0	21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		30		30	30		30	30		30	30	30
Act Effct Green (s)	64.5	64.5		35.5	35.5		26.5	26.5		42.0	37.5	37.5
Actuated g/C Ratio	0.54	0.54		0.30	0.30		0.22	0.22		0.35	0.31	0.31
v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.51		1.39	0.78	0.55
Control Delay	137.6	14.7		35.1	130.3		38.7	277.8		239.6	39.8	21.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	137.6	14.7		35.1	130.3		38.7	277.8		239.6	39.8	21.9
LOS	F	B		D	F		D	F		F	D	C
Approach Delay		83.2			126.4			275.0				70.5
Approach LOS		F			F			F				E
90th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
90th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
70th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
70th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Max	Max
50th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
50th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
30th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
30th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
10th %ile Green (s)	22.5	64.5		35.5	35.5		26.5	26.5		4.5	37.5	37.5
10th %ile Term Code	Max	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
Queue Length 50th (m)	~110.1	21.5		8.4	~159.7		1.4	~208.0		~37.6	114.5	43.8
Queue Length 95th (m)	#175.2	30.3		19.1	#203.4		5.8	#280.4		#83.1	149.3	77.8
Internal Link Dist (m)		348.3			189.1			181.5			310.4	
Turn Bay Length (m)	125.0			25.0						100.0		
Base Capacity (vph)	358	1640		213	889		118	395		114	562	502
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.18	0.20		0.21	1.18		0.06	1.51		1.39	0.78	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 9 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.51
 Intersection Signal Delay: 129.0
 Intersection LOS: F
 Intersection Capacity Utilization 123.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ 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.

Splits and Phases: 5: Booth Street & Albert Street



Lane Group	Ø9	Ø10
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	MaxR	MaxR
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	MaxR	MaxR
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	MaxR	MaxR
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	MaxR	MaxR
10th %ile Green (s)	3.0	3.0
10th %ile Term Code	MaxR	MaxR
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	12	1309	38	0	813
Future Volume (Veh/h)	0	12	1309	38	0	813
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	12	1309	38	0	813
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			334			75
pX, platoon unblocked	0.83					
vC, conflicting volume	1734	674			1347	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1479	674			1347	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	97	397			507	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	873	474	406	406	
Volume Left	0	0	0	0	0	
Volume Right	12	0	38	0	0	
cSH	397	1700	1700	1700	1700	
Volume to Capacity	0.03	0.51	0.28	0.24	0.24	
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	
Control Delay (s)	14.3	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.3	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			49.5%		ICU Level of Service	A
Analysis Period (min)			15			